MEETING ABSTRACTS

107TH Annual Meeting of the American Association of Colleges of Pharmacy, San Diego, California, July 9–12

BIOLOGICAL SCIENCES

Completed Research

Alcohol and Drug Addiction Education of Pharmacy Students Enrolled in the Block Curriculum. Allison A. Welder, University of Southern Nevada; Renee E. Coffman, University of Southern Nevada. This study evaluated the impact of attending the 2005 session of the University of Utah School on Alcoholism and Drug Dependencies (UUSADD) on attitudes and behaviors of undergraduate pharmacy students enrolled in the block curriculum. First and second year pharmacy students (N = 87) were administered an alcohol and drug (AOD) survey which addressed AOD use attitudes and behaviors prior to and after attending UUSADD. Each student anonymously completed the survey. Prior to attendance of UUSADD, 67% of the students had a perception that problematic AOD existed in their college, whereas, 84% felt it was a problem after attending the school. After the school, students who said they would be more cautious about their own alcohol/drug consumption increased from 43% up to 78%. Before UUSADD, 9% said they thought that 7 or more students currently enrolled were impaired by AOD compared to 22% after. Only 63% (pre) said they would know where to seek help if they thought they personally had a problem with AOD compared to 99% (post). Finally, after attending UUSADD, those individuals who felt that students or faculty who are successfully recovering from AOD should be allowed to complete their education and keep their jobs increased from 91% to 100%. The data from this study suggest that undergraduate pharmacy students enrolled in the block curriculum were positively influenced in their attitudes and behaviors toward alcohol and drug use after attending the UUSADD. It is hoped these pharmacy students who attend UUSADD will share their new knowledge with peers.

Enhancing interdisciplinary collaboration and student learning in an oncology module through integrated lecturing. James M. Culhane, Wilkes University; Edward Li, Wilkes University. Objectives: To describe the reasoning, process and assessment behind developing a fully integrated oncology course within a two year collaborative pharmacotherapy course. Methods: At Wilkes University, a 2-year, integrated course was developed, combining pathophysiology, pharmacology, medicinal chemistry, and therapeutics courses and utilizing a sequential approach to lecture delivery. Organized largely by disease state and divided into 12 modules, both clinical and basic science faculty share teaching and administrative responsibilities and both are present in every lecture. Within a module, separate lectures on specific disease states are presented starting with pathophysiology and followed by lectures in medicinal chemistry, pharmacology, and therapeutics. The oncology module within Pharmacotherapeutics was recently reorganized utilizing an integrated lecture approach to further enhance interdisciplinary collaboration and student learning. A series of 10 integrated lectures were developed, each containing complete information on the pathophysiology, medicinal chemistry, pharmacology, and therapeutics of a specific cancer. This method of organizing and delivering lectures: facilitates genuine and collaborative in-class dialogues between the clinical/basic science faculties; allows students to grasp the relationship between the respective disciplines and its relevance to patient care; teaches students that different faculty viewpoints regarding similar subject material is complementary, rather than contradictory. Students’ satisfaction with this model was evaluated using a Likert-based, 7-question survey that assessed the overall module design, faculty collaboration, and lecture integration. Implications: Preliminary survey results suggest a high level of student satisfaction. In order to fully determine the utility of this model, student learning and retention of material will need to be assessed.

Identification and design of novel teaching approaches that enhance the link between biochemical concepts and top 200 prescribed drugs. Misty M. Carroll, University of Kentucky; Marcos A. Oliveira, University of Kentucky. Objective: Our objective is to evaluate student attitude and knowledge of biochemistry and to focus on the design of a new processes of teaching and learning in the classroom. A process that helps students correlate biochemical concepts with a drug and/or therapy. We analyzed the attitude of first year Pharmacy students towards learning Biochemistry as well as their prior knowledge as they begin the Pharmacy curriculum. Measures of student attitudes are discussed and different factors that influence attitude systems are identified. Objective questions were administered online through Blackboard. Students were evaluated on their perceptions and on their knowledge of fundamental chemical concepts including pH and functional groups. Results: show that over 50% of students have not taken Biochemistry in their pre-pharmacy preparation and perceive the topic as difficult. However 75% are able to respond effectively to fundamental chemical concepts tested. Moreover, this study investigates the importance of changing the process through which learning of biochemistry occurs. We argue for the need for Pharmacy students to be able to identify and articulate connections between biochemical concepts and top 200 prescribed drugs. We conclude that students enter Pharmacy school with the perception that Biochemistry is difficult. This perception needs to broken down in order to eliminate a fundamental barrier that hinders student learning. An innovative approach is described where we focus not only acquisition of knowledge, but emphasize the students ability to establish correlations between biochemical concepts with and the top 200 most prescribed drugs.

Incorporating Common Prescriptions into the Basic Biomedical Coursework at a School of Pharmacy. Craig A. H. Richard, Shenandoah University; Chao-Ping Lei, Shenandoah University; Emilie Gillis, Shenandoah University. Objectives: First year biomedical curricula (biochemistry, cell biology, physiology, and pathophysiology) are taught mostly from general texts designed for undifferentiated students. Our goal therefore was to create a database of common prescriptions that could be utilized easily and effectively to integrate drug information into basic biomedical coursework. Methods: We utilized an annual list of Top 200 Drugs (most common prescriptions by volume) to create an annually updated database that can be sorted by any of the following topics: active agent(s), generic name, trade name, classification, molecular formula, molecule type, antagonists, agonists, inhibitors, stimulators, biological target (channel, enzyme,
receptor), physiological system target (examples: nervous, respiratory, cardiovascular, renal, immune), and indications/pathophysiology (examples: angina, arthritis, diabetes, dyslipidemia, GERD, hypertension, infections, neurological disorders, pain). The database was utilized in basic biomedical coursework over the prior 3 years. A survey was performed of first year, second year, and third year pharmacy students that were taught with the incorporation of the Top 200 Drugs in their first year curricula. Results: The database served as an efficient method to incorporate common drugs into the first year of basic biomedical coursework. Students reported that the inclusion of the drug information was beneficial to making first year science coursework more practical, increased their integrated understanding of how drugs effect cells to alter physiology, increased long term knowledge of drug names, and increased long term understanding of drug categories and drug mechanisms. Implications: Developing public access or dissemination of this database could provide additional utility for other schools of pharmacy.

Influence of hypothyroidism induced by thiamazole on the toxicity of amitriptyline in chick embryos. Yuji Yoshiyama, Kyoritsu University of Pharmacy; Motoko Kanke, Kyoritsu University of Pharmacy. Objectives: With regard to the use of experimental animals for research and education, alternative methods for animal testing came to be discussed. Thus, based on social acceptance, experimental studies using chick embryos have drawn attention. The present study evaluated the effect of the hypothyroidism induced by thiamazole on the toxicity of amitriptyline in chick embryos. Methods: Fertilized eggs of White Leghorns were incubated and investigated. 1.2 mg/0.2 mL/egg of thiamazole was injected into the air sac of the thiamazole-egg, 2.5 mg/egg or 5 mg/egg was injected into the air sac of the albumen of fertilized eggs of incubation. Amitriptyline at 1 mg/egg was injected into the thiamazole-treated eggs, the heart rate was not different compared with physiological saline. However, the heart rate was significantly decreased by the administration of 2.5 mg/egg and 5 mg/egg amitriptyline. After the injection of amitriptyline into the thiamazole-treated eggs, the heart rate was significantly decreased compared with the untreated eggs. Implications: In the present study, the influence of the hypothyroidism on the toxicity of amitriptyline was demonstrated in chick embryos. In conclusion, thiamazole-treated chick embryos may prove to be an alternative animal model with which to examine the cardiotoxicity of some drugs, including amitriptyline, under certain experimental situations.

Knowledge and Perceptions of Accreditation from Applicants to a New School of Pharmacy. David F. Maize, University of the Incarnate Word; Carmita A. Coleman, University of the Incarnate Word; Mark C. Granberry, University of the Incarnate Word. Objectives: We sought to determine our applicants’ perception of the importance of accreditation and to measure the applicant’s knowledge of the accreditation process. Methods: Applicants and first year pre-pharmacy students (potential applicants) were requested to complete an online or paper, anonymous survey. A Likert scale was used to measure their responses with 1 being the most positive response. Using SPSS, appropriate statistical tests with 95% confidence intervals were used to determine if differences existed in their responses. Data were considered significant different if p < 0.05. Results: When applicants (n = 184) ranked the importance of location, tuition, rep-
A total of 5,399 individual student evaluations from 138 course offerings that were taught over four successive academic years were compiled and analyzed. The evaluation instrument included course-related and instructor-related items, as well as a question inquiring about the grade the student expected to receive in the course. Correlation analyses were conducted to evaluate the significance and interrelatedness of those relationships (evaluation scores, instructor effectiveness, and student grades). **Results:** Students’ grades, both expected and actual, were significantly correlated with the mean instructor evaluation score ($P < 0.01$). There was also a strong positive correlation ($r = 0.916$) between the mean course evaluation score and the mean instructor evaluation score ($P < 0.01$). The relationship between instructor evaluations and each of the four teacher effectiveness domains were also significantly correlated to the instructor evaluation scores. **Implications:** Based on the results in this study, students’ expected and actual course grades appear to be an influential factor in how they evaluate instructors. This finding raises questions about the proper utilization of student evaluations in assessing instructors and their effectiveness. Additionally, the ability of students to discriminate between course evaluations and instructor evaluations is suspect.

**The Relationship Between ACT and Other Factors on PCAT Score for Selection of Pharmacy Applicants.** Joel E. Houglum, South Dakota State University; Teresa M. Delfinis, South Dakota State University; Rajender R. Aparasu, University of Houston. **Objectives:** The purpose of this study was to determine whether the American College Test (ACT) score and other factors could be used as predictors of the Pharmacy College Admission Test (PCAT) score. **Methods:** Following institutional review board approval, release forms were used to obtain the appropriate consent from students. The academic records of 131 applicants for the pharmacy program at South Dakota State University from 2004-2005 who reported both ACT and PCAT scores were examined retrospectively. Descriptive and stepwise multiple regression analyses were used to analyze the data. **Results:** A total of 131 (23.4% of all applicants) student records from the 2004-2005 application cycles contained verification of scores for both ACT and PCAT. Percentile scores for students who took the PCAT prior to March 2004 were adjusted to the corresponding score based on the 2003 norms. The average ACT, PCAT, GPA, and age for the study sample were 24.8($+3.1$), 63.1($+20.9$), 3.4($+0.3$), and 21.9($+2.3$), respectively. Stepwise regression analysis revealed that higher ACT score, higher GPA, and being older were predictive of a higher PCAT score, whereas female gender was predictive of a lower score. These variables explained 54% of the variation in the PCAT scores. **Implications:** The analyses revealed that academic (ACT and GPA) and demographic factors (age and gender) are significantly associated with PCAT scores. Such analysis can be a valuable tool during the screening process, thus facilitating the selection when comparing applicants who have taken PCAT and those who have not.

**Utilization of ZDF Rats to Demonstrate Type II Diabetes Mellitus to Students in Pharmacy Laboratories.** Diane Hardej, St. John’s University; Helen Scaramell, St. Johns University; Eileen Hussey, St. John’s University; Louis D. Trombetta, St. John’s University. **Type II diabetes mellitus, also known as non-insulin dependent diabetes mellitus (NIDDM), is an insidious and protracted major health concern in the United States. Risk factors include age, obesity, genetic predisposition and physical inactivity. The purpose of this instructional laboratory was to give Pharm D. students practical experience with animal handling, blood drawing and the use of the glucometer to understand the pathophysiologic principles in NIDDM. These principles were demonstrated in the laboratory by using obese and lean ZDF rats, a genetic strain predisposed to NIDDM. Upon housing, obese female ZDF rats were fed a high fat diet for 4-6 weeks, which induces NIDDM in these animals. Animals were fasted for 16 hours before lab and given a bolus dose of glucose (2ml/kg -60% glucose).
glucose solution) by gavage. Blood taken from locally anesthetized tails of treated rats were tested for glucose at 0, 30, 60, 90 and 120 minutes using commercially available glucometers. Students plotted blood glucose levels of each rat over 120 minutes and observed higher glucose levels in obese ZDF rats at all time points, when compared to lean controls. Glucose levels of lean rats returned to baseline by 120 minutes. Glucose levels of obese rats failed to return to pre-glucose administration levels in this time frame. Some preparation and expertise in handling of animals was required, but as a visual demonstration of NIDDM, this laboratory proved to be an excellent teaching tool for our students to explain this major health issue.

Variables Related to the Effectiveness of Large Group Peer Tutoring Sessions. Judith E. Garrett, University of Arkansas for Medical Sciences; Megan Nicole Barnard, University of Arkansas for Medical Sciences; Charles K. Born, University of Arkansas for Medical Sciences. Objectives: When supplemental instruction is provided by peer tutors and the number of tutors is not adequate to provide individual or small group instruction, sessions are often open to all students, leading to ‘standing room only’ sessions just before exams and the perception that only ‘gunners’ attend these sessions. The objective of this study was to identify variables related to the effectiveness of ‘open’ peer tutoring sessions on early achievement in a P1 Physiology course. Methods: Regression analysis (dependent variable = scores on Exam 2) was used to investigate the impact of the following variables on the achievement of students who agreed to participate in an IRB-approved study (N = 51): scores on Exam 1, (primarily a review of physiology concepts covered in preprofessional courses), scores on measures related to comprehension-monitoring skills: visualizing lecture material and identifying and condensing relevant information, and two nominal variables, prior physiology coursework and number of tutorials attended between Exams 1 and 2. Indicator (dummy) variables were created for the two nominal variables before they were entered into the regression equation. Results: R2 or the amount of variance accounted for by the regression equation was .522 (p = .000). Significant predictors were Exam 1 scores (beta = .457, p = .001) and skill in condensing relevant information (beta = .331, p = .009), while ‘number of sessions attended’ was not significant (beta = -.208, p = .090). Implications: While traditional tutorial methods can be effective in imparting skills: visualizing lecture material and identifying and condensing relevant information, and two nominal variables, prior physiology coursework and number of tutorials attended between Exams 1 and 2, indicator (dummy) variables were created for the two nominal variables before they were entered into the regression equation. Results: R2 or the amount of variance accounted for by the regression equation was .522 (p = .000). Significant predictors were Exam 1 scores (beta = .457, p = .001) and skill in condensing relevant information (beta = .331, p = .009), while ‘number of sessions attended’ was not significant (beta = -.208, p = .090). Implications: While traditional tutorial methods can be effective in imparting knowledge and skills, more focused tutorials, including ‘learning skills’ instruction, are needed to produce significant achievement gains.

Work in Progress

Assessing Pharmacy Students’ Ability in Evidence Based Medicine (EBM). Alice J. Gardner, Massachusetts College of Pharmacy and Health Sciences – Worcester; Irena Bond, Massachusetts College of Pharmacy and Health Sciences – Worcester; Monina R. Lahoz, Massachusetts College of Pharmacy and Health Sciences – Worcester. Objectives: (1) To assess pharmacy students’ knowledge and skills in four EBM domains - formulate a clinical question, conduct efficient searches for the best evidence for that question, critically appraise the evidence, and apply the evidence to solve the problem - using the Fresno test of EBM; and (2) to assess the effectiveness of an elective course, “Evidence Based Pharmacology”, in developing EBM ability. Methods: In Weeks 1 and 15 of the spring 2006 semester, the Fresno test will be administered to students enrolled in the elective course (intervention group) and to volunteer students enrolled in a traditional didactic, required pharmacology course (control group). In the elective course, students will use the EBM Method (Sackett 1996) to solve four clinical pharmacology problems. The mean pre- and post-test Fresno scores within and between the two groups will be compared using the t-test. Results: Twenty students took the Fresno test in Week 1: 11 in the intervention group and 9 in the control group. Their tests were scored using standardized grading rubrics. An analysis of the pre-test scores showed that students’ ability in the EBM domains were either in the “not evident” or “limited response” category. There was no significant difference in the mean scores between the two groups in any of the EBM domains. Implications: The results of this study may demonstrate the usefulness of the Fresno test in assessing students’ EBM knowledge and skills. Findings: on the four EBM domains may help identify strengths and weaknesses in a PharmD curriculum.

Correlation between Serum Leptin Levels and Blood Pressure in Overweight Aged Rats. Eugene W. Shek, Texas Tech University Health Sciences Center. The aim of the present study was to examine the effect of elevated serum leptin on BP in aging. Six-month (young) and 24-month (old) male F344/BN rats were divided into control, pairfed and leptin-treated groups. Method: Rats were implanted with a chronic arterial catheter for monitoring BP and heart rate (HR) and a stainless steel cannula in the left lateral ventricle for infusion of either vehicle or murine leptin (15 microgram/day for 7 days). Results: Basal BP, adiposity, serum leptin, BW and FI were increased significantly in old rats compared with young rats (young vs old: map: 91 ± 1 vs 97 ± 1 mmHg; adiposity index: 1.18 ± 0.1 vs 1.57 ± 0.1; Serum leptin: 7 ± 1 vs 25 ± 5 ng/ml; bw: 332 ± 5 vs 556 ± 11g; fi: 17 ± 1 vs 19 ± 1g). Serum leptin level was correlated positively with BP (r2 = 0.69, p < 0.0001). CSF/serum leptin ratio was significantly reduced in old rats (young: 1.9 ± 0.2 vs old: 0.9 ± 0.2). In young rats, chronic ICV leptin infusion for 7 days significantly reduced FI (−10 ± 2 g/day) and BW (−45 ± 7 g). Leptin also increased BP by 15 ± 3 mmHg and HR by 64 ± 6 beats/min in young rats compared with age-matched pairfed control. In contrast, the anorexicon and weight reduction effects of leptin were attenuated in old rats (FI: −7 ± 1 g/day; bw: −19 ± 3 g). Leptin also failed to increase BP in old rats although HR was increased by 23 ± 7 beats/min. Conclusion: Results of the present study demonstrated that overweight aged rats were associated with increased adiposity, serum leptin level and BP. Furthermore, both anorexic and cardiovascular effects of central leptin treatment were attenuated in overweight aged rats suggesting the development of leptin resistant with age.

Predictors of success in pharmacy calculations: Comparison of entry-level Pharm D students enrolled in campus and web-based pathways. Michael Shara, Creighton University; Sam C. Augustine, Creighton University; Mark V. Siracuse, Creighton University; Anne Constantino, Creighton University. Objectives: Assess potential predictors for achievement (grades) in a pharmacy calculations course. Methods: Quantitative PCAT results, pre-professional hours, preprofessional science grade point average (GPA), previous degree, and calculus grades were analyzed as predictors of achievement in a pharmacy calculations course. Multiple linear regression using the backward elimination technique was used to find best fit models. Web students and campus students were analyzed separately. The campus-based pathway students were further divided into two groups based upon pre-pharmacy education - Creighton University (CU) vs. other schools. Results: The best fit model for campus pathway non-CU students had an R2 = 0.205. Significant predictors were PCAT score (p = 0.002), pre-professional science GPA (p = 0.008) and having a previous degree (p = 0.017). The best fit model for web-based
students had an $R^2 = 0.261$. Significant predictors were PCAT score ($p = 0.001$) and calculus grade ($p = 0.017$). The best fit model for campus pathway CU students was $0.494$. Significant predictors were pre-professional science GPA ($p < 0.001$) and pre-professional hours ($p = 0.032$). **Implications:** We examined five parameters to determine whether they could predict a student’s success in pharmacy calculations. Nearly 50% of the variation in calculations grades in campus CU students was explained by pre-professional GPA and pre-professional hours. PCAT score and calculus grade explained 26% of the grade variation for web students. PCAT score, pre-professional science GPA and having a previous degree explained 20.5% of the grade variation for non-CU campus students.


**Objective:** To report results from a two-year inter-professional clinic designed to enhance the understanding of diabetes and improve health outcomes for underserved, rural patients. **Methods:** An inter-professional diabetes clinic was developed two years ago as part of a student project awarded the 2003-2004 Department of Health and Human Services Secretary’s Award for Innovation in Health Promotion and Disease Prevention. Students from the Colleges of Allied Health Sciences, Optometry and Pharmacy staff the once-weekly clinic which is designed to enhance the level of diabetes management and education in patients from a rural, underserved population. Patients are identified from existing optometry clinic records or an ASP diabetes screening project. Student-team members, in consultation with their preceptors, provide a level of care that is synergistic, enhancing the patient’s understanding of the disease and its management. Efficacy of this intervention continues to be measured. **Results:** The student-based interventions enhanced patient specific care and improved patient outcomes. A paired t-test revealed a significant difference ($p < 0.001, n = 53$) between the pre-test and post-test assessments. Patients felt the educational information expanded their knowledge of the disease contributing to changes in eating and exercise habits. Further, students find the inter-professional practice model increases their understanding of team dynamics. **Implications:** An inter-professional practice model greatly enhances pharmacy students’ awareness of the scope of practice of other health professions while augmenting the level of patient care. Academic pharmacy must develop advanced practicums which emphasize inter-professional practice models while recognizing the significant effort that is necessary to sustain such models.

**CHEMISTRY Completed Research**

**Continuous Quality Assurance of an Educational Mentor Program in a Web-Based Doctor of Pharmacy Pathway.** Naser Z. Alsharif, *Creighton University*; Amy H. Schwartz, *University of Southern Nevada*; Patrick M. Malone, *University of Findlay*. **Objective:** To establish a successful educational mentor program for the web-based doctor of pharmacy pathway at Creighton University, School of Pharmacy and Health Professions. **Design:** A recruitment process was established and the educational mentor’s responsibilities were identified. The roles of faculty instructors of record, the Office of Information Technology and Learning Resources, and the Office of Faculty Development and Assessment as it pertains to the training of educational mentor were clearly delineated. An evaluation process of all key aspects of the program was also put in place. **Assessment:** Student and instructor of record evaluations of the mentor and the program, and the mentors evaluations of the program, show overall satisfaction with the mentoring program. Areas of concern have been addressed. **Conclusion:** The educational mentor program has become an invaluable component of the web-pathway and has helped to enhance the interactions of the students with the content and mentor.

**Effectiveness of Examination Blueprints to Promote Higher Cognitive Level Performance.** Siu-Fun Wong, *Western University of Health Sciences*; Ryan Quist, *Western University of Health Sciences*; Wallace Murray, *Western University of Health Sciences*. **Objective:** The objective was to study the effectiveness of using examination blueprints to develop a step-wise approach in testing higher cognitive level examination questions (using Bloom Taxonomy definitions) within an oncology block. Successful presentation and assessment of material should be indicated through successive improvement in higher level (HL: analyze/evaluate, and create) skills later in the course, while establishing lower level (LL: recall, understand, and apply) skills early and maintaining throughout. **Methods:** The II: HL ratio was pre-determined for the examinations during the 18-day oncology block as 75:25 (Exam 1); 50:50 (Exam 2) and 40:60 (Exam 3). The weighted scores of the 2 levels of questions were compared. **Results:** For Exam 1, students achieved 89% and 60% weighted scores on the LL and HL questions, respectively. For Exam 2, students achieved 74% (LL) and 77% (HL). For Exam 3, the scores were 84% (LL) and 83% (HL). Statistical analyses utilized the McNemar test to study changes in performance across the three tests, and the Kappa statistic was used to represent improvements in agreement between LL and HL questions over time. **Implications:** An examination blueprint successfully measured students’ development of HL competence while maintaining LL competence as it relates to the educational content. A long term study is needed to better assess the link between course content and the utilization of examination blueprints as a tool to guide course development and testing design. This may serve to improve students’ performance on higher level questions, a measure of students’ critical thinking skills.

**Effectiveness of an Instructional Model to Teach Clinically Relevant Medicinal Chemistry.** Naser Z. Alsharif, *Creighton University*; Kimberly A. Galt, *Creighton University*. **Objectives:** To document the effectiveness of an instructional model to teach clinically relevant medicinal chemistry. **Methods:** An instructional model that utilized Bloom’s cognitive and Krathwohl’s affective taxonomy, published and tested concepts in teaching medicinal chemistry, and active learning strategies, was introduced in the medicinal chemistry course for second professional year doctor of pharmacy students (campus and web). Subjective and objective evaluation tools were developed to assess student learning and overall effectiveness of the instructional model. A temporal comparison of the student performance after introducing the instructional model was compared to previous student performance academic years. Quantitative and qualitative analyses were conducted to determine the results. **Results:** Student performance improved when compared to previous years. Students’ overall enthusiasm about the course, the course content and activities is evident. The students’ perceived value of medicinal chemistry to clinical practice is demonstrated. **Implications:** The explicit integration of the cognitive and affective learning objectives resulted in enhanced student ability to envision how they will apply the science of medicinal chemistry in practice. Testing this instructional model provides validation that the theoretical framework for this...
Failing letter grades and impact on subsequent academic performance in a cohort of pharmacy students. David H. Kinder, Ohio Northern University, Kathryn T. Knecht, Loma Linda University. Objective: We assessed whether poor performance in the therapeutic modules at Ohio Northern University could be correlated with grade assignments in foundation courses by following students who either received a D grade for one or more of the foundation courses, or who would have received a D if the percentage scores had not been scaled. The Ohio Northern University curriculum follows a modular plan where students enter the professional pharmacy courses during their 4th year. The first two quarters consist of 4 foundation courses in basic medical science and pharmacodynamics followed sequentially by therapeutics modules (cardiovascular system, infectious diseases, CNS, endocrine system, and oncology). Methods: We examined the academic preparedness of a cohort of students who otherwise would have received a D grade in the foundation courses but received a C grade instead, and compared them to students whose scores were just below that group and who therefore did receive a D grade. We then examined the success rate of these students in the therapeutic modules. Sufficient numbers of students were available such that statistical analysis could be performed. Conclusion: Students who received a C grade due to scaling of foundation courses were more likely to perform poorly in subsequent therapeutics modules than those who received a D grade. Thus, while course failure denotes a weak pharmacy student, failing with a D grade will have a more positive outcome on subsequent performance in therapeutics modules than assigning borderline students a C grade.

Learning and Lecturing Preferences: Description of an Incoming PharmD Class. Robin M. Zavod, Midwestern University – Chicago; David P. Zgarrick, Midwestern University – Chicago; Phuong Duong, Midwestern University – Chicago. Objectives: To determine the learning and lecturing preferences of a student cohort prior to exposure to the didactic portion of a professional pharmacy program. Methods: A survey that assesses student learning and lecturing preferences was developed and pilot tested with 200 students. After modification the survey was administered to an incoming class of 200 pharmacy students within the first week of their first quarter of their pharmacy program. The survey items evaluated lecturing preferences, including type of lecture, as well as presentation and assessment styles. Student preference for learning activities/methods, including non-lecture based classroom activities and methods to receive additional assistance was also assessed. Results: Utilizing SPSS, data was entered and statistical tests were run to provide descriptive information about the student cohort. Practice problems (52%) and lecture (56%) were preferred learning activities, active and passive lecturing were equally desirable, visual (61%) and kinetic (40%) were favored learning methods and multiple choice (36%) and short answer (34%) exam questions were perceived as the best assessment methods. Other students (42%) were clearly preferred as a source of additional assistance and office visits (80%) and e-mail (70%) were favored to get questions answered outside the classroom. Implications: If the faculty is aware of student learning and lecturing preferences, then course activities, including avenues to provide additional assistance, can be tailored to best fit these preferences.

Optimizing the Four Important Interactions in Distance Education: An Example Medicinal Chemistry Course. Naser Z. Alsharif, Creighton University. Objective: To optimize the four important interactions in distance education in a Medicinal Chemistry course. Methods: Factors cited in the literature to impact learner-content, learner-instructor, learner-learner and learner-interface interaction in a web-based course were identified. Our program infrastructure was built and modifications to our course design, content design, course activities and course delivery were made to support and optimize the four interactions for web-students enrolled in our on-line course. Results: Web-student learning and performance has been consistent and comparable to campus students over the last four years. Web students indicate that they feel connected to the course instructor and that they have been able to build a learning community. In addition, web-students appear to have more contact with course content than the campus students. Further, web-students indicate that they have confidence with the technology utilized in the course. Implications: Optimizing interactions in a web-course enhances web-student learning and performance.

Work in Progress

Learning and Lecturing Preferences: Description of College of Pharmacy Faculty. Robin M. Zavod, Midwestern University – Chicago; David P. Zgarrick, Midwestern University – Chicago; Phuong Duong, Midwestern University – Chicago. Objectives: To determine the learning and lecturing preferences of a College of Pharmacy Faculty. Methods: A survey that assesses faculty learning and lecturing preferences was developed and pilot tested with 40 faculty members. The faculty were instructed to limit their responses to those associated with classroom-based teaching to ~200 students. The survey was modified and will be administered to the entire College faculty at the end of the academic year. The survey items will evaluate lecturing preferences, including type of lecture, as well as presentation and assessment styles. Faculty preference for learning activities/methods, including non-lecture based classroom activities and methods to provide additional assistance will also be assessed. Results: Utilizing SPSS, data will be entered and statistical tests will be run to provide descriptive information about the College Faculty. Several aspects of both the learning and lecturing preference constructs will be assessed, including preference for active vs passive lecturing, identification of preferred learning and assessment methods, and experience with outside of classroom assistance. Implications: If the College Faculty is aware of their learning and lecturing preferences, then professional development activities can be identified that will strengthen existing faculty capabilities. With this information and knowledge of student learning and lecturing preferences, then course activities, including avenues to provide additional assistance, can be modified to best fit both faculty and student preferences.

Making a Difference: A Successful Approach to Promoting Careers in the Indian Health Service. Victoria F. Roche, Creighton University; Rhonda M. Jones, Creighton University; Clint E. Hinman, Chiricahua Comprehensive Health Care Faculty, Nathalie Sooldo, Tsai Health Center. Objectives/intent: To evaluate the success of an elective course in Native American culture, health and service learning in fostering interest in careers with the USPHS Indian Health Service (IHS). Methods: The authors have offered a pharmacy elective course (PHA 341) focused on cultural and health-related issues in Native American populations since 2003. Enrollment is limited to 3-4 second or third year pharmacy students who engage in readings, keep and share reflective journals, hold discussions with Native and non-Native speakers from nearby reservations and the Omaha urban
American Indian community, research and present on a Native American health issue, and spend their fall break in Chinle, AZ providing social and healthcare services to the Dine people under the supervision of IHS pharmacists. Two of the 14 classroom sessions are used to educate on additional elective experiences with IHS, including Jr. COSTEP and advanced practice rotations. An additional hour is devoted to discerning the Creator’s call to a professional life of service.

**Results/outcomes:** Eleven students have enrolled PHA 341. Of these, 4 have applied for a Jr. COSTEP (3 accepted, one pending), 6 of 8 third-year students have requested IHS rotations, and 3 of 5 fourth-year students have applied for an IHS residency. **Implications:** Providing students with opportunities for immersion in a culture rich in tradition and values, and desperately underserved, coupled with opportunities for collaborative learning, guided reflection and focused professional mentoring, can result in the selection of careers of service to those in need.

**Utilization of a Virtual Patient to Enhance Spiral Instructional Integration across the Curriculum.** Andrew A. Webster, Samford University; Condit F. Steil, Samford University; Maisha K. Freeman, Samford University. **Objective:** To investigate the utilization of a virtual patient as the backbone of an innovative approach to integrating information across the curriculum. **Method:** For several years, first-year student groups in Physiologic Chemistry have been assigned to develop a presentation on the biochemical basis of type 1 diabetes mellitus. The foundation of this assignment is a virtual patient who is newly diagnosed with diabetes. This assignment runs concurrently with the lecture series covering the major biochemical pathways that are affected by the disease state. The project is assigned at the same time that a parallel drug information systems course utilizes diabetes mellitus as the teaching model for introduction to pharmacy secondary literature data-bases. During the following semester the first-year students complete a course in clinical communications. This course is designed to introduce basic skills in communication with patients, health providers, and other individuals and groups. This course includes information on verbal and written communication along with appropriate documentation of care. Within the communications course, the students are assigned the project of describing the components to include in providing patient and family teaching to this same virtual patient (a ten year old) at diagnosis. The students again utilize the information retrieval skills previously presented. **Results:** The project provides a relevance of practice to the course content while increasing the demand on drug information resources. **Implications:** This spiral model of instructional integration provides the student the opportunity for viewing the use of varied disciplines in the educational process.

**CONTINUING PROFESSIONAL EDUCATION**

**Completed Research**

A Preceptor Development Program Delivered by Interactive Television. Doneka R. Scott, University of Minnesota; Raquel Rodriguez, University of Minnesota; Rodney A. Carter, University of Minnesota. **Objectives:** To increase participation at an annual preceptor development program by successfully utilizing interactive television (ITV) for external sites while maintaining educational quality. **Methods:** A planning committee was assembled. Issues regarding the implementation of technology, the structure and delivery of content, and the barriers encountered with ITV were discussed. The symposium was then structured to incorporate presentations, panel discussions, scripted video vignettes and audience response activities. Participant program evaluation data were reviewed and suggestions for improvement were determined. **Results:** Eighty-seven (61%) Twin Cities preceptors and 55 (39%) out-state preceptors participated in this symposium, which was broadcasted live from the Twin Cities to seven other regions. In previous years, only 10% of program participants were out-state preceptors. Eighty-three percent (83%) of the respondents agreed or strongly agreed that the program was well organized and conducted. Moreover, the number of participants who stated in the open comments field that the highlight of the program was the use of ITV and the multi-site interactions were 25 and 21, respectively. Active participation was achieved at each site. Presentation evaluations were similar to previous years. For future programs, the participants suggested improving the audio quality, picture quality, background noise, and transitions from one site to another to avoid distractions and communication delays. **Implications:** The delivery of the symposium via ITV to sites across the state significantly increased preceptor participation. However, the technology must be readily accessible and significant coordination is required.

Determining learning objectives for a Continuing Professional Education using an online needs analysis. Anna Legreid Dopp, University of Wisconsin – Madison; Karen J. Kopacek, University of Wisconsin – Madison; Orly Vardeny, University of Wisconsin – Madison; Alan L. Hanson, University of Wisconsin – Madison. **Introduction:** The purpose of this study was to evaluate pharmacists’ perceptions of completing an online needs analysis to determine learning objectives for a Continuing Professional Education (CPE) symposium. **Methods:** Potential symposium participants were asked to rank their current knowledge of and level of importance for 26 potential learning objectives, developed by the symposium planning committee, on a scale of one to five (one = least, 5 = greatest). Learning objectives with a ranked difference of greater than one between importance and knowledge were used in the development of CPE symposium content. In order to assess pharmacists’ perceived impact of completing a needs analysis, symposium participants were asked to rank their level of agreement, using a five-point Likert Scale (strongly agree to strongly disagree), with five statements upon completion of the symposium. **Results:** Forty-eight pharmacists completed the needs analysis. Thirty-eight of these pharmacists also attended the symposium and therefore ranked the evaluation statements. The percentages of those that agreed or strongly agreed are as follows: “Being involved in the development of this symposium; (1) influenced my decision in attending (52.6%), (2) increased my satisfaction with the symposium (68.4%), (3) led to a better designed symposium (84.2%), (4) led to more relevant CPE for my learning needs (86.8%), and (5) enhanced my ability to reflect on what my specific learning needs are (78.9).” **Conclusions:** Surveying potential CPE participants leads to targeted learning objectives and subsequent improvements in attendance, satisfaction, design, and relevance, as well as participants’ reflection on learning needs.

Factors affecting selection of continuing education programs. Kristina Stout, Butler University; Carriana Richley, Butler University. **Objective:** The purpose of this study is to identify what factors pharmacists take into consideration when selecting a continuing education (CE) program and determining its usefulness. By identifying how pharmacists select CE programs, providers will be able to focus CE development on these factors. **Methods:** Using an on-line survey tool, a pilot survey was emailed to Butler University College of Pharmacy and Health Sciences faculty. Fourteen respondents participated in the pilot. One thousand randomly selected pharmacists from the Indiana Board of Pharmacy database were emailed a link to the final survey, which was posted on an on-line survey tool.
Impact of Adding a Pharmacist to a Continuing Medical Education Committee. Mark A. Malesker, Creighton University; Sally C. O’Neill, Creighton University. Objective: Our primary objective was to measure the impact of adding a pharmacist as a regular member on a University-based Continuing Medical Education Committee (CMEC). The results obtained from this analysis will be used to promote further collaborative continuing education programs for our faculty at Creighton University and other health care professionals. A pharmacist was made a regular committee member in January 2001. All programs scheduled from January 2001 until May 2006 were evaluated for providing pharmacy continuing education credit (PCEC). PCEC for these programs was applied for to the Nebraska Council For Continuing Pharmaceutical Education (NCCPE), a provider of continuing pharmacy education. Results: A total of 25 programs were identified to offer 126 hours of PCEC. Program topics were varied and included pain management, stroke, infectious diseases, women’s health, pediatrics, immunizations, and others. Pharmacist attendance at these programs has been variable. Evaluations indicate that pharmacists are greatly satisfied with these program offerings. Many of these programs also offered credit for physical therapy, occupational therapy and dentistry. The pharmacist is an active member of the CMEC, as well as the Program Review Subcommittee, and Health Sciences Education Committee. Implications: The addition of a pharmacist to a CMEC has created a multi-disciplinary culture where routine consideration for pharmacy credit is evaluated during the program review process. The largest limitation to offering pharmacy credits within this structure is the NCCPE fees.

Impact of needs analyses in determining Continuing Professional Education symposium topic and learning objectives. Anna Legreid Dopp, University of Wisconsin – Madison; Karen J. Kopacek, University of Wisconsin – Madison; Orly Vardeny, University of Wisconsin – Madison; Alan L. Hanson, University of Wisconsin – Madison. Introduction: Improving symposium quality and increasing participant ownership are important principles in pharmacist Continuing Professional Education (CPE). This study sought to determine the impact of utilizing online needs analyses on these principles. Methods: Prior to an annual CPE symposium, potential pharmacist participants prospectively completed two online needs analyses to determine the symposium’s topic and specific learning objectives. Upon completion of the symposium, participants evaluated the influence of completing the needs analyses by ranking their level of agreement, using a five-point Likert Scale (strongly agree to strongly disagree), with the following statements: “Being involved in the development of this symposium by completing both needs analyses: (1) influenced my decision and interest in attending today, (2) increased my satisfaction with the symposium, (3) led to a better designed CPE symposium, (4) led to more relevant CPE for my professional learning needs, (5) enhanced my ability to reflect on what my specific learning needs are.” Results: Forty-four participants responded; twenty-three of them completed both needs analyses and 21 completed neither. Prospective needs analyses significantly influenced pharmacists’ decision to attend the CPE symposium (p < 0.01), increased pharmacist satisfaction with the symposium (p < 0.001), led to a better designed symposium (p < 0.001), improved relevance to professional practice (p < 0.01), and enhanced pharmacists’ ability to reflect on learning needs (p < 0.05) compared to those who did not participate in the needs analyses. Conclusions: Prospective needs analyses may increase pharmacist CPE symposium attendance, satisfaction, design, relevance, and self-reflection abilities.

Outcomes Assessment of a Clinical Nutrition Support Certificate Program. Priya Bardal, University of Minnesota; Lisa Kelly, University of Minnesota; Kristin K. Janke, University of Minnesota. Objectives: To evaluate the impact of a Clinical Nutrition Support Certificate Program (CNSCP) on participants’ comfort level, preparedness to advance practice, and involvement with nutrition support services. To assess the relevance of course content to clinical skills used in practice. Methods: All pharmacists having completed the ACPE accredited certificate program as of Spring 2005 were invited to participate in an online thirty-four item survey. Sections of the survey addressed comfort, preparedness and involvement with nutrition support services, before and after completing the program, along with the applicability of course content to practice. An email invitation was followed by two reminder emails. Results: Sixty-five of 306 eligible pharmacists (21%) participated. Forty-eight of sixty-four (75%) respondents reported an increase in comfort level in providing nutrition services. Forty-three of sixty-four (68%) reported an increase in their preparedness to advance nutrition support services. Nineteen (29%) respondents provided decentralized nutrition services prior to course completion, increasing to twenty-nine (45%) following course completion. Likewise, eleven (17%) participants developed nutrition regimens prior to course completion, increasing to 24 (37%) following the course. Of the skills most utilized at the work setting, evaluating TPN formulas for appropriateness, and understanding unique needs associated with various disease states, were covered in the course appropriately; however, information on evaluating and adjusting electrolytes, and communication with other health professionals were important, but not covered as well. Implications: A focused 45 hour certificate program can positively impact pharmacists perceptions of their comfort levels and preparedness, in addition to the levels of services provided.

Theoretical Models

A Continuing Professional Development (CPD) Model as an Intervention for Pharmacists at Risk. Karan N. Dawson, University of Washington; Donald F. Downing, University of Washington. Pharmacists who have come to the attention of a state board of pharmacy for professional infractions (e.g., failure to counsel and committing multiple dispensing errors) have been referred to the authors for assessment and/or remediation. A model for assisting such individuals using CPD tools in a supportive, peer collaborative effort is presented. Centered on the CPD cycle (reflect, plan, act, evaluate,
Purpose: Distance learning is increasingly available in higher education, resulting in growing needs to prepare faculty to teach online. Our purpose was to 1) conduct a training seminar to prepare pharmacy teaching assistants (TAs) and College faculty to teach in an online “classroom” and 2) assess the impact of this training on faculty’s perceptions of teaching effectiveness. Methods: The seminar was a two part series hosted on campus; it was open to all teaching faculty. Part One included an introduction to technology (with classroom examples), a discussion of strategies and challenges, and teaching pearls from experienced distance education faculty. Part Two was an application-based workshop, with attendees planning and participating in a mock case discussion in the web-based classroom. A pre- and post-survey was developed to collect demographics, prior distance education experience, and perceptions/satisfaction before and after facilitating an online case discussion. Both were delivered via an Internet-based survey tool. Results: The pre-survey was emailed to 22 teaching faculty, with a 90.9% response rate (n = 20). Only 25% of respondents (n = 5) felt comfortable teaching online. Attendance at the seminar was voluntary, with 13 and 10 persons attending each part, respectively. To date, 6 post-surveys have been distributed, with 83.3% completed (n = 5); post-surveys will be collected throughout the academic year. Implications: Information from surveys will be used to characterize faculty’s expectations and perceptions related to facilitation of online discussions, and assess effectiveness of prospective training. It will also be used to improve seminar content and provide support for additional teaching development initiatives.

Making Learning Portable: CE on Your iPod. Anita Young, Northeastern University. Objectives: The objective of this study is to determine the value of a mobile podcast format for pharmacy practitioners to obtain quality and convenient continuing professional education and is a new resource for continuing professional development activities. It also responds to the changing, fast paced world of the adult learner by utilizing new and evolving technology. Additionally, this format appeals to a different learning style and different generation of learners. Methods: Three pharmacy continuing education programs were converted from PC based to a podcast format. After conversion, these become available to a global audience of pharmacists who use MP3 players or iPods. Data collected will include (but not be limited to): the number of iPod users, age of participant, gender and practice type. Results: Comments from potential program participants have been very positive. Pilot studies have been well received. This program is brand new, additional information will be submitted as it is received and reviewed. Implications: A Podcast format provides pharmacists the opportunity to learn anywhere, anytime. Learning becomes truly portable since individual do not need to have a computer or attend a live session to enhance their knowledge.

Pharmacy’s Continuing Education Enterprise: 2005 Update. Dimitra V. Travlos, Accreditation Council for Pharmacy Education; Ulric K. Chung, Accreditation Council for Pharmacy Education; Anne-Marie Sesti, Accreditation Council for Pharmacy Education; Peter H. Vlasses, Accreditation Council for Pharmacy Education. Intent: Twenty years have elapsed since the Accreditation Council for Pharmacy Education (ACPE) published data describing the pharmacy continuing education (CE) enterprise. ACPE will provide an update on the current CE landscape and compare it to 20 years earlier. Methods: ACPE conducted a retrospective analysis of accredited providers’ CE activity and program data from 06/01/2004-05/31/2005 to analyze their characteristics. CE categories analyzed include: descriptive statistics, frequently presented topics, the type of activity offered and methods of presentation. In addition, ACPE will describe the organizational changes and expansions that occurred over the past twenty years in relation to its CE program. Results: The number of accredited providers doubled to approximately 404 providers. These providers conducted about 23,000 continuing education activities and served approximately 3.5 million participants. Out of the activities offered, 60% were live, 39% were homestudy and 1% was combined. Pharmacists received the majority of their contact hours from home-study activities (77%) and the most common topics offered by providers dealt with drug therapy (59%). All 53 state boards of pharmacy require mandatory CE for relicensure (up from 36 state boards in 1985). Additionally, accreditation standards for Certificate Programs in Pharmacy were developed and adopted, and pharmaceutical and medical device manufacturers may no longer participate as ACPE-accredited providers. Implications: Since the published article by Shannon, et. al. (1985), the CE landscape changed dramatically in volume and activity level. This information will serve the pharmacy CE community and ACPE as they work together to understand and enhance the CE enterprise.

Utility of a CommunityZero Website to Enhance Communication during a Clinical Pharmacy Rotation. Paul L. Price, Creighton University; Mark A. Malesker, Creighton University; Alice B. Smith, Creighton University; W. Wayne Young, Creighton University. Background: A CommunityZero website (CZW) was designed to facilitate and enhance the clinical rotation experience both for the preceptor and the student. Fourth-year students are asked to login to the site on a daily basis and post reflections (blog) of their learning experience, participate in posted discussions, and keep up to date with the rotation calendar. Other pertinent information found on the website includes practice-related links and news items. Objective: The objective of this study was to assess the utility and ease of use of a CZW at two clinical rotation sites. The results obtained from the survey will be used to promote further research with the School of Pharmacy and
Health Professions at Creighton University. Methods: Clerkship students are asked to evaluate the discussion, calendar and daily notes (reflections) areas of the CZW in electronic survey format utilizing the WebSurveyor software product. The survey will also measure the overall technical ease of use with the CZW and the ability to foster communication from the student perspective. Results: This is currently a work in progress. Implications: Faculty and rotation students often cannot spend the entire day together. Furthermore, multiple rounding teams and scheduling conflicts contribute to the lack of communication between rotation students and faculty. The effectiveness of the CZW with its active learning and interactive communicative components as an addition to traditional clinical rotation teaching methods needs to be more thoroughly evaluated.

Web-based Portfolio Approach to Developing and Documenting Pharmaceutical Care Plans During Advanced Pharmacy Practice Experiences. Charles H. McDuffie, The University of Georgia; Melody C. Sheffield, The University of Georgia; Lori J. Duke, The University of Georgia; William K. Kennedy, The University of Georgia; Mindi S. Miller, The University of Georgia; Sandra Rogers, The University of Georgia. Objective: To develop and implement a web-based portfolio system for students completing advanced pharmacy practice experiences (APPEs) throughout our statewide preceptor network. This system should enable students to gain comparable proficiency in managing medication therapy for common disease states and develop a standardized method of documenting and communicating patient care information to healthcare team members. Methods: Students enrolled in APPEs during Fall 2005 and Spring 2006 will complete six patient cases within five disease state categories using the web-based portfolio system. For each case, students discuss the disease state; develop a patient database; identify medication therapy issues, formulate a problem list; indicate desired therapeutic outcomes; and propose a pharmaceutical care plan. Once submitted electronically, regional faculty evaluate and provide feedback on case content as well as monitor student progress throughout the year. Outcomes: Students are assessed on their understanding of common disease state management, their ability to utilize an evidence-based approach to evaluate therapy, and their ability to communicate patient information to healthcare members in a clear and concise manner. At the conclusion of Spring 2006, student feedback will be collected to determine the perceived benefit of the patient portfolio system. Additionally, the types of cases submitted will be evaluated to identify the diseases typically encountered by students throughout the year. Implications: Students completing APPEs throughout the experiential network can demonstrate comparable proficiency in managing and communicating medication therapy for patients with common disease states. Regional faculty overseeing experiential activities can monitor, assist and evaluate student progress electronically.

LIBRARIES/EDUCATIONAL RESOURCES

Completed Research

Addressing Generational Issues in a Pharmacy Setting. Machelle A. Davison, Oklahoma State University; Tony Palmer, University of Oklahoma. Objective: Generational issues are emerging as factors in many sectors of pharmacy practice. Attitudinal problems, job satisfaction, and turnover are a few of the complications that can arise from generational differences. The purpose of this study was to assess generational awareness, evaluate generational differences especially in management, and cultivate a plan to reduce conflicts in the pharmacy profession. Methods: A survey was developed to assess the knowledge of pharmacy leaders, practitioners, and managers regarding generational issues in the workplace. A focus group was also held to discuss generational differences in the workplace. Results: Thirty-nine percent of the individuals surveyed did not know or understand generational differences that can affect the workforce. Although seventy-four percent felt that generational differences were affecting the pharmacy profession. The majority of respondents indicated that they would not take a management position if it were available. The top reasons for this decision were: they want to stay at the current site, do not like politics, and too stressful. Participants felt confident in current managers strategic planning and organizational skills but lacked confidence in their mentoring and motivational skills. A plan of action was developed from results and implemented at one site to tackle the issues found, evaluate program areas, and implement strategies for addressing generational differences on a continuing basis. Implications: By making individuals in all areas of pharmacy practice alert to generational differences and developing action plans to address critical complications, management will be able to cultivate programs to address generational conflicts in their area.

Charting the Pharmaceutical Education Literature: Past, Present...and Future? Katherine T. Vaughan, University of North Carolina – Chapel Hill, William H. Campbell, University of North Carolina – Chapel Hill. During the past four decades, pharmaceutical education has experienced a transformation from a five year baccalaureate curriculum to the current entry-level doctoral degree program. These changes have been both guided and documented by research into the pedagogy and content of pharmacy education. Rapid growth of empiric studies, demonstration projects, case studies, reports and advocacy statements marked this period and represent a rich resource for understanding dominant and emerging themes. The authors conducted an analysis of publications about pharmacy education for the period 1960-2005 using MeSH terminology, and report results using the following measures: relative and absolute growth in literature about pharmacy education, dominant themes during pharmacy education’s period of transformational change, growth and decline of themes during the period of study, correlation of themes to changes in pharmacy education and practice, and suggestions for emerging themes for the scholarship of teaching in pharmacy education. The study results will demonstrate how contemporary library science techniques can be applied to a pharmacy education publications database to both document and anticipate change.

Theoretical Models

Focusing attention on focus groups: strengthening methods to strengthen results. Sally A. Huston, South University; Eric H. Hobson, South University. Objectives/Intent: To educate the Assessment Committee and pharmacy faculty about purposes, methods, and caveats governing focus groups for data collection. Methods/Process: Focus groups are structured small-group meetings to encourage exchange of opinions and feedback related to a topic of common concern. Focus groups contain three discrete roles: meeting facilitator, recorder, and informants. The project drew upon the authors’ expertise and upon literature from outside of the discipline to construct a concise guide to methodologically-sound focus group use within the School. Results/Outcomes: Focus groups are not complex; yet, their effectiveness depends upon their execution. The guide reviewed methodology, placed the method within the School’s assessment model, and outlined a pre-, during-, and post-session protocol. The goal was to systematize the method, reduce common methodological weaknesses, and amplify inherent strengths, so that results could be...
used with confidence. A faculty development program on focus group management followed. Implications: Focus groups are powerful research tools for collecting qualitative information across disparate contexts, and are recommended for gathering information (formative and summative) relevant to faculty/staff issues, student experience, and curricular effectiveness. They accrue multiple benefits via one structure: collect information about the curriculum at the macro-level, assure timely professor-students exchange of perceptions of micro-level course effectiveness, and encourage broad participation in on-going attempts to improve School activities. As with any research methodology, however, results validity is conditioned by processes followed. Formalizing a protocol and training faculty to use it is important if regular student/stakeholder focus groups are a central assessment plan component.

Focusing faculty on key concerns: using a primary-trait rubric to evaluate student drug posters. Andrea L. McKeever, South University; Eric H. Hobson, South University. Objective/Intent: To introduce a methodologically-sound assessment tool/rubric to reduce faculty-evaluator variability in assessing student-developed drug posters. Application of Informatics is a project-based course that serves to build on the drug information and informatics concepts covered in Professional Practice I-Informatics, which is taught in the first quarter of the first professional year. Students are placed in small groups, are assigned a recently FDA-approved drug, and research the product and its literature in order to create a professional drug poster for delivery. Each year, faculty are asked to evaluate the group drug posters; these evaluations account for 75% of the final course grade. In previous years, a more subjective faculty evaluation form was used causing dramatic graded variability. Methods/Process: In developing the new rubric evaluation tool, cues were taken from the previous evaluation tool and from “best practices” established in the literature. For example, several evaluation categories were maintained (organization, content, delivery, questions and answers). Rather than applying arbitrary points that lacked guidance, the rubric was designed to provide concrete exceptions for an excellent, good, fair, and poor group performance. Results/Outcomes: Use of the new rubric tool provided more discriminating and constructive evaluations of student group performances. Implications: Future informatics courses will utilize the rubric evaluation tool and further refinement will occur. Additionally, primary-trait rubric assessment tools, such as this one, transfer with minimal modification to a range of verbal and written student projects.

Work in Progress

Development of an Inter-Institutional Doctor of Pharmacy Program Using Video-Teleconferencing. Kimberly H. Deloatch, University of North Carolina – Chapel Hill; Huyla G. Coker, University of North Carolina – Chapel Hill and Elizabeth City State University; Sarah C. Paliulis, University of North Carolina – Chapel Hill; Susan J. Peck, Elizabeth City State University; David Maldonado, University of North Carolina – Chapel Hill. Objectives: To expand enrollment in UNC Doctor of Pharmacy Program through development of a remote campus using synchronous video-teleconferencing (VTC) as a primary instructional delivery mechanism. Methods: Representatives of the UNC School of Pharmacy and Elizabeth City State University (ECSU) developed a memorandum of understanding to guide development of a PharmD partnership program. Inter-institutional policies and procedures were established for student recruitment and admission; tuition, fee and financial aid distribution; registration/transcript management; faculty/staff recruitment; marketing; instructional delivery and evaluation; and program evaluation. Consultants with VTC classroom design and pedagogy expertise were engaged to design and build state-of-the-art VTC classrooms and to guide implementation of related communication technologies and faculty development. Results: The first ECSU student cohort enrolled in the UNC PharmD program in Fall 2005. Inter-institutional policies and procedures were implemented and two ECSU faculty members were hired to serve as classroom facilitators and advisors prior to students’ arrival. VTC classrooms were built and tested; these are now used to connect campuses, using VTC technologies in conjunction with Macromedia® Breeze Meeting® software, during classroom and laboratory instruction. A comprehensive desktop VTC initiative facilitates one-on-one interactions between Chapel Hill and ECSU-based students, faculty, and staff. Additional technologies were implemented to improve timely movement of graded assignments between campuses; additional IT personnel provide support and faculty and TA training on the use of new distance technologies. Discussion: This poster will provide detail regarding approaches used and lessons learned in developing this partnership. Summary results from end-of-year assessments will be provided.

Do Online Programs Prepare Pharmacists for Specialty Practice as Well as Face-to-Face Programs? Kristina M. Wittstrom, University of New Mexico. Do Online Education Programs Prepare Pharmacists for Specialty Practice as well as Face-to-Face Programs? - A work in progress. Context: The preparation of pharmacists for the specialty practice of nuclear pharmacy was originally developed in Colleges of Pharmacy. The curriculum changes required by conversion to PharmD programs have significantly reduced the academic option to prepare nuclear pharmacists. Non-academic, face-to-face certificate programs have been found less satisfactory than academic programs in the preparation of nuclear pharmacists. A facilitated online education program for nuclear pharmacists has been offered over five years to more than 200 students. Hypothesis: There is no difference in nuclear pharmacists’ preparedness to practice specialty competencies after completing a facilitated online education and training program when compared to those completing a face to face program. Methods: A close-ended survey measuring self-perceived satisfaction with preparedness to practice specialty competencies established by APhA will be administered to nuclear pharmacists who have completed the online program. These results will be compared to 267 identical assessments from nuclear pharmacists who completed face-to-face programs. Conclusion: Data from the two studies will be analyzed using Student’s t-test. An equality of variance will imply that facilitated online specialty education is as effective as face-to-face. An inequality of variance will either substantiate increased preparedness from online learning or highlight areas of needed improvement. Statistical tests demonstrating P < 0.05 will be considered significant.

Providing Information Resources for Clinical Instructors/Preceptors: Results of a Survey of Current Practice. Amy E. Allison, Mercer University; Gerri R. Wanserski, University of Wisconsin – Madison. The 2005 Draft Revision of the ACPE Standard No. 29, Library and Educational Resources indicates that preceptors, as well as students and faculty, distant from campus should have access to electronic resources (e-resources) and methods for accessing information not in the library collection. This presents technical challenges; however, financial and legal obstacles often prove to be greater challenges in providing e-resources to a school’s preceptors/clinical instructors. A program at the 2006 annual meeting will
PHARMACEUTICS

Completed Research

Ciprofloxacin: Suppressing the Bitterness—A Project for Pharmaceutics Compounding Laboratory. Deborah L. Strong, The University of Georgia. **Objective:** The CDC recommends ciprofloxacin for empiric therapy in cases of suspected anthrax disease exposure. Ciprofloxacin is supplied as 500 mg tablets in the SNS. To meet the need of pediatric patients, the tablets require reformulation into an oral suspension. Ciprofloxacin tablets compounded into an oral suspension have an extremely bitter taste. The purpose of this project is to produce an acceptable oral formulation for pediatric patients.

**Methods:** One-hundred and twenty-six students were randomized into 24 groups. Each group received ciprofloxacin tablets; various concentrated flavoring agents, a suspending agent, and a sweetening agent. The prepared products were compared to a test product and judged for bitterness and improved taste by a three member panel.

**Results:** The compounded ciprofloxacin aqueous suspensions were extremely bitter. Panelist noted no significant improvements in taste and considered all formulations unacceptable for long term antimicrobial therapy. Some improvements over the test product were noted. Simple syrup, Ora plus, citrus or mint flavoring agents produced the best product. Even though, the students were unsuccessful at suppressing the bitterness, the majority of students viewed the project as an opportunity to apply their pharmaceutical knowledge and practice their compounding skills.

**Implications:** The compounding of ciprofloxacin aqueous suspension using 500 mg tablets results in an extremely bitter tasting product. The students were not successful at producing a significantly improved product but they gained valuable knowledge concerning the skills and techniques needed for preparing oral suspensions. In addition, the students utilized active learning strategies to complete this project.

Development and Implementation of a Veterinary Pharmacy Elective Course with Compounding Laboratory. Christine R. Birnie, Palm Beach Atlantic University; Marvin C. Pankaskie, Palm Beach Atlantic University; Charles C. Collins, Palm Beach Atlantic University. **Objectives:** To develop and implement a Veterinary Pharmacy elective course for doctoral pharmacy candidates which uniquely incorporates the compounding of drug delivery systems for animals. **Methods:** This elective course was designed to allow students to learn both in the classroom and in the laboratory about pharmacy related issues that pertain to animals. Didactic class time encompassed lectures and student presentations, while the laboratory incorporated the design and compounding of dosage forms intended for animal use. Selected compounded products were analyzed by spectrophotometric methods to determine the accuracy of student prepared compounded products. The course capstoned with the preparation of an individual student-designed formulation for an animal of the students’ choice. Student performance was assessed by examinations, oral presentations, and completion of compounded prescriptions. An evaluation form was utilized for use by the students for assessment of the instructor and the course. **Results:** The class was successfully administered to 26 students. Students performed well in the course and were satisfied with the course content and advanced skill development in compounding. Evaluation forms demonstrated an overall positive assessment of the course. Quantitative analysis of selected compounded products showed good correlation to the label claim. **Implication:** With the recent increase in human medication usage in companion animals and specialty veterinary compounding, a course of this type is of great benefit to the pharmacy student. This course has a two-fold benefit: educating the student on drug related issues for animals, and gaining additional compounding skills above the traditional training received in Pharmaceutics related courses.

Effect of a Remediation Program on Student Academic Progression. Donald A. Godwin, University of New Mexico; Karen D. Dominguez, University of New Mexico. **Objective:** The objectives of the remediation program are early identification of at risk students and the provision of support and mechanisms to progress in the curriculum. **Methods:** A remediation program was initiated in 2001-2002 with a “remediation year”. Eligibility criteria were any grade of “F” or >=6 credit hours of “D” in professional coursework. Eligible students were assigned courses to address specific deficiencies and were required to repeat any professional course with earned grades of “D” or “F”. All remediation courses required a minimum grade of “C-”. A course-specific remediation plan was introduced in fall 2003 with the early identification of at-risk students (course averages < 70%) and assignment of mandatory supplemental instruction and academic counseling. If necessary, additional proficiency exams allowed students to demonstrate competency in a given course.

**Results:** In the 2 years prior to the implementation of the “remediation year”, 68% of students graduated in 4 years with 85% graduating in 5 years. Projected 4 year graduation rates in the two years of the “remediation year” remained at 68% with a decreased 5 year rate of 76%. Since the implementation of the “course-specific remediation plan”, projected 4-year graduation rates have increased significantly to 97% with 99% projected to graduate in 5 years. **Implications:** Introduction of the course-specific remediation plan, but not the remediation year, improved graduation rates. Early identification of at risk students and the provision of supplemental educational activities and academic counseling are essential in the success of students in a Doctor of Pharmacy curriculum.

Error Detection and Practice Experience in Pharmacy Students. Shelley Chambers, Alina Chahal, Washington State University. Shelley L. Chambers, Washington State University. **Objectives:** Detection of medication errors is a core competency of the pharmaceutical care laboratory at Washington State University. We introduce the skill in the first year focusing on order entry and dispensing errors and increase the complexity as students progress. The purpose of this study was to determine whether previous practice experience increased the likelihood of detecting order entry and dispensing errors. **Methods:** After a presentation on error detection problems, first year students practiced error detection in 5 weekly exercises. The final assessment presented 10 filled orders laid out for checking. Students were asked to record whether the order had been prepared.
correctly and if not, explain what error had been made. In addition, students were asked whether they had worked as a pharmacy technician or intern, in what setting and for how long. Results: There was no correlation between weeks worked as a technician or intern and the score on the error detection evaluation (R = -0.00249, R = 0.039467 respectively). When the data was examined between any pharmacy work experience and the error detection score, there was again no correlation (R = -0.00055). Implications: Detection of dispensing errors is an essential skill for practicing pharmacists. Working as a pharmacy technician or intern provides students with familiarity with drug names, doses and products, but they do not gain experience with error detection since this is a pharmacist function. Error detection training in schools of pharmacy as well as the workplace must improve the performance of this important pharmacist function.

Evaluation of Sterile Compounding Instruction in the Advanced Pharmacy Practice Experience. Regina F. Peacock, Shenandoah University; Deanna S. Rotenberg, Shenandoah University. Objective: To evaluate the sterile compounding training students receive in the Advanced Pharmacy Practice Experience (APPE) in the curriculum at the Bernard J. Dunn School of Pharmacy. Methods: A survey, based on minimum competencies, was developed and administered via Survey Monkey to preceptors at APPE sites that perform sterile compounding. The results were evaluated to determine the extent of training these sites provide. Results: Of the 52 sites contacted by e-mail, 23 surveys were completed. Eighty-seven percent of respondents require students to observe compounding prior to performing and 87% assess the student’s aseptic technique as well. Forty-three percent of preceptors require students to prepare less than 25 preparations in 6 weeks and only 78% required students to clean/disinfect laminar flow hoods. Ninety-five percent of respondents require students to obtain stability/compatibility information. Only 22% of respondents thought students were prepared to compound sterile preparations prior to APPE and only 56% thought students were prepared after they provided training. Implications: Errors in sterile compounding may result in wrong dosing, infection or even death. Since pharmacists are the primary source for sterile compounded preparations, it is important that pharmacy students receive adequate instruction in this area. Many students may not be adequately prepared to perform sterile compounding and inconsistency of experience during APPE may contribute to incomplete training. Students may benefit from additional training prior to APPE and specific training objectives/guidelines should be developed to facilitate preceptors in sterile compounding instruction.

Five-Years of Experience with Student Focus Groups (SFG) as a Tool for Curricular Assessment. Gayle A. Brazeau, University at Buffalo; Mark M. Sauberan, University at Buffalo; Sara E. Renzi, University at Buffalo; Melissa A. Krzeminski, University at Buffalo. Objective: Student focus groups (SFG) are a useful supplemental assessment tool. The goal of this work was to investigate trends observed through SFG since spring 2001 and to compare with results observed through student completed curricular outcomes surveys and accreditation self-study surveys. This study also investigated changes in the SFG process over the last five years. Methods: SFG are held for each professional year each semester. The hour-long SFG specifically address courses and curricular issues from the immediate previous semester on a course by course basis followed by other general curricular concerns. These sessions are usually conducted over a time where lunch is provided. The student comments are recorded by hand with no names of the students or faculty discussed in the final report. The reports courses and general curricular comments are offered to the specific course coordinators. Results: The student selection process for these SFG have transitioned from a random selection process to the current method of volunteer sign-up with the number of students per SFG ranging from 3-14, with an average of 8. Major issues raised over this time include availability of course material, an interest for greater curricular emphasis on pharmacy management issue and a concern for knowledge on pharmacotherapy and physiology. These comments were similar to the student curricular outcomes surveys and the accreditation surveys. Students voiced concerns about faculty professionalism, yet this was not as evident in the other assessment tools. Implications: The results from SFG generally parallel findings from other assessment strategies.

Gene Expression During and After Relapses in Multiple Sclerosis Patients as Potential Disease Biomarkers. Roseane M Santos, Nova Southeastern University; Darlene Badgett, University at Buffalo; Bianca Weinstock-Guttman, University at Buffalo; Murali Ramathan, University at Buffalo. Objectives: To identify surrogate biomarkers which are associated with clinical relapses in multiple sclerosis (MS) patients. Methods: Sixteen relapsing-remitting MS patients were sampled during a relapse prior to treatment with steroids and re-sampled 4 weeks and 3 months later. Total RNA was prepared from the CD3 + T-cell population and processed for DNA array analysis. The data was analyzed using the Significance Analysis of Microarrays (SAM) and subsequently analyzed for function and gene ontology using Expression Analysis Systematic Explorer (EASE). Three genes were assessed by real-time reverse transcriptase polymerase chain reaction (real-time RT-PCR): kalikrein 6 (KLK6), proteasome alpha type 7 (PSMA7) and fibrillin 2 (FBN2). Results: The DNA array analysis showed that when recovery/relapse was compared 217 genes related with cell proliferation and differentiation were mainly localized in the nucleus, were significantly expressed. The comparison between relapse/remission identified a group of 66 genes related with protein catabolism such as KLK6 and PSMA7 and regulation of cell cycle mainly located at mitochondria. The biological processes occurring during transition recovery/remission were mostly immune-related and the cytoplasm and membrane located genes were over-expressed. Statistically significant patterns were confirmed by real-time RT-PCR only for KLK6. Based on non-parametric paired comparison (Wilcoxon test) KLK6 mRNA levels from the comparisons between relapse/remission and recovery/remission had p-values of 0.001 and less than 0.001, respectively. PSMA7 and FB2N results did not reach statistical significance. Implications: The results suggest that KLK6 gene expression have a potential to be used as a biomarker of relapses in MS patients.

Is Faculty Turnover Greater at Newer Schools and Colleges of Pharmacy? Robert S. Kidd, Shenandoah University; David A. Latif, University of Charleston; Joseph M. Hensley, Shenandoah University. Objectives: To compare faculty turnover at newer schools and colleges of pharmacy (inception dates 1996 and after) with a random sample of established schools and colleges of pharmacy (inception dates 1980 or before). Methods: Data were compiled from the American Association of Colleges of Pharmacy rosters for the years 1996-1997 to 2004-2005. For newer schools and colleges, percent of annual faculty turnover was calculated both from inception and after four years of operation when a full complement of faculty should have been hired. The variances of the results were first examined using Levene’s test for equality of variances, and overall significance was analyzed using independent sample t tests in SPSS v12.0. Results: Overall average annual faculty turnover was not
Longitudinal Development of Pharmacokinetics in the Pharmacy Curriculum. Jeffrey Wang, Western University of Health Sciences; Jennifer Le, Western University of Health Sciences; Wallace J. Murray, Western University of Health Sciences; Robb W. McGory, Western University of Health Science. Objectives: To improve pharmacokinetic (PK) competency and to integrate the use of PK longitudinally throughout the curriculum. Methods: A PK focus group of 2 science faculty and 2 practice faculty met to design and coordinate curricular development of PK skills. Periodic review and use of PK was initiated in fall 2003 P2 and P3 years. PK review occurs in renal, cardiology, neurology, infectious diseases blocks as well as 3 integration blocks. The P1 course was restructured in spring 2003 to include practical clinical application and 2004 to replace a computer-based interaction module with mandatory practice workshops (class average 91.1 ± 3.9%) and longitudinal review. The 2004 P3 received modified PK course without workshop (class average 91.8 ± 6.1%) and limited review prior to the challenge exam. The 2004 P3 received PK course without workshop (class average 94.0 ± 6.1%) and limited review prior to the challenge exam. Results: The 2003 P3 received previous PK course (class average 94.0 ± 6.1%) and limited review prior to the challenge exam. The 2004 P3 received modified PK course without workshop (class average 91.8 ± 6.1%) and longitudinal review, and the 2005 P3 received modified PK course with workshops (class average 91.1 ± 3.7%) and longitudinal review. The percent of students achieving a passing score (80%) on the challenge exam was 67% (2003), 67% (2004) and 93% (2005). Implications: PK classes that substitute computer simulation without individual practice and feedback fail to provide lasting knowledge capable of producing clinical decisions despite incorporating classes on practical application. Longitudinal practice does not improve the results of a similar substandard primary course. Insuring individualized attention to student skill development and longitudinal practice improves student PK retention and performance.

Potential of Tc-99m-Labeled Bacteriophage for Bacterial Infection-Specific Imaging. Blaine T. Smith, Massachusetts College of Pharmacy and Health Sciences – Worcester; Mary Rusckowski, University of Massachusetts Medical School, Suresh Gupta, University of Massachusetts Medical School; Guozheng Liu, University of Massachusetts Medical School; Donald J. Hnatowich, University of Massachusetts Medical School. Diagnostic agents capable of accurately identifying a causative bacterial pathogen would allow clinicians to more rapidly provide appropriate treatment to patients. Such diagnostic agents would decrease unnecessary use of broad-spectrum antibiotics and allow a more tailored approach to treatment. We propose the development of radiolabeled bacteriophage that would specifically identify the causative bacterial agents. Bacteriophage (phage) are viruses that infect bacteria exclusively, showing no affinity for mammalian cells. Our work involved radiolabeling bacteria-specific phage. Our hypothesis is that Tc-99m-labeled phage with the correct specificity could be utilized as a valuable diagnostic aids via nuclear medicine imaging, in cases where bacterial infections were suspected. Objectives: to show 1) that Tc-99m-MAG3 could be used to label a phage of interest; 2) that the labeled phage could differentiate between different bacteria in-vitro; and 3) that a radiolabeled phage could specifically bind bacteria in-vivo. Methods: Escherichia coli (strains ER2537 and 25922), Staphylococcus aureus (strain 29213) and Salmonella typhimurium were used as targets for M13KE and P-22 phage. S-acetyl NHS-MAG3 was conjugated to the phage, then radiolabeled with Tc-99m. Experiments were performed to assess in-vitro specificity of the phage, stability of the radiolabel in serum, and the biodistribution of radiolabeled phage in mice. Results: Radiolabeled phage displayed selectivity in bacterial binding in-vitro, stability in serum, and their biodistribution revealed selectivity of uptake in infected versus inflamed tissue, though liver uptake was also noted. Implications: Radiolabeled phage may be useful tools for in-vivo identification of bacteria.

The Use of Longitudinal Patient Cases to Conceptualize Patient Monitoring in a Pharmaceutical Care Laboratory. Cynthia A. Wuller, St. Louis College of Pharmacy; Rasma S. Chereson, St. Louis College of Pharmacy; Rhonda Bilger, St. Louis College of Pharmacy. Objective: To illustrate the concept of patient monitoring by using longitudinal patient cases in the Pharmaceutical Care Laboratory. Methods: Each third year professional student received three randomly assigned longitudinal (encountered more than once during the semester) patient cases with the chronic disease states of asthma, hypertension and type II diabetes mellitus. At the initial encounter, the student conducted a patient interview and then wrote a SOAP note that included drug therapy recommendations and monitoring parameters based on the case information presented. At each subsequent encounter, the student received additional written information, including updated lab values, and completed a follow-up SOAP note incorporating therapeutic recommendations and monitoring parameters from the initial SOAP. Each student also received prescriptions, conducted DURs, intervened and consulted with the “prescriber” (laboratory instructor) for these patients throughout the semester as necessary. With each prescription, the student counseled and educated the “patient” (pharmacist practitioner) on proper medication management, including life style implications, to improve outcomes. Outcomes: Students gained experience documenting their encounters with patient information in a SOAP format thus practicing their ability to assess, recommend and monitor drug therapy. Student learning was evaluated by assessing the SOAP notes, medication and life style counseling sessions and the patient interview. Implications: The assessment tools demonstrated that the use of longitudinal patient cases enhanced the student’s understanding of the concept of patient monitoring. Student evaluations of this exercise noted the opportunity to incorporate their knowledge from previous classes and the activity was good preparation for advanced practice experiences.

Work in Progress

A Comparison Study between Independent and University-affiliated Pharmacy Schools in China – Does “University Setting” Benefit Pharmacy Education? Yi-Zhuo Zhu, Fudan University; FangMing Zhou, Fudan University; Wei-Yue Lu, Fudan University; DeYeong Ye, Fudan University; HaiAn Zheng, Albany College of Pharmacy. The pharmacy schools in China are experiencing the dramatic changes, together with the booming economics and continuous education reform. In the last ten years, one major structural change in
the higher educational system was the merger of several medical and pharmacy schools with several major universities. The environment for these pharmacy schools have been changing dramatically from independent or medical university settings into being affiliated to comprehensive and multidisciplinary Universities. It presented the similar situation as those happed in the US during last century, when some state universities expanded into the pharmacy education or merged with independent pharmacy schools. 

Objectives: In order to estimate and discuss the impact on the educational outcome, research, and administration, this evident-based study is initiated and conducted. 

Methods: A pool of eight schools is selected. Among them, four have been merged with a major university; four are still staying as independent. School profiles and administrative data are collected and compared before and after the merger, including: student enrolment, standard admission exam score, diversity, graduate rate, national exam score, employment; research funding profile and achievements; school annual budget, faculty/staff employment, capital assets; public ranking and reputation. A survey is also conducted to the former Deans (right before merger) and the current Deans. 

Results: The data are statistically analyzed and discussed for the benefits on the educational outcome and administrative efficiency. 

Implications: This study also presents a reference for the comparable scenario in the current US pharmacy education system, especially for those newly establishing pharmacy schools.

A Comparison of Two Student Groups Using Chronic Disease Role Play Assignments to Develop Empathy for Patients. Cynthia A. Wuller, St. Louis College of Pharmacy; Nicole M. Petersen, St. Louis College of Pharmacy; Ellen E. Rhinard, St. Louis College of Pharmacy. 

Objective: To create active learning assignments for an advanced OTC elective course that would develop students' empathy for patients by role playing the daily challenges faced by patients with chronic diseases. 

Methods: Students who were enrolled in the elective course, Advanced Non-Prescription (OTC) Drugs, in two different semesters completed six one-week assignments in which each student simulated a chronic disease patient. At the beginning and end of the semester, each student completed a survey regarding their attitudes toward patients with chronic diseases and their understanding of the impact a pharmacist can have on patients’ therapeutic outcomes. The chronic diseases included: diabetes mellitus (DM) type I and type II, hypertension, asthma, allergies and deep venous thrombosis. As appropriate to the disease state, students received instructions and supplies for each role play assignment. Evidence of the impact of the assignments was a reflective journal created by each student and participation in class discussions. 

Results: The first class had an enrollment of 5 students, 4 of which actively participated in the assignments. The second class had an enrollment of 10 students. Pre and post test surveys are being compiled and will be available at the poster session. 

Implications: Young and healthy students may not realize how a chronic disease impacts a patients’ quality of life. Using a role play assignment may provide students with a more comprehensive, emotional understanding of the patient perspective than that achieved by standard teaching methods.

A Learner-Centered Teaching Approach to Assignment Selection in an Elective Biotechnology Course. Karen M. Nagel, Midwestern University – Chicago; Elizabeth Langan, Midwestern University – Chicago. 

Objective: Evaluation of a learner-centered teaching approach on student workload, stress level and interest in biotechnology course material. 

Methods: The learner-centered teaching method developed by Weimer was adapted to an elective biotechnology course. Students were presented with a menu of assignment options at the beginning of the course, distributed over a range of categories (in-class quizzes, homework assignments, position papers on pre-selected topics, and several critique options, including journal articles, popular media articles, and fictional representations of biotechnology). Assigned deadlines and limits on the points available in each category were strictly enforced. To ensure that the assignments were taken seriously, students were required to earn at least half the available points for each assignment to receive any credit. No assignments were required; instead, students were free to choose assignments based on topics that interested them, and were permitted to complete as many assignments as they wished to reach their desired number of course points, which corresponded to final course grades as defined in the syllabus. 

Implications: While all students receive the same broad course material during lecture, this method allows significant student control over what topics they will research in more depth for assessment purposes, and what type of assignment they would complete. Students must also utilize time-management skills to decide which assignments to complete based on the deadlines given and their other academic responsibilities. The effect on student workload, stress level, and interest in subject material will be assessed.

Cumulative Grade Point Averages of P1-P3 Students as a Function of Previous Years in College. Gayle A. Brazeau, University at Buffalo; Mark Sauberan, University at Buffalo; Daniel A. Brazeau, University at Buffalo. Objective: An Early Assurance (EA) program, guaranteed admission after 2 years based upon completion of specific requirements (minimally 3.0 GPA) for UB students, was implemented to attract talented high school students. This baseline study investigates whether there is a significant difference in the cumulative grade point average (CGPA) of students at the end of their P1 through P3 year as a function of their previous years in college. 

Methods: The CGPA was calculated at the end of each the P1-P3 years for the 2004-2006 graduating classes. Previous college education was classified as 1) 2 years of college, 2) 3+ years of college without a Bachelors (3+) and 3) Bachelors degree or higher (BD). For the 2 year students, students were classified as EA versus students who transferred in after two years of college (2Y). Statistical differences were calculated using a MANOVA with repeated measures followed by an LSD Post-Hoc test. 

Results: A total of 297 student records were utilized with 104 EA, 61 2Y, 50 3+ and 82 BD. There were statistically significant differences among years and among college levels. Overall, BD had significantly higher CGPAs. This effect is largely due to academic performance in P1. The performance of the EA improved significantly with each class. A similar trend was not observed in the 2Y class. 

Implications: Students with 3+ or more years of college achieved higher CGPA compared to EA or 2Y. Increases in the EA GPA requirements may minimize these differences in the future.

Curriculum Development in Pharmacy Education: The Critical Role of Deliberation. Kenneth R. Keefner, Creighton University; Thomas L. Lenz, Creighton University; Gail M. Jensen, Creighton University; LuAnn Schwery, Creighton University.

Intent: Develop a revised pharmacy curriculum based on national pharmacy and medicine educational outcomes, and our own assessment data, using a faculty deliberation model. 

Process: Walker’s Naturalistic Model of curricular development is grounded in a deliberative process. This process builds a platform of beliefs and values that become the foundation for guiding curriculum development. Curricular redesign should be seen as practical problems about choice, action, educational policy and practice where belief systems play a central role. Initial phases of our curricular renovation included faculty and
administrative consensus on a need for change, and catalyzed by a core group of faculty attending the AACP Institute. This core group then led the curricular renovation process by providing opportunities for faculty to deliberate and reflect, through the guidance of external curriculum consultants and several faculty retreats. **Outcomes:** The deliberative process began at the AACP Institute and continued via several pharmacy faculty gatherings that included discussion on curricular change, and allowed faculty to reach a consensus regarding the CAPE Outcomes, NAPLEX blueprint, IOM core competencies, and our own curricular guiding principles and assessment data. These then became the platform for revision of the curriculum, including revision of ability-based outcomes. Several deliberations are planned to make curriculum design decisions based on the established platform of beliefs and values. **Implications:** Pharmacy faculty have much to gain from engaging in a process of deliberative curricular reflection. Consensus-building across practice and science faculty provides a vehicle to build professional community and shape future pharmacists.

**Development of a Computerized Compounding Laboratory “Practical” Exam.** Laura M. Fox, South Carolina College of Pharmacy – USC Campus; Michael S. Dollar, South Carolina College of Pharmacy – USC Campus; Khang H. Pham, South Carolina College of Pharmacy – USC Campus; L. Clifton Fuhrman, South Carolina College of Pharmacy – USC Campus. **Objectives:** To develop an electronic version of a practical, hands-on compounding laboratory exam. **Methods:** Several questions related to each laboratory exercise (e.g. pharmacutes theory, compounding technique, pharmacy calculations, labeling and patient counseling questions, etc.) were formulated in Microsoft Access. Digital photographs were developed using Macromedia Flash technology and were incorporated into questions to provide a simulation of a “practical” examination. The exam was served using Visual Basic scripting and an SQL server. Students received questions in random order and had to submit all questions associated with a laboratory exercise before continuing to the next page. Access to the exam was limited to a proctored on-campus computer lab on the scheduled date. The computerized final exam was administered in Spring 2005, refined, and will be administered in Spring 2006. Students will complete an evaluation of the improved final exam format in Spring 2006. **Outcomes:** The computerized final exam took students approximately 1.5 hours to complete compared to 3 hours for hands-on practical examinations. Issues generated by increased number of students, such as incorporation of rest stations or division of laboratory sections, were avoided by using the computerized final exam. Problems with the electronic platform encountered during Spring 2005 frustrated students, however positive reviews are expected in Spring 2006 due to improvements made. **Implications:** An electronic compounding laboratory examination incorporating high-resolution digital photographs is a satisfactory substitution for a practical, hands-on compounding laboratory examination and resolves many problems associated with increased number of students in laboratory sections.

**Evaluations of Popular Media and Fictional Sources to Reinforce Concepts in an Elective Biotechnology Course.** Karen M. Nagel, Midwestern University – Chicago; Elizabeth Langan, Midwestern University – Chicago. **Objective:** Critical evaluation of biotechnology topics as presented in non-scientific venues for public consumption. **Methods:** Popular media sources (newspaper, magazine and online articles) on biotechnology topics of interest were selected by students for evaluation on a number of criteria. Knowledge gained in the course was applied in a practical fashion, with students assessing source credibility, accuracy and completeness of reporting, balance and bias in viewpoints given, and evidence of sensationalism in reporting. Fictional representations involving biotechnology topics (movies, books and short stories) were also evaluated for plausibility and accuracy, based on the science learned in the course. **Implications:** Students were immediately able to utilize knowledge gained in a biotechnology elective in a practical fashion, and were able to critically evaluate material they would be likely to encounter for plausibility, credibility, accuracy, balance of opinion and bias.

**Interprofessional Perspectives on Teaching and Learning Using Reflection.** Kenneth R. Keefer, Creighton University; Caroline Goulet, Creighton University; Yolanda W.L. Griffiths, Creighton University; Julie A. Ekstrom, Creighton University; LuAnn Schwery, Creighton University. **Objectives:** Creighton University SPAHP is a multidisciplinary school composed of Pharmacy, Occupational and Physical Therapy programs. The purpose of this project is to explore the processes used across the different programs within the SPAHP that facilitate reflection in students to enhance professional formation. **Methods:** Curriculum documentation of reflection was analyzed to uncover where in each curriculum reflective skills were utilized. Surveys were designed to explore faculty perceptions and how reflection was utilized and assessed in individual courses. Narrative summaries were created via small focus groups of faculty from each program to provide information, process, and outcomes of reflection exercises. Examples of reflections across programs were analyzed to differentiate levels of reflection. Thematic analysis of the data will be performed to understand how faculty utilize reflection in preparing students for professional practice. **Results:** Reflection was found to be used least in pharmacy and greatest in OT. The themes identified by faculty in defining reflection included cognitive process; contemplation; purpose; meaning; review; analysis; self-awareness; thinking for change; thinking about self in relation to a situation. Survey and focus data are being analyzed. **Implications:** Although individual faculty across the programs require student reflection within courses, facilitating the development of reflective skills remains a challenge. Sharing experiences across disciplines and integrating individual effort within the curriculum will enhance student learning of this critical professional skill and develop faculty using best practices in teaching reflection. The overall goal is to produce a theoretical model on how to effectively train reflective healthcare practitioners.

**Personal Experience with Blood Glucose Monitoring and Carbohydrate Counting in a Diabetes Care Course Changes Student Attitudes and Beliefs about Diabetes Self-Care.** Kenneth R. Keefer, Creighton University; Maryann Z. Skrabal, Creighton University; Karen K. O’Brien, Creighton University. **Objective:** To determine if personal experience with Self-Monitoring of Blood Glucose (SMBG) and carbohydrate (carb) counting in a diabetes care course changes student attitudes and beliefs about diabetes self-care. **Methods:** Students enrolled in an intensive three-day elective diabetes care course were required to monitor their serum glucose and count their carbohydrate intake for the duration of the course. They were given minimal advanced instruction about SMBG and carbohydrate counting. They were asked to reflect each day on aspects of these personal experiences. **Results:** A series of nine reflective questions were asked over the 3 days concerning personal impressions of SMBG and carb counting. Changes in attitudes and beliefs were observed over the 3-day period. Following the course, the formative and summative student self-reflections were reviewed and categorized thematically to assess attitudes and beliefs regarding diabetes self-care. **Implications:** In addition to enhancing knowledge and
PHARMACY PRACTICE

Completed Research

A 13-year review of initial employment trends for pharmacy graduates of The University of Arizona. Jeremy A. Short, The University of Arizona; Ryan Tabis, The University of Arizona; Kevin P. Boesen, The University of Arizona; John Murphy, The University of Arizona. Objectives: The purpose of this study was to gain insight into current trends in pharmacy employment directly after graduation in the areas of community, hospital, pharmacy practice residencies, etc., and to relate those findings to environmental factors within the field. Methods: An exit survey was distributed to fourth-year students at The University of Arizona College of Pharmacy in the spring prior to graduation during the years 1993 to 2005. The survey inquired about each student’s initial job selection. Results: Data were collected from a total of 692 graduating students over the thirteen year period. Groups were assigned based on year of graduation: Group 1 consisted of data from the graduates of 1993-1995, Group 2 contained graduates from 1996-2000, and Group 3 included data from students during the years 2001-2005. The number of students pursuing residency training decreased between Group 1 (36.2%) and Group 3 (23.7%), with p = 0.006. Also, there were differences between Group 1 and Group 3 in regards to those students pursuing employment in community positions, increasing from 25% to 51.8% between the groups, respectively (p < 0.0001). Conclusions: Over the last 13 years, the percentage of students from The University of Arizona College of Pharmacy that pursue residency training is declining, while the fraction of students choosing community pharmacy as their initial employment is increasing. This trend may be influenced by a variety of factors, including increased salaries in community pharmacy, rising tuition costs, and increased competition for residency positions.

A Survey of Students’ Perceptions of Community Service Requirements in a Pharmacy Curriculum. Susan M. Jay, University of Kentucky; Eleanora R. Bird, University of Kentucky. Objectives: To determine students’ perceptions of community service and its place in the curriculum; to qualify students’ perceived benefits; to compare results to previous data collected without a survey instrument. Methods: As a component of a 6-credit course, PY2 students must participate in 6 hours of community service. Prior to receiving defined service criteria, students were asked to voluntarily and anonymously participate in a survey. The survey was administered online using CoursEval(TM). After completing their service, students submitted an online form that included a perception of any service benefit. Results: The entire class of 103 students responded to some portion of the survey. 83% felt community service should be part of the curriculum but only 22% felt no compensation such as course credit was appropriate. 88% indicated 6 hours of service was excessive. Of activities on the survey that did not qualify as community service under course criteria, at least one or more activities were viewed as appropriate by 53%. This result was lower than expected since previous data had shown 72% used such projects when service did not have to meet specific criteria. Only 49% qualified true community service activities as such on the survey. 92% perceived completed service as worthwhile. Implications: Using a tool to help students evaluate community service opportunities prior to enforcement of criteria encourages them to think about voluntarism within a community as a healthcare professional. Data will also help refine future community service requirements in the curriculum.

A Unique Interactive Critical Care Pharmacotherapy Elective. Liza Barbarello, Rutgers University; Alissa Lee, Rutgers University; Joseph A. Barone, Rutgers University. A new critical care specialty elective with a unique course structure designed to simulate the student’s participation in a multidisciplinary critical care team during their advanced clinical experiential rotations was added to our third year professional curriculum. During the first half of the semester, interactive lectures required students to participate in “rapid fire” discussions of material as it was presented, followed by critical thinking exercises, concluding with a traditional written midterm examination. The second half of the semester challenged students to cumulatively apply the material to various complicated clinical scenarios. Students presented case presentations to develop effective skills for delivering inservices. An oral case study-based final exam approximated the student's need to prepare a system-based assessment in a short period of time that would allow them to effectively respond to attending physician or preceptor pharmacotherapy questions. This was accomplished using set questions, time limits, and evaluator training to minimize “coaching” or “coaxing.” Exams were conducted by two faculty, one serving as the exam administrator and one as the evaluator. Course evaluations revealed a preference for an interactive course structure for classes preparing for clinical rotations. The majority of students taking the course subsequently sought critical care rotations, through which consistent transfer of classroom-learned skills was demonstrated across several clinical sites. When in a mixed group on rotation, students completing the critical care elective were challenged to teach core skills to those without course exposure, which rapidly advanced the course-naïve students and further demonstrated the effectiveness of the innovative course structure.

A “Team” Exam Approach to Reinforce Therapeutics Topics Post-Examination. Susannah E. Motl Moroney, University of Tennessee. Objectives: This project investigated a new approach to reinforce therapeutics topics post-examination in a 3rd year Therapeutics course. Specific objectives included evaluating the acceptability and feasibility of a “team” exam approach to review course materials and comparing individual test scores of students before and after the “team” exam. Methods: All enrolled Therapeutics students (n = 125) completed the first exam, an 81 multiple choice exam accounting for 50% of the course grade. Interested students formed “teams” of three and met the following day to discuss questions and retake the exam without notes or inter-team communication. A new exam score was calculated, where 50% of the difference between the “team” and initial score were added to the initial score for a maximum of 5 additional points. Students also completed a 14-question survey evaluating their acceptability, feasibility, confidence, and reinforcement of the materials in the “team” exam. The difference between initial and team exam scores were significant when p < 0.05 via the student’s t-test. Results: 109 students (87.2%) participated in the “team” exam and 105 completed the survey. 95% of students agreed the “team” exam was acceptable and feasible and 93% agreed the “team” exam would help them retain the material for future use. “Team” exam scores were significantly higher than initial scores (95% vs. 72%, respectively, p < 0.0001) and the average “team” participant received 4 points added to their initial score. Implications: Survey results and exam scores
support the use of this approach in future Therapeutics courses as an additional method to reinforce course material.

Adaptation of an active learning communications course for distance learning. Renee L. Rose, University of Florida – Orlando; Lisa D. Inge, University of Florida – Jacksonville; Kelly L. Scolaro, University of Florida – St. Petersburg; Carole L. Kimberlin, University of Florida – Gainesville. Objectives: Describe how the communications course was adapted for distance learning. Methods: The communications course at University of Florida, College of Pharmacy instructs students on methods of effective communication. Before 2004, the course in Gainesville consisted of students practicing empathy, assertiveness, medication history, and new medication counseling during lab sessions. Two videotaped interviews with a professional actor as patient were required. In spring 2004, three distant sites began offering the course requiring modifications. Local practitioners were hired as faculty facilitators on each campus. In addition, all students traveled to Gainesville for a final interview. Course evaluations and focus groups were used to assess modifications. Results: In 2004, 250 students were enrolled and each student completed a course evaluation. Data from the evaluations and focus groups revealed that further modifications were needed to improve the educational quality for the distance students. Changes were made in 2004 and 2005 that included adding faculty, expanding facilitator training, incorporating academic clerkship students, restructuring evaluation forms, videotaping interviews during lab, and posting videos on Blackboard. Videotaping during lab eliminated student travel to Gainesville. Students are evaluated on: 3 interviews, self evaluations, weekly quizzes, written assignments, class participation/attendance, and two exams. Quality control is performed by the course coordinator through facilitator training, assessment of interrater reliabilities of paired instructor evaluations in each lab, and by comparing grades and evaluations from all 4 campuses at the end of each semester. Implications: Modifications have improved the educational experience of distance students while maintaining the goals of the course.

ADR Reporting by Third Year Pharm.D. Students: Narrowing the Quality Gap for Medication Safety. Rahemat Naseem Amarsi, University of Tennessee; Catherine Crill, University of Tennessee; Shacresa Staley, University of Tennessee. Objectives/Intent: According to Kaiser Foundation and Novartis Benefit Report, Tennessee has the highest national prescription use (15.3-17.8 prescriptions/person/year) making adverse drug reactions (ADRs) inevitable. The objective of this study was to involve pharmacy students in ADR reporting to determine the top five classes of drugs responsible for ADRs and their preventability. Methods/Process: From 2002-2005, third year Pharm.D. students reported an ADR identified at experiential training sites throughout the Memphis area. Data collection included ADR type, patient age, presence or absence of ADR on admission, suspected causative agent, preventability, Naranjo algorithm score, and outcome classification. Results/Outcomes: Of 396 ADRs submitted, 166 (42%) were present on admission. The top five drug classes identified were antiplatelet/antiagulant 95 (24%), cardiovascular 83 (21%), antimicrobial/antibacterial 74 (19%), analgesic 67 (17%) and statin 12 (3%). Whereas 147 (37%) were preventable, 112 (28%) were non-preventable, and 137 (35%) undeterminable (due to incomplete data on report). The following causality index was assigned to completed Naranjo algorithms: 199 (58%) probable, 123 (36%) possible, and 21 (6%) definite. Outcome classification was: 211 (53%) mild, 150 (38%) moderate, 21 (5%) definite, and 14 (4 %) undeterminable (due to incomplete data on report). The mean age (yrs ± SD) of the patients experiencing ADRs was 56 ± 22.5 (range 0.7-99.0). Implications: Appropriately trained pharmacy students can prevent and report ADRs. The ADR potential of the top drug classes identified and the need for completeness will be emphasized throughout the curriculum to increase student awareness of proactive monitoring for prevention of ADRs.

Alcohol and Other Drug Use Attitudes and Behaviors in Nebraska Health Professions Students. Jeffrey N. Baldwin, University of Nebraska Medical Center; Edward M. DeSimone, Creighton University; David M. Scott; North Dakota State University. Study objective: To identify attitudes and behaviors of health professions students (HPS) in Nebraska toward alcohol and other drug (AOD) use. Design: A 62-item survey was administered to 5,468 pharmacy, medical, nursing, dental, occupational therapy, physical therapy, and other health professions students in Nebraska. Results: 2,741 (50.1%) students responded. Substance abuse education was considered adequate by 52.2% overall and 63.5% of pharmacy respondents. Restricted alcohol availability at campus sponsored/sanctioned events was favored by 47.7% overall and 60.1% of pharmacy respondents. Family history of alcohol and drug use problems were reported by 40% and 14.1%, respectively (42.8% reported one or both). Alcohol, drug, or one or both family problems were reported by 48.1%, 19.2% and 51.1%, respectively, by nursing respondents. Past year alcohol use was similar to that reported for the same year by university college students (UCS) overall (about 83%). Heavy drinking was 16.8% lower among HPS than UCS but was still 30% within the past 2 weeks for pharmacy students. There was less use of tobacco or recreational drugs reported by HPS than by UCS. Medical students most often reported past year drug use. Marijuana was the most common illicit drug used, with medical students and males most often reporting use; 5.9% of pharmacy respondents reported past-year marijuana use. Those treated for alcoholism were more likely to also report drug experimentation and tobacco use. Among the 45 students (1.6% overall) who reported past AOD dependency treatment, 23 were for alcoholism, 8 were for drug dependency and 14 were for both.

An Adaptation of Problem Based Learning in an Elective Neonatology Course. Gregory V. Stajich, Mercer University; Candace W. Barnett, Mercer University. Description: An adaptation of didactic teaching and Problem Based Learning (PBL) methodologies were integrated to create Problem Assisted Based Learning Utilizing Multimedia Methods (PABLUMM). PABLUMM differs from PBL by incorporating significant instructor input, guidance and direction with the student away from the scheduled class time. This methodology can ensure accuracy and comprehension of learning issues, and that appropriate learning methods (visual aids, videos) are utilized. The incorporation of PABLUMM in an elective neonatology course is presented. Objective: To introduce and evaluate PABLUMM in an elective course entitled, Fundamentals of Neonatology. Methods: Case studies were provided and underwent traditional PBL dissection to identify and assign learning issues. Learning issues included: maternal history, laboratory and radiographic information, respiratory management, monitoring parameters, sepsis, and disease state. In contrast to conventional PBL, students met with the facilitator outside of class to ensure understanding of learning issues they had researched before students presented them in class. Assessment included student evaluation (on a 5-point scale) and open-ended comments. Results: Mean ratings were 4.75 for the course and 4.9 for how well PABLUM helped them learn. Student comments indicated...
PABLUMM was conducive to learning. Instructor reflection indicated PABLUMM allowed for greater instructor control of content covered in terms of depth and breadth than established PBL format. Students’ confidence appeared enhanced by the opportunity to validate the self-taught learning issues. Implications: PABLUMM is an effective instructive format and may be efficient in PBL based courses with limited time and numerous topics.

An Impression of the Clinical Scholars Program at UNC-Chapel Hill School of Pharmacy: Four Perspectives. Jo E. Rodgers, University of North Carolina – Chapel Hill; Katrina L. Jamison, University of North Carolina – Chapel Hill; Serge S. Drouin, University of North Carolina – Chapel Hill; Kim I. Leadon, University of North Carolina – Chapel Hill; James C. McAllister, University of North Carolina – Chapel Hill; Suzanne M. Cala, University of North Carolina – Chapel Hill. Introduction: In 2000, an innovative experiential program, the Clinical Scholars Program (CSP) was created to offer advanced training. Program coordinators have received informal feedback regarding the program’s influence on CSP graduates and interacting programs. This study formalizes this feedback. Methods: CSP graduates (n = 60) were matched with non-CSP graduates (n = 24) by gender, race, graduating class, and GPA. Pharmacy Directors (n = 5) hosting CSPs and Residency/Fellowship Directors (n = 21) overseeing CSP graduates were also surveyed. All correspondence was via email and surveys were online. Results: The majority of CSP and non-CSP graduates stated that their experience afforded them the most advanced, comprehensive training (95% and 91%, respectively). CSPs agreed that the additional requirements of the program gave them an advantage upon graduation while non-CSPs reported that additional educational opportunities, such as completing a research project and identifying a mentor, would not have been beneficial. The majority of Pharmacy Directors hosting CSP students acknowledged the value of the program to their institution and that the program positively impacts patient care, but reported a lack of involvement in CSP recruitment. Residency/Fellowship Directors agreed that the CSP graduate performance was higher than non-CSP graduates in various areas of their program, including clinical decision-making and communicating with healthcare professionals. Conclusions: Both CSP and non-CSP graduates acknowledge a benefit from their fourth year experiences; however, non-CSPs do not appear to value many of the CSP requirements. While both Pharmacy and Residency/Fellowship Directors acknowledge the value of the CSP, Pharmacy Directors are not actively involved in CSP selections.

An Innovative Selective Advanced Pharmacy Practicum in a National Center of Excellence for Women’s Health. Betty A. Torres, University of Puerto Rico; Lydia González, University of Puerto Rico; Elga E. Vega, University of Puerto Rico. Objectives: Develop and implement a selective four-week clerkship in a National Center of Excellence for Women’s Health to define pharmacists’ role in women’s health, enhance general and professional abilities as direct providers of pharmaceutical care in this area, and meet pharmacotherapeutic women’s health needs. Methods: Development and implementation of this Practicum based on the educational and research needs of Puerto Rican women and responding to the increased interest of government agencies and health professions to include this topic in the curriculum. Activities included: direct interaction with gynecologists, case discussions, patient education at different settings, and preparation of articles, brochures and TV spots about women’s health. Outcomes: (1) Students developed professional abilities in areas such as: (i) women’s pharmacotherapy, (ii) sex and gender differences, (iii) understanding and interacting with female patient; (iv) lifespan issues, (v) general health concerns (climacteric, menopause), (vi) health and wellness promotion. (2) Partnership between the School of Pharmacy and the Center was strengthened. (3) Collaborative research was enhanced. Assessment: Students’ and professor’s reflections and course evaluation using the school’s standardized instrument indicated that students, patients and the Center benefited from this experience. Implications: Improvement in the provision of pharmaceutical care in women’s health. Enhancement of students’ professional abilities. The importance of this topic in the curriculum was emphasized. Areas and settings for research and publications were identified. Projections: Increase the number of students exposed to this practicum; continue offering educational and clinical services and stimulating specialized training and research interests in this area.

An Interdisciplinary SoTL Workgroup: Moving from Ideas to Action. Amy M. Haddad, Creighton University; Rhonda M. Jones, Creighton University; Jo Kostka, Creighton University; Tracy Leavelle, Creighton University; Nancy Shirley, Creighton University; Maryann Z. Skrabal, Creighton University; Marlene Wilken, Creighton University. Objectives: As part of a university-wide initiative in faculty development, an interdisciplinary SoTL workgroup was established in fall 2004. The disciplines represented in the group were: history, pharmacy, and nursing (N = 7). The main objective of the workgroup was to assist in the development of faculty members who were interested in exploring their teaching and their students’ learning in a scholarly manner. Methods: The workgroup met monthly for one year. Workgroup members identified and discussed interests in teaching and learning. Problem identification was refined through group discussion over the course of several months. Group members then worked on developing methods appropriate to his or her discipline. The workgroup facilitator provided a reading list on basic content in SoTL, feedback and reminders regarding moving the projects forward to data collection, analysis and communication of results. Results: Feedback from members indicates that the most helpful aspects of the workgroup were the ability to clarify questions and problems in teaching and learning and group member diversity. All group members moved from preliminary ideas about researchable questions to refined research questions and methods of inquiry. Some group members began data collection. All group members reflected on possible scholarly outcomes observable to the professional community for their projects. Implications: An interdisciplinary workgroup has the potential of moving motivated faculty members from preliminary reflection on their teaching and student learning to a plan of action and inquiry. The interdisciplinary makeup of the group is a distinct asset to faculty development in SoTL.

Analysis of Factors Involved in Independent Learning and Retention of Basic Drug Information. Keith N. Herist, The University of Georgia; Henry H. Cobb, The University of Georgia; Beth P. Brown, The University of Georgia. Objectives: To correlate individual student’s exam performance of basic drug information with learning styles, GPA, and seven-day retention. Methods: Second year students were instructed to prepare independently for two scheduled exams of basic drug information from the Top 300 Drug Cards. The exams were multiple-choice in sets of five questions testing various drug information categories. The original exams had been returned and the answer key was posted. Testing of short-term retention involved repeating the original exam after seven days. Solomon’s Index of Learning Style Questionnaire was employed and correlation coefficients were determined between the factors using...
Assessing classroom engagement utilizing student perceptions of faculty attributes and teaching techniques. Michael J. Gonyeau, Northeastern University; Maryellen Dascoli, Northeastern University. Background: Current information on student engagement at the university level is broad and discusses engagement in a variety of arenas, but information for pharmacy schools is lacking. Objectives: To identify faculty characteristics and teaching methods that initiate and maintain student attention and engagement throughout the classroom experience. Methods: Current 3rd and 4th professional year Doctor of Pharmacy students were invited to complete a web-based survey regarding their perceptions of faculty attributes and teaching techniques that maintain or enhance engagement. Each questionnaire consisted of 23 multiple choice questions using a 1-4 rating scale from strongly disagree to strongly agree and 5 open ended questions. Preferences of teacher characteristics, active learning techniques and lecture structure were examined. Results: Ninety eight questionnaires were completed (48%). Students strongly agreed that enthusiasm (73%), genuine interest in student learning (71%) and preparation/organization (69%) were engaging faculty attributes. Strong agreement was also observed for techniques including multiple examples/patient cases per subject (71%) and end of class summaries (72%). Other techniques were perceived negatively by students. Sixty two percent found think-pair-share activities distracting, 45% found cold calling ineffective and 47% did not think unannounced quizzes were a valuable method of engagement. Open ended questions revealed common themes that promote engagement including: 36 comments on clinical application of material, 28 comments on use of humor and 15 comments on faculty enthusiasm. Implications: This information will be provided to educate faculty about student supported techniques and attributes to engage upper class pharmacy students to attain the best possible didactic experience.

Assessment of Technology Use in the Southern Illinois University-Edwardsville School of Pharmacy. Therese I. Poirier, Southern Illinois University-Edwardsville; Catherine R. Santanello, Southern Illinois University-Edwardsville; Julie P. Karpinski, Southern Illinois University-Edwardsville; Craig Keigher, Southern Illinois University-Edwardsville; Andrea Reaka, Southern Illinois University-Edwardsville; Jason Scott, Southern Illinois University-Edwardsville. Objectives: To assess the impact of the laptop program, the smart classroom, the integrated audio/video recording device (Accordent), and the course management system (Blackboard) on student learning; to determine the benefits and negative effects of the use of technology on student learning; and to assess how technology is used by students. Methods: A nineteen item survey using a six response Likert scale and three open ended questions was administered online to first year Pharmacy students in a new School of Pharmacy after one semester of coursework. Results: An 89% (n = 82) response rate was obtained. 94.5% agreed that the laptop program was beneficial in enhancing learning. 95.8% agreed that the ability to use the Internet during class was an enhancement to learning. Greater than 90% agreed that the laptop program assists in managing time; facilitates group work; enhances communication among students and with faculty. 98.6% agreed that technology available facilitate communication of needed content for the courses. However, 38.2% indicated use of instant-messaging to enhance learning during classroom lecture; 80.8% indicated extracurricular Internet use during classroom time; and 20.5% agreed that learning is distracted by others using their laptop during class. Implications: The laptop program and the course management system facilitated student learning. Technology appears to be used primarily to increase student learning despite some negative effects. Re-assessment of how faculty use technology in their classroom is underway because of the results of this survey.

American Journal of Pharmaceutical Education 2006; 70 (3) Article 65.
from the Learning Assistance Center on campus. The students were given a basic overview of the five-paragraph essay. They were given time to ask questions. They then had a stimulated essay writing experience. The on-site essays were blinded and graded by at least two members of the admission committee. The scores ranged from 1-6 with 6 being the best score. The members of the committee did not know who attended the workshop. Data was analyzed using a student’s t-test to assess if there was an overall difference in the average of on-site essay scores between the students attending the workshop and those who did not. Students who attended the workshop scored higher on the writing samples than those who did not (3.5 and 3.0 respectively), although the difference was not statistically significant (p = 0.054). The writing workshop may be beneficial to students preparing for a pharmacy school interview.

Biomedical Database Coverage of AACP’s Core Journals. Dennis F. Thompson, Southern Mississippi State University; Edna Patatian, Southern Mississippi State University. Purpose: To determine the extent of coverage of AACP’s core journals (2nd Ed., 2003) by the Iowa Drug Information Service (IDIS), International Pharmaceutical Abstracts (IPA), Science Citation Index expanded (SCI), Social Science Citation Index expanded (SSCI), Medline, and Embase. Methods: The core journal list (N = 109) was obtained from the AACP web site. IPA, SCI, and SSCI journal lists were obtained through their individual web sites. Embase and IDIS journals were searched online. Journal database searches were done December 2005, using ISSN numbers to confirm journal identity except in IDIS which did not list ISSN. Only fully indexed journals current for 2005 were counted on the Medline database (using NLM LocatorPlus) and Embase. We calculated the percent coverage of core journals and unique journals (defined as journals indexed in only one database). Results: Embase had the most complete coverage of AACP’s core journals with 83% (90/109), followed by Medline at 71% (77/109), IPA 66% (72/109), SCI 61% (67/109), IDIS 50% (54/109), and SSCI 9% (10/109). IPA had the most unique journals with 7, followed by Embase with 3, and Medline with 1. Four journals were not covered by any of these databases. Combination searches of IPA and Embase covered 95% of core journals while IPA and Medline covered 91%. Conclusions: Combination searches using multiple databases are necessary to assure >90% coverage of AACP’s core journals. Four core journals are not covered by any of the databases utilized in this study.

Building a Community of Learners: Laying the Foundations with a Weeklong New Student Orientation Program. Therese I. Poirier, Southern Illinois University-Edwardsville; Catherine R. Santanello, Southern Illinois University-Edwardsville; Gireesh V. Gupchup, Southern Illinois University-Edwardsville. Objectives: Describe and evaluate a new student orientation program designed to lay the foundations for a community of learners. Methods: A weeklong orientation program is structured as the first week of an 18 week fall semester for the first professional year class. Each of the activities support objectives for the program and also develops elements of a community of learners. Results: Student reflective portfolios and daily program evaluations provide evidence of development of a community of learners and successful outcomes. The following attributes are identified as innovative for a new student orientation program:

Changes in pharmacy students’ attitudes and perceptions toward CAM after a required course. Emily W. Evans, South University; Jeffery D. Evans, South University. Objectives: To determine whether a required course addressing complementary and alternative medicine (CAM) would change students’ attitudes and perceptions toward the subject, including their likelihood to recommend various natural products and CAM therapies. Methods: A three-part, 48-question survey was administered to all 3rd-year Pharm.D. students on the first and last days of the course. Part 1 of the survey was based upon a validated tool and assessed students’ attitudes and perceptions toward CAM in the areas of professional competence, personal interest, personal experience, personal beliefs, and philosophical congruence. Parts 2 and 3 assessed the students’ likelihood to recommend a number of popular natural products and CAM treatments as both primary and adjunct therapy. The degree of change for each question was assessed and analyzed in order to determine the impact of the course. Results: Fifty-three students (93%) completed both the pre- and post-survey. The absolute value of the change for each of the forty eight survey questions was significant (p < 0.001). Implications: A required course addressing CAM and natural products significantly changed students’ attitudes and perceptions toward the subject, as well as their likelihood to recommend various CAM therapies and natural products in a professional setting.

Closing the Assessment Loop: Using Assessment Data to Improve a Management Course Sequence. Katherine A. Kelley, The Ohio State University, Craig A. Pedersen, The Ohio State University, Philip J. Schneider, The Ohio State University, Katherine L. Bellebaum, The Ohio State University. Objective: The purpose of this work is to show how course and program-level data were used to improve a management course sequence to meet both accountability (for accreditation purposes) and improvement (for continuous quality improvement) agendas. Methods: Course and program-level data from three sources were extracted and combined to generate an action items list of improvements to three pharmacy management courses. Tools used included student focus groups, fourth-year exit surveys for graduating students, and end of course assessments. Data from these instruments were used to track outcomes over time for these three courses. Course content and objectives were mapped to the both the ACPE revised standards and to the College outcomes document. Results: The survey and focus groups revealed two major themes - redundancy and relevance of course content. The mapping exercise revealed several required content areas missing from the courses. Course content was revised to include missing content, eliminate redundancy and improve relevance. Results of subsequent mapping and survey activities show improvements in measures of compliance with accreditation standards and improved student reports of satisfaction with the overall sequence of courses. Sixty-six percent of students reported that the revised management content was relevant to their future career path, and follow-up focus groups yielded no
Comparison of 1:1 versus 1:2 Preceptor/Student (P/S) Ratios on Advanced Practice Experience (APE). Laurie L. Briceland, Albany College of Pharmacy; Robert A. Hamilton, Albany College of Pharmacy. Background: Accreditation Council for Pharmacy Education recently proposed an optimal P/S ratio of 1:1 on APES. Intuitively, such a ratio enables an optimal learning environment; however, objective evidence to support this 1:1 ratio is lacking. The objective of this study is to compare the preceptor and student evaluations of 1:1 vs. 1:2 P/S ratios on APE. Methods: IRB approval was obtained. Clerkship records of students assigned to full-time faculty preceptors between August 2003 and December 2005 were reviewed to identify cases and controls. Cases were identified as a sole student assigned to the preceptor (P/S 1:1) and controls as students assigned to the same preceptor/rotation with P/S of 1:2. Further, cases and controls were matched for program (accelerated vs traditional) and timing of rotation (±3 modules apart from case). The primary outcome measure was the student and preceptor evaluation; numeric data were compared using non-parametric tests. Written comments specific to the presence/absence of an additional student were evaluated for a preference of P/S 1:1 or 1:2. Results: Twenty -two case/control pairs of students assigned to 15 preceptors were identified. Comparison of 33 student and 20 preceptor numeric evaluation items demonstrated no differences (p > 0.14). Five students (3 cases, 2 controls) and 5 preceptors (3 cases, 2 controls) offered comment; of students, 3 preferred 1:2, and 2 preferred 1:1; of preceptors, 2 preferred 1:2 and 3 were neutral. Implications: This small sample shows no difference in student or preceptor evaluations with respect to P/S ratios of 1:1 or 1:2.

Concept Mapping to Increase Student Understanding and Learning in Therapeutics Courses. Paula A. Thompson, Samford University; Angela R. Thomason, Samford University. Objectives: Previous surveys of pharmacy students in their third professional year have revealed that one of the difficulties in learning and applying information in the Therapeutics series is the inability to organize large amounts of information. Students have difficulty seeing connections and drawing conclusions. This is despite (or perhaps because of) the extensive lecture handouts provided for the course in addition to the required readings. This study seeks to assess the utility of concept maps to improve student understanding and learning. Methods: Detailed, one-page concept maps were developed for each topic presented in the fall Therapeutics course (13 topics total). They were included in the lecture handouts, and each instructor was requested to review their map(s) at least once. At the end of the fall semester, the students were surveyed about how they used the concept maps and the perceived effectiveness of these maps in facilitating learning. Preliminary Results: Preliminary analysis of the data shows that the majority of students found the concept maps to be helpful and requested that they be continued throughout the course. Many students included written feedback that emphasized that the “big picture” was made clear for many of the topics. Implications: The addition of concept maps to the traditional handouts appears to have improved student understanding based upon their responses to the survey. And, although there is no way to establish a direct connection, this is the first fall semester in over ten years where all students successfully completed the course.

Cross-Practice Comparison of Preceptor Evaluations of Student Professionalism and Ethical Conduct during Early Experiential

American Journal of Pharmaceutical Education 2006; 70 (3) Article 65.
Rotations. Diane M. Nauman, Oregon State University. Objectives: Preceptor evaluations of Pharm.D. students were obtained upon completion of 160-hour summer clerkships in both ambulatory and institutional settings to determine preceptor’s perceptions of student professionalism and ethical conduct (PEC), including: - Self-motivation and active learning. - Desire to exceed expectations. - Accountability for assigned tasks and duties. - Acceptance and use of constructive criticism. - Cooperation, helpfulness and tact. - Respect for patients, colleagues and other personnel. - Empathy and ability to identify with other perspectives. - Maintain confidentiality. Methods: First and second year OSU Pharm.D. students are required to complete 160-hour summer clerkships in ambulatory and institutional practice settings. Each student is given a manual containing required core competencies, testing methods, competency evaluation forms and PEC evaluation forms that are completed by preceptors. Students submit portfolios of competency evaluation results and PEC forms for faculty review upon completion of each clerkship. Retrospective cross-practice preceptor evaluations of the same student cohort were compared and analyzed. Results: Cross-practice preceptor evaluations of the same student cohort demonstrate no statistical difference in assessment of student professionalism and ethical conduct. Likert scale data collected from hospital-based pharmacy preceptors and ambulatory practice preceptors result in the same student cohort median scores on all questions on the PEC evaluation form. Implications: Results indicate preceptor evaluations of student professionalism and ethical conduct remain consistent as students move through various practice settings while completing experiential program rotations. Little variance is exhibited in cross-practice pharmacist preceptor evaluations of student PEC between hospital and retail pharmacy practice sites.

Curricular Competencies Development through Pharmaceutical Care Plans in Second Year Pharmacy Students. Iadelisse Cruz-Gonzalez, University of Puerto Rico; Lydia Gonzalez, University of Puerto Rico; Elga E. Vega, University of Puerto Rico. Objective: Integrate curricular competencies in second year pharmacy students by developing a pharmaceutical care plans (PCP) about patients’ non-adherence. Methods: Students registered in the course Integrative Seminar of Pharmaceutical Care and Human Development were divided in ten groups. Each group interviewed a patient and determined the risks for non-adherence according to a questionnaire. It included a patient’s database, thirty-one non-adherence risk factors, three open ended questions and four statements to collect students’ perception. The questionnaire was applied as pre and post test. Each group used indirect and direct methods to measure patient’s adherence (laboratory data, pill counting, and patient self monitoring test among others). An individualized PCP was developed and supervised by professors. Interventions included written and verbal education about patients’ health conditions and drug regimens. Follow-up evaluations were performed after each intervention. Descriptive statistics were applied. Results: Risk factors for non-adherence decreased in 80% (8/10) of the patients. The most common risk factors during the assessment were: Chronic conditions, Prolonged treatment duration and Lack of symptoms. Students were able to identify non-adherence risk factors and had successful interventions in most cases. This represents adequate integration of curricular competencies (Self-learning, Critical Thinking, Problem Solving, Communication, Ethics and Pharmaceutical Care). In: Second year pharmacy students are capable of identifying risk factors for non-adherence and, designing and implementing a PCP to improve adherence under professors’ supervision. This activity was useful to integrate the competencies and guide students in assessing non-adherence risks early in their professional development.

Developing a Library of Resources for Preparing and Supporting Practitioner Educators. Beverly A. Talluto, Virginia Commonwealth University; Kathleen H. Besinque, University of Southern California; Gerald L. Cable, The Ohio State University College of Pharmacy; Abir A. Kahaleh, Ohio Northern University; Ruth E. Nemire, Nova Southeastern University; Geralynn B. Smith, Wayne State University; Veronica P. Shuford, Virginia Commonwealth University; Jeanette Henry, Virginia Commonwealth University. Objectives: Develop a library of resources for preparing and supporting practitioner educators: a directive of the AACP Advanced Pharmacy Practice Initiative (APPI). Methods: Developing a web-based library included the following steps: identifying consultant reviewers, developing a web based submission form, creating a resource review form for reviewers and to archive resources, creating article retrieval using keywords, category, school or author, soliciting existing resources from pharmacy faculty, searching for additional resources, linking all library resources, developing intellectual property release, conducting a Gaps Analysis, surveying pharmacy school websites for links to Experiential Education programs and preceptor resources, and promoting the availability of the PEPSIG library to members and pharmacy organizations. Results: Six faculty reviewed articles for inclusion into the web-based library. Approximately 100 resources were included from 11 categories. A Gaps Analysis revealed that all of the categories represented in the library were selected by PEPSIG program directors as resources they would use. Live preceptor training was preferred. The most frequently used resource was other colleges/schools of pharmacy. Implications: An annotated library has been developed to provide resources for PEPSIG personnel to develop and support practitioner educators. Problems identified while compiling the resources included; many experiential program resources were not archived, programs did not have a web-site or direct link from the experiential program making it difficult for preceptors to access programs and many of the development tools came from medicine. The resources are available and additional resources will be added.

Development of a Patient Case Database, ITeaCH, with On-Line Access as a Resource for Faculty. Jay D. Currie, The University of Iowa; Hazel H. Seaba, The University of Iowa; Christine M. Catney, The University of Iowa; Michael E. Ernst, The University of Iowa. Objectives: Cases incorporated into teaching, discussions, laboratory exercises and testing encourage students to develop problem-solving and critical thinking skills. We describe an indexed, searchable, online database of patient cases, ITeaCH (Iowa Teaching Cases for Health), that we created to increase the availability of unique case materials to faculty. Methods: We secured funding from our academic division, contracted campus computing resources, and established minimum required data elements. The Iowa Drug Information Service (IDIS) provided the controlled vocabulary for indexing drugs and disease states. We created new descriptors for medical and medication history elements (11); patient characteristics (9), including race, ethnicity, culture and socioeconomic characteristics; as well as case complexity, care setting, and instructional use. The database structure allows faculty to submit, index, search, and download cases, attach teaching materials to indexed cases and administer the database. Result: A SQL Server database with web interface was developed. Actual clinical cases were collected from faculty. Currently, ITeaCH includes 780 indexed cases from a variety of patient care settings. ITeaCH cases are word processing program documents that
can be modified easily for instructional purposes. Modified cases can be resubmitted and teaching materials can be attached to cases at any time. Faculty began using ITeaCH in Fall 2005. Implications: Faculty members have improved access, regardless of location, to continually updated case materials for use in teaching and assessment. ITeaCH assists faculty in providing active, practice-based learning and testing.

**Effect of lecture audio files on class attendance and examination performance.** Gary N. Elsasser, Creighton University; Eric B. Hoie, Creighton University; Christopher J. Destache, Creighton University; Michael S. Monaghan, Creighton University. Objective: Assess the impact of digitally recorded lecture audio files on student attendance and examination performance. Methods: Digitally recorded audio files were made available for download to campus students enrolled in a team-taught pharmacotherapeutics course for the spring semester of 2005. At the conclusion of the course, students were administered a questionnaire to assess their utilization of the audio files, perceived benefit and impact on attendance. Participating faculty were likewise asked to provide an estimate of attendance as compared to the previous year. Lastly, exam scores were compared to the previous year’s class. Results: One-hundred five students (100%) returned completed questionnaires. Ninety-six respondents (91%) reported using the audio files as a replacement to attending lecture with 22% replacing lecture attendance with the audio file often (16-30 times during the semester) or always. Likewise a majority of students (82%) agreed with a statement that the availability of audio files aided their learning, with an equal percentage reportedly using the audio files as a resource to study for exams. A poll of faculty who had taught in the previous year unanimously estimated an attendance decrease of least 25%. Average exam scores for verses 2004 showed a statistically significant (p < .0001) improvement, 80.92 and 76.97 respectively. Implications: The availability of lecture audio files had a negative impact on lecture attendance, however, exam performance improved markedly.

**Effectiveness of Unannounced Electronic Assessment Quizzes to Enhance Student Learning.** Eunice P. Chung, Western University of Health Sciences; Sheryl L. Chow, Western University of Health Sciences. Objective: To assess the effectiveness of electronic assessment quizzes to enhance student competency of the core learning objectives. Methods: Eight assessment quizzes were incorporated into a cardiovascular pharmacotherapeutics course to assess competency of the core learning objectives as measured by the overall performance in the course. The unannounced assessment quizzes were administered electronically to facilitate immediate feedback and discussion. Participation was optional as the assessment scores did not contribute towards the final grade. 127 students were evaluated for performance based on their total accumulated points and grade. A final score ≥180 of 200 total points was defined as an A letter grade. The course performance for students who took the majority of assessment quizzes (≥7/8) was compared to students participating in <7 assessment quizzes. Student comments regarding assessment quizzes in the final course evaluation were also reviewed for qualitative assessment. Results: The frequency of 127 students receiving ≥180 points was significantly different between those who participated in ≥7 assessment quizzes compared to <7 assessment quizzes (10.2 vs. 6.3%, p < 0.05). A total of 28 students provided specific comments regarding the assessment quiz on the final course evaluation. There were 17 (60.7%) positive comments, 7 (25.0%) negative comments, and 4 (14.3%) with a mixture of positive and negative comments. Implications: Preliminary data demonstrates a clear association between students who participated in a majority of the assessment quizzes and superior performance in the course. Furthermore, the integration of this teaching tool was considered useful by the students given the favorable feedback on the qualitative assessment.

**Evaluation of Advanced Electives in Private Ownership and Chain Operated Community Practice.** Rick A. Sylvies, Western University of Health Science; Robb W. McGory, Western University of Health Science. Objective: To compare course satisfaction and self-assessment of community management skills upon completion of 12 week advanced elective (AE) clerkship. Methods: AE tracts in clinical practice, research or community practice are completed by students in P4. The community tract was divided into private (PO) or chain ownership (CO) with a single facilitator for PO and numerous store pharmacists for CO. Specific exposures were pharmacist in charge (PIC) duties, state board expectations, exploring community resources (CR) and general management issues. A course evaluation was completed for PO and CO containing specific areas for PIC, CR and management skills (MS). A grading scale of 1(worst) to 5(best) was used to evaluate each question, with a lack of answer earning 0 points. Responses were totaled for each student and averages were calculated (± standard deviation) for total score, MS and PIC. Averages were compared by two-tailed T-test. Results: 6 of 9 PO students and 23 of 31 CO students completed the survey. Several CO students didn’t complete the MS section as they didn’t feel they were given training. The average score was significantly different for total score (PO 153 ± 12.8 vs. CO 115 ± 27.8; p < 0.00001) and MS (PO 73.8 ± 7.0 vs. CO 40 ± 22.2; p < 0.00001) but not PIC (PO 61.3 ± 4.7 vs. CO 56.7 ± 4.8). Implications: Students who were mentored by an experienced PO faculty gave the AE experience better evaluations and felt they developed better understanding of management skills. CO may not be an optimal environment to learn community management principles.

**Evaluation of Changes to the Introductory Pharmacy Practice Experience Course.** Michelle Holt-Macey, Wilkes University; Kristen Dulick, Wilkes University. Objective: To assess changes made to the Introductory Pharmacy Practice Experience course. The challenges posed by previous course design and content included difficulty recruiting practice sites/preceptors in quantities and varieties desired and student dissatisfaction with course assignments. The course was redesigned to better accommodate the needs of preceptors and students. Methods: Previously students completed two 6-week rotations, some having two community sites due to limited non-community sites. The new design allows each student to experience two distinct rotations plus a campus-based rotation. New assignments were created which better reflect the current curriculum and are largely graded by full-time faculty. Preceptors do less grading, allowing them more time with students. Students and preceptors were surveyed at the conclusion of the course to evaluate the changes. Results: The survey response rate was 76% percent from preceptors and 100% from students. 79% of preceptors felt they were able to spend adequate time with students and 90% felt students gained more site experience from having fewer onsite assignments to complete. Overall, 100% of preceptors were satisfied with the course changes. 94% of students agreed rotations helped them gain practical experience in different pharmacy settings, and 90% agreed they were a useful stepping stone in their progression towards becoming a professional. 78% of students felt the overall quality of the course was high. Implications: It is hoped that reducing preceptor burden increases satisfaction and aids in recruiting and retaining sites. The
with academic performance was observed in one area. Students with changes in all other dimensions were non-significant. Correlation preference for reflective versus active learning ($p = 0.0002$), while GPAs versus those who were balanced in the sequential/global dimension ($GPA 3.60$ vs. $3.07 p = 0.018$). Implications: As students enter into the university setting, LS do not significantly change. However, a change was noted toward a more reflective style. In general, no strong correlations were made between LS and academic performance.

Faculty and Student Learning during Hurricane Katrina: Response during a natural disaster. Roger D. Lander, Samford University; Michael D. Hogue, Samford University. Intent: During the days following landfall of Hurricane Katrina, the authors created a pharmacy response plan as part of the local health department emergency response to the healthcare needs of evacuees. Methods: An emergency protocol granting prescriptive authority to faculty was executed by the County Health Officer for non-controlled prescription medication. Faculty-led clinics were established in three separate emergency facilities in order to provide prescriptions to evacuees. Students completing their ambulatory clinic rotation and student and faculty volunteers were mobilized to provide medical triage, patient assessment, and medication history evaluation. Faculty then issued prescriptions for needed medication. Patients were also given information regarding local health services, including pharmacies, counseling services, urgent care facilities, and emergency referrals. Students also did disease monitoring, including blood glucose and blood pressure measurement. In order to assess the impact of this activity on student learning and professional maturation, students were asked to keep a reflective journal of their experiences and to interpret the impact of their experiences on their professional development and attitudes. Students and faculty also kept a log of interventions, prescriptions written, and the purpose of the patient visits. Results: The authors found that students were highly motivated to serve during such a natural disaster and its aftermath, reflected positively on the experience, and self reported their enhanced understanding of the pharmacist as a health care provider during such disasters. Implications: Participating in emergent care delivery to disaster victims enhances the professionalism of students, as it reinforces their desire to serve.

From Patient Care Experiences to the Practice of Pharmacy—Evolution of a Series of Pharmacy Care Skills Courses. Susan W. Miller, Mercer University School of Pharmacy. Patient Care Experiences I - VI are a series of required courses in the P1 through P3 year that were originally designed for the purposes of offering introductory pharmacy practice experiences and opportunities for practicing pharmacy care skills. The series of courses was developed using the satisfactory/unsatisfactory (S/U) grading system and offered several oral examinations or presentations as the means of summative assessment. During the five years that this series of courses has been offered, the content has changed to include regulatory accountability, current topical lectures, case study and journal article discussions, service-learning activities, writing assignments, on-line calculations quizzes, and quizzes on most commonly used drugs, non-prescription products and dietary supplements. The purpose of these added assessments is to reinforce concepts taught in the disease state modules and the foundational courses of the P1 year (biostatistics, patient counseling, areas of pharmacy practice, quality-of-life measures, and pharmacoeconomics). Based on course evaluations, student-focus group input, faculty input, and the evolution of the course content, the course series will change in name to The Practice of Pharmacy I - VI and convert to a traditional grading format (A - F) for the academic year 2006-2007. A description of
the evolution of the course content, course assessment data, and the rationale for the change in the title of the series of courses and grading system will be presented.

Health Promotion and Wellness Topics in Pharmacy Education. Thomas L. Lenz, Creighton University; Michael S. Monaghan, Creighton University; Elizabeth A. Hetterman, Creighton University. Objectives: The AACP CAPE Educational Outcomes stress the importance of teaching public health topics which include health promotion (HP), wellness and disease prevention as part of training future pharmacy practitioners. The objective was to assess the number of pharmacy schools who incorporate these topics into their curricula. Methods: An electronic survey regarding HP topics was developed and sent to the Curriculum Committee Chair at each of the 89 pharmacy schools in the United States. The survey defined HP as topics that address nutrition, exercise, weight loss, smoking cessation and alcohol use. Results: 50/89 (56%) pharmacy schools responded to the survey. 4/50 (8%) offer at least one required course on a HP topic. 7/50 (14%) offer at least one elective course on a HP topic. 1/50 (2%) offer a required course that incorporates more than one HP topic into that course. A total of 5 required and 9 elective courses were identified from the responses. Nutrition was the most commonly offered required course topic (4/5) followed by smoking cessation (2/5), exercise (1/5), weight loss (1/5) and alcohol use (0/5). Implications: Few pharmacy schools are addressing the CAPE educational outcomes to promote public health education through health promotion, wellness, and disease prevention courses. More courses on HP topics must be offered to pharmacy students as they will be highly accessible to the public as pharmacists and will be able to offer education to enhance public health focused on the prevention of chronic diseases.

Hurricane Katrina Disaster Relief Elective Rotation: A Study in Growth, Compassion and Professionalism. Allison M. Chung, Auburn University; Gerald Thomas, Auburn University; Debbie C. Byrd, Auburn University. Intent: To develop a disaster relief elective that would refine problem solving, self-directed and service learning skills. Process: A disaster relief experiential elective rotation was developed for fourth year pharmacy students. The syllabus, created largely by students, defined the rotation objective as assistance with disaster relief efforts in whatever capacity students felt they could best serve. Students were instructed to use their skills as pharmacy students to the best of their abilities and as efficiently as possible. Students provided daily reflections and met weekly with the preceptor to review objectives, progress, and problems. Students also delivered a Professional Seminar Series (PSS) to the entire pharmacy school regarding disaster impact, rotation development, rotation accomplishments, and disaster relief organizations. Outcomes: Students independently identified areas of pharmacy need including a charitable pharmacy, an International Medical Alliance emergency medical clinic where they established a pharmacy, and a relief shelter where they assisted in obtaining medications and supplies. Students gained a direct education regarding the organization and structure of disaster relief organizations, their roles, and how to provide volunteer services. Implications: Students served disaster relief victims in many ways that may not be measurable, but the immeasurable gains were enormous: professional maturity, initiative and flexibility to identify areas where they could be of most assistance and actively participate. The students gained an invaluable experience that will continue to provide them with a sense of professional servitude and humanity.

Impact of Drug Information Case Studies on First Year Pharmacy Students. Lama H. Nazar, Western University of Health Sciences. Objective: To determine the impact of a series of drug information cases on the level of DI skills for first year pharmacy students. Methods: After the completion of the drug information class on DI tertiary resources, all first year pharmacy students were required to complete a series of 6 drug information case studies. One DI case was e-mailed to the students every other week. Each DI case included a patient scenario associated with a DI query that addressed a specific area (e.g., dosing, adverse events). Students were allowed to use online or hardcopy tertiary resources. In addition, students were advised to discuss their cases with their preceptors at their introductory experiential site. Following the completion of the case studies, students were asked to complete a survey. Results: The survey was e-mailed to 110 students; 83 responded back. Ninety percent of the students indicated that the DI cases advanced their DI skills, 84% agreed that the cases increased their interest in DI, and 89% recommended this exercise for next year’s students. However, only 22% of the students discussed the cases with their preceptors. Conclusions: Incorporating drug information case studies for first year pharmacy students improved their DI skills. Factors should be identified to facilitate more clinical discussions between pharmacy students and their preceptors during their introductory experiential program.

Impact of a Third Year Pharmacotherapeutics Lab on Clinical Skills in the Fourth Year. Jane R. Mort, South Dakota State University; Janet R. Fischer, South Dakota State University; Michael D. Lemon, South Dakota State University. Objective: Determine the impact of a third year pharmacotherapeutics lab on subsequent clinical skills of fourth year students. Methods: Clinical faculty completed a clinical skills evaluation tool for students they precepted on the first Advanced Pharmacy Practice Experience (APPE) of the fourth year. The tool examined nine clinical skills on a five point Likert scale (1 being always and 5 being never). The tool was completed in the third week of the first APPE. The evaluation was performed the year before and the year after the lab course was implemented. Not all students had their first APPE with clinical faculty and therefore this is a sample of convenience. The lab course included mock ambulatory care experiences and evolving case studies. The lab was designed to improve application of knowledge and better prepare students for APPE’s. Results: The sample involved 39.7% (n = 23) of the class who did not have the lab and 39.3% (n = 22) of those having the lab. Those students having the lab scored better (i.e., lower mean scores) on eight of the nine skills examined compared to those not having the lab. The score for the one remaining item did not change. Students taking the lab had a lower clinical skills mean compared to those who had not had the lab (2.6 and 2.9, respectively; p = .05). Implications: The pharmacotherapeutics lab appears to impact students’ clinical skills. Improvement in these areas will help students gain greater knowledge from the initial APPE.

Implementing a Successful First Year Pharmacy Practice Course in a New School of Pharmacy at a Public University. Renu F. Singh, University of California, San Diego; Brookie M. Best, University of California, San Diego; Candis M. Morello, University of California, San Diego. Objectives: Two junior clinical faculty developed a Pharmacy Practice course (PPC) in a new pharmacy school spanning three quarters in the curriculum’s first year. Our objective was to measure the course’s effectiveness in meeting the goals of each evaluated component and to evaluate student perceptions of the course. Methods: After reviewing literature and consulting internal
and external faculty, the content included in PPC was self-care therapeutics, communication skills, physical assessment, and pharmacy calculations using didactic lectures, self-study, and innovative hands-on weekly conferences/workshops using case-based role plays with self-care products and devices donated by community pharmacies. Students were evaluated by a case-based, short-answer midterm and final exam (worth 40% and 50%, respectively), participation in conferences/workshops (pass/no-pass), three calculations quizzes (pass/no-pass), and one assignment (worth 10%) per quarter. Students also provided scaled responses to ten course evaluation questions. **Outcomes:** The mean PPC course exam score over three years (2002-2005) was 87% (mean range: 85.9-88.7), with a 99% (80/81) overall course pass rate. Student course evaluations consistently documented that the course format was well organized and content intellectually stimulating. Students also strongly felt that correlations were provided that demonstrated applicability of material presented. **Implications:** Overall, course development was successful; students performed very well and evaluations were positive. However, due to the time-intensive structure, and the need for clinical faculty to succeed on academic tracks, future challenges to course chairs include logistics of accommodating a larger class size and enhancing the unique conference format to best use a new clinical simulation laboratory.

**Implementing nonprescription drugs and self care into an integrated pharmacy practice laboratory.** Emily M. Ambizas, St. John’s University; Joseph M. Brocavich, St. John’s University; Joseph V. Etzel, St. John’s University. **Objective:** To incorporate nonprescription medication instruction into an integrated, interactive pharmacy practice laboratory. **Methods:** The pharmacy practice laboratory which consists of four pharmaceutical compounding sessions, four biomedical/pharmacology sessions and four patient assessment/simulation sessions each semester for three semesters was structured for the last semester of the current laboratory curriculum to incorporate nonprescription triage, along with aspects of self-care and appropriate dietary supplements. Students were assigned readings on various self-care topics to be covered. A pre and post-student evaluation was administered in the areas of self-care and patient assessment. **Results:** Self-care topics were incorporated in the laboratory in the Fall 2005 semester. During the first session students were given an introduction to non-prescription medications, self-care, and herbal supplements, as well as an introduction to patient assessment and triage. Subsequent sessions included patient case scenarios on various self-care topics. Students were required to adequately evaluate patients with regards to these conditions. The mean scores of the pre and post-evaluations were 66% and 75%, respectively (n = 138, p = ≪0.005) **Conclusion:** The therapeutic use of nonprescription topics was successfully incorporated into the pharmacy practice laboratory. Students successfully performed well in the self-care assessment and this improvement in competency was reflected in their quiz scores. This new revision provided students with a more active approach to learning issues of self-care and nonprescription medications.

**Improving student understanding of respiratory disease management.** Gary Milavetz, University of Iowa; Jeffrey C. Reist, University of Iowa; Lucinda M. Harns, University of Iowa College of Pharmacy. **Background:** Historical collegiate assessment data indicate approximately 50% of students can demonstrate effective use of a metered dose inhaler. Additional feedback from student course assessment suggests that the majority of students are unable to apply pulmonary function test information to therapeutic decision making. **Objective:** To improve the students’ understanding of respiratory disease management, allow hands-on practice of respiratory delivery devices and more closely tie together the therapeutics knowledge with pharmacy practice laboratory skills. **Methods:** We devised a lab session to accomplish the objectives. Lab partners assessed each other’s use of metered dose and dry powder inhalers using a checklist. Lab stations were set up to allow students’ hands-on experience with other respiratory devices (nebulizers, chambers etc.). Students observed volunteers performing pulmonary function tests with interpretation of results in the context of changes induced by drug therapy. We then assessed the students’ perception of the laboratory experience on a 1-5 scale with 5 representing “very helpful.” **Results:** 102 of 104 students complete the survey. 98% of students found the hands-on experience with the devices helpful or very helpful, median response = 5. 69% of students found the PFT observation helpful or very helpful, median response = 4. 97% of students felt they could apply drug delivery information presented in the therapeutics course in the practice lab experience, median response = 4. **Conclusions:** This collaborative effort between the therapeutics course and our practice lab demonstrates that students’ knowledge and skills can be favorably improved by linking the two courses together.
twice weekly, addressing a new topic each week. The first weekly class meeting consisted of a lecture/discussion format, while the second weekly meeting involved practical exercises and role playing to emphasize key points. The intent of this format was to teach and develop specific skill sets. Topics included Leadership Theory, Student Organizations, Self Assessment, Negotiating Skills, Presentation Skills, Professional Writing, Social and Business Etiquette, Ethics, Networking, Professional Dress, and Conflict Resolution. Early in the course, students took a Myers Briggs test to determine their leadership styles. Guest experts were frequently utilized. The course was coordinated by Rutgers faculty and facilitated by Post-Doctoral Fellows. Results: At the semester’s conclusion, students assessed the course through an anonymous survey and a University-conducted evaluation. Feedback was very positive, as evidenced by the reported improvement in skill set proficiency, the high degree of satisfaction with the course, and the number of students who recommended the course for their peers. Implications: Based on the feedback from the survey and the course evaluation, the course was very successful. It will be offered again with minor improvements. Faculty at other schools of pharmacy could offer a similar course at their respective institution.

National Curriculum Survey: Status of Instruction in Nonprescription Drug Therapy. Tim R. Covington, Samford University. A baseline national survey was conducted in 2002 to determine the status of school of pharmacy curricula addressing nonprescription drug therapy. The survey was repeated in 2005 and findings compared with 2002 survey data. The primary objectives of the 2005 survey were to (1) compare results with the 2002 survey in five domains (i.e., general, course status, course content, course instructor and course instructional methodology), (2) address the preparation of pharmacy students to serve in expanded practice roles involving pharmacist-assisted self-care, and (3) raise awareness of this critical knowledge system in pharmacy education. The methodology employed a mailed questionnaire directed to the coordinator/lead teacher in all curricular venues addressing nonprescription drug therapy. The survey was mailed to every accredited U.S. pharmacy school. Data from 2005 was aggregated and compared to 2002 survey data. Results will be presented in poster format.

New Faculty Roles: The Details of Implementing a Blended Learning Approach on Multiple Campuses. Lisa D. Inge, University of Florida – Gainesville; Carol Anne Motycka, University of Florida - Gainesville; Kelly L. Sclaro, University of Florida - St. Petersburg; Renee L. Rose, University of Florida - Orlando. Objective: To describe the faculty roles and methods necessary for implementing a blended learning approach on multiple campuses. Methods: New faculty positions, titled Campus Director and Assistant Director, were established to develop the blended learning environment at each distant site of the University of Florida College of Pharmacy. One major role created for these new faculty members was course liaison which carries the responsibility of arranging and organizing the logistics of each course with the course coordinators at the main campus in Gainesville. Together, these faculty members are tasked with implementing a plan to present the course content in a parallel manner on all campuses. Results: A structured process has been developed from which the course coordinators and course liaisons obtain the necessary information to support the course goals as well as specific technology and faculty requests. This plan includes regularly scheduled meetings prior to the course semester to obtain essential course information concerning faculty, technology, and student assessment. Standardized forms and websites to aid in the coordination process were also developed to allow specific needs to be documented and distributed between campuses. These tools help the directors create separate campus calendars while maintaining the established course goals and parallel course delivery with the Gainesville campus. Implications: The incorporation of new faculty roles and a structured process for obtaining information pertaining to each course has assisted in a standardized method for establishing the necessary technology and faculty for course delivery across multiple campuses.

Outcomes of Medication Therapy Management Services (MTMS) Assignment with Student-Patient Interaction by Practicing Pharmacists Enrolled in Post BS Doctor of Pharmacy Program. Stuart J. Beatty, The Ohio State University. Objective: To determine how recent graduates from Schools of Pharmacy (SOP) across the U.S. perceive their pediatric training, and to assess their comfort level with pediatric topics. Results: A total of 275 medications (10.6 ± 4.1/patient) were reviewed, and 121 potential medication-related problems (4.8 ± 2.0/patient) were identified. Of the 121 problems, students resolved 20 (16.5%) during the medication review. An additional 42 of 73 (57.5%) problems were addressed by PCPs even though students were not required to send communication to the PCP. On assignment due date, some students were anticipating PCP feedback; many had scheduled follow-up appointments with their patients. Implications: Student participation exceeded stated requirements. Assignment will be adjusted based on feedback and utilized in subsequent years. In the future, this assignment may be used as an interactive continuing education program for pharmacists.

Pediatric Training in U.S. Schools of Pharmacy: Perceptions From Recent Graduates and Competency Assessment. Karen Weise, University of California at San Francisco; Cathi Emily Denney, University of California at San Francisco. Objective: To determine how recent graduates from Schools of Pharmacy (SOP) across the U.S. perceive their pediatric training, and to assess their comfort level and competency with pediatric topics. Methods: In September of 2005, a survey was sent to Directors of ASHP-accredited pharmacy practice (PP) residency programs for distribution to their (2005-2006) resident class. This survey group was chosen, as it was likely to represent recent SOP graduates from across the U.S. Survey questions included demographics, perceptions of pediatric training (required, elective, clerkship), comfort level with pediatric topics and basic competency questions. Results: There were (308/893, 34.5%) respondents, primarily graduating in the last 3 years (92.9%), and representing 81.6% of all SOPs. A majority, 86.4%, indicated that required pediatric coursework accounted for less than 5% of their curriculum. Frequently covered topics were dosing/administration, immunizations, over-the-counter (OTC) medications,
asthma and otitis media. Comfort level in selecting and counseling on a pediatric OTC product was superior to that of counseling on pediatric disease states and prescription products. Although 38.6% of residents reported that a pediatric elective was offered at their SOP, only 9.7% took one. Similarly, 91.1% reported that a pediatric clerkship was available, but only 37.8% took one. The average score on the pediatric competency exam was 61.5%, with areas involving prescription drug dosing and pharmacokinetics scoring poorly. Implications: Results of this survey indicate that additional required curriculum in pediatrics may be necessary to improve graduates understanding of certain pediatric topics and overall competency.

Pharmacy Student Attitudes about Plagiarism Before and After an Interactive Workshop. Jennifer L. Kirwin, Northeastern University; Todd A. Brown, Northeastern University; Debra A. Copeland, Northeastern University. Objective: Publications in the medical field exist describing student attitudes toward academic honesty and plagiarism, but similar data in Pharm.D. students is lacking. The purpose of this project was to evaluate Pharm.D. student attitudes about plagiarism. Methods: Students entering the fifth (P3) and sixth (P4) years of a 6-6 entry level Pharm.D. program attended an interactive workshop detailing the definition, examples and avoidance strategies for plagiarism. Surveys were administered before (“PRE”) and after (“POST”) the workshop to assess changes in students’ understanding of the definition, associated penalties and their overall attitudes on plagiarism. Results: 138 students completed the PRE while 125 completed the POST. Analysis of PRE revealed 85.5% of students had been exposed to information about plagiarism prior to the session and 77.5% stated they knew the definition of plagiarism. 54.3% of students agreed that students who plagiarize material do not learn as much as other students, compared to 60.8% of students in the POST (p = 0.004). Following the workshop, students who reported that unintentional use of statements from another source was not plagiarism was reduced (32.8% PRE vs. 20.7% POST (p = 0.008)). 51.1% of students felt that pharmacy students and pharmacists should be held to a higher ethical standard than non-health care professionals. Implications: Despite years of education, 22.5% of students surveyed did not know the definition of plagiarism prior to the workshop. Surveys revealed the workshop had a modest impact on student understanding of what constitutes plagiarism and may have helped those students avoid plagiarism in the future.

Predicting Academic Success in Pharmacy School. Katherine Lewis Janeszk, CVS; Wayne E. Buff, South Carolina College of Pharmacy – USC Campus; Richard M. Schulz, South Carolina College of Pharmacy – USC Campus; L. Clifton Fuhrman, South Carolina College of Pharmacy – USC Campus. The objective of this study was to assess the relationship between pre-admission academic and non-academic variables typically found in a student application and academic success in pharmacy school. Study design was a historical cohort without control group. Graduates of the 2003 and 2004 pharmacy school classes at the University of South Carolina College of Pharmacy (n = 121) served as subjects. Both bivariate and multivariate analyses were used to assess this relationship. Academic independent variables from high school included SAT-Verbal, SAT-Math, SAT-Total, and class rank. Academic independent variables from college included previous degree, college major, and entrance GPA. Non-academic independent variables included location of permanent residence (urban/rural), pharmacy experience, and demographics. Academic success was measured by multiple dependent variables, and included First year Fall GPA (GPA_P1-F), First year Spring GPA (GPA_P1-S), Exit GPA, P-I_Deficiencies, defined as any grade below C in the first year, and Total Deficiencies, defined as any grade below C while in pharmacy school. Bivariate analysis resulted in the following variables associated with at least one measure of academic success: previous degree, location of permanent residence, race, SAT-Verbal, SAT-Math, SAT-Total, and entrance GPA. Multivariate analysis revealed that entrance GPA was significantly associated with all outcomes measures, SAT-Verbal was significantly associated with GPA_P1-F, GPA_P1-S, and exit GPA. Previous degree was significantly associated with GPA_P1-F. The model explaining the most variance was exit GPA with entrance GPA and SAT-Verbal as predictors (R2 = 0.70). Entrance GPA and SAT-Verbal Scores are readily available measures, and consistently strongly predict academic success in pharmacy school.

Redesign and Assessment of an elective Women’s Health Course. Leisa Marshall, Mercer University. Objectives: Increase active learning and class participation in a Women’s Health course and assess changes using faculty evaluations of student performance and student course evaluations. The purpose of the course is to increase awareness of women’s health topics and to prepare students to provide pharmacy services to female patients. Methods: Course format, delivery and assessments were revised to assess and reward active learning and class participation, 60% of the redesigned course grade. Active learning strategies incorporated included cooperative learning groups, peer teaching, drug information exercises using electronic resources, case studies, and writing in class. Faculty evaluated participation, oral and written exercises at multiple time points for timely feedback. Students evaluated the course with a survey developed for the redesigned course with open-ended items and 16 close-ended items concerning content, delivery and active learning exercises. Results: 33 students completed the course Spring 2005. Course evaluations were favorable, with means of 3.38 (SD 1.08) to 4.5 (SD 0.58) on a 5-point Likert scale on 16 close-ended items. Open-ended items revealed that students had formed definite ideas regarding provision of pharmacy care to females. The mean grade for participation and active learning exercises was 91.97/100 (SD 1.79). However, the mean grade for the remaining 40% from two examinations was 80.28 (SD 9.4). Implications: Students were motivated to perform well in active learning exercises and class participation when faculty provided multiple written assessments representing a high percentage of the course grade. Survey results indicated that students preferred the redesigned format to traditional lectures.

Retrospective Review of the Potential Effect of a ‘Plus/Minus’ Grading System on Students’ GPA and on Class Ranking. James D. Scott, Western University of Health Sciences; Wallace J. Murray, Western University of Health Sciences; Jeany K. Jun, Western University of Health Sciences; Stephen A. O’Barr, Western University of Health Sciences; David Hacker, Western University of Health Sciences; Mark Iannuzzo, Western University of Health Sciences. Objectives: Western University College of Pharmacy recently changed from a High-Pass, Pass, No-Pass system based on percent score (80-89% = Pass, ≥90% = High Pass) to an A/B/C/U (ABC GPA) grading system. Some advocated a ‘plus/minus’ A/B/C/U system (+/−GPA). The Academic Performance and Standards Committee (AP&S) initiated this study to determine whether differences between the systems would impact grades and class ranking. Methods: The summary grades (percent scores) for the classes of 2004, 2005, and 2006 were converted to the ABC GPA and ±GPA systems. The differences between the three systems were analyzed using the paired t-test. Results: For the 275 students included, the mean percent score was 88.98 (+2.79). The mean ABC GPA was 3.452 (+0.28) and the
mean ± GPA was 3.436 (±0.25); this difference was statistically significant (p < 0.0001). The ±GPA system resulted in a reduction in GPA in 60.6% of the students compared to the ABC GPA (mean reduction = 0.0473 ± 0.0334, range = 0.0014-0.14). Increases in GPA were seen in 33.9% of students (mean increase = 0.0385 ± 0.0279, range = 0.0029-0.15). Class ranking decreased for one student. Implications: Even though the ±GPA system seems to offer greater discrimination when comparing grades, the AP&S concluded that it offered no advantage over the ABC GPA system, and recommended retaining the ABC GPA system. A prospective study would be needed to determine if a ±system offers more motivation for students, which could result in improved grades.

Rx for Change: Clinician-Assisted Tobacco Cessation-Evaluation of a Train-the-Trainer Workshop for Pharmacy Faculty. Robin L. Corelli, University of California at San Francisco; Karen S. Hudmon, University of California at San Francisco; Christine M. Fenlon, Yale University; Lisa A. Kroon, University of California at San Francisco; Kenneth W. Lem, University of California at San Francisco; Alexandre V. Prokhorov, University of Texas/MD Anderson Cancer Center. Background: Train-the-trainer models are increasingly being used to disseminate educational programs for health-care providers, yet few studies have evaluated the impact of this approach. Objective: To assess pharmacy faculty members’ post-training perceptions of the Rx for Change program materials and train-the-trainer workshop. Methods: During 2003-2005, 188 faculty members representing 89 schools of pharmacy attended a train-the-trainer workshop (15 hours conducted over 3 days) and completed a post-training survey assessing key factors hypothesized to be associated with program adoption. Results: Prior to the workshop, 49.5% of participating faculty had received no formal training for treating tobacco use and dependence, and 46.3% had not taught tobacco cessation to students. On average, participants reported that 30.3% of the curriculum content was new [to them], 46.0% was a necessary review, and 23.6% was an unnecessary review. When asked to rate their post-training confidence for teaching the Rx for Change materials, 73.3% responded “high,” and 26.7% responded “moderate.” Compared to pre-training, there was an increase in self-rated abilities to teach tobacco cessation training to pharmacy students (p < 0.001). The materials were viewed as either moderately (43.9%) or highly (55.0%) compatible for integration into existing curricula, and 68.3% indicated a high likelihood of program adoption in the upcoming academic year. Nearly all participants (97.3%) would recommend the workshop to other pharmacy faculty. Conclusion: Participation in a train-the-trainer workshop increased faculty confidence for providing comprehensive tobacco cessation education to pharmacy students. The majority of participants indicated high likelihood of adopting the Rx for Change program.

Student assessment of the accuracy of population-based pharmacokinetic parameters in adult patients receiving Vancomycin therapy, Keith N. Herist, The University of Georgia; Courtney Crosby, The University of Georgia; Michelle McNell, The University of Georgia; Henry H. Cobb, The University of Georgia; Chris L. Cook, The University of Georgia. Objectives: Using the Statistical Data Analysis tools within Microsoft Excel 2003, fourth-year clerkship students developed a monitoring program for patients during their hospital rotation. Methods: Pharmacokinetic data for patients dosed with Vancomycin by clerkship students was collected. The pharmacokinetic data was recorded in an Excel worksheet and assessed with the statistical analysis software, employing both the descriptive and regression analysis packages. Results: The standard population parameters for Vancomycin from the literature are kel = (0.00083 × CRCL) + 0.0044 with a volume of distribution of 0.7 to 0.9L/Kg. The results of the student data was kel = (0.0009 × CRCL) + 0.001 with R2 = 0.66. The average student population volume of distribution was 0.87L/Kg. The population age range was 24 years to 90 years. The weight range was 121 to 244 pounds. The population was 33% female and 67% male. The total number of patients receiving pharmacokinetically dosed Vancomycin with available peak and trough drug levels during the rotation was fifteen. Conclusions: Utilizing Excel, important statistical information is available for monitoring results of Vancomycin pharmacokinetic dosing program. The student-developed program was found to be an excellent teaching and clinical tool for assessing predictive pharmacokinetic accuracy on a specific population and practice setting. In this introductory study, the program accurately predicted the drug levels of 66% of the population studied. This finding indicates that monitoring of serum drug levels with sustained therapy is necessary for a successful service and for pharmacokinetic dosing accuracy.

Student Opinion Regarding the Importance of Student to Preceptor Ratio. Constance M. Pfeiffer, Rutgers University; Donald K. Woodward, Rutgers University. Objective: To determine if students consider student-preceptor ratio an important indicator of advanced practice experience (APE) quality. Method: An online survey was developed and emailed to students midyear through the fourth professional year. The survey included questions relating to student-to-preceptor ratio, activities that facilitated learning, and features of the APE that determined quality. Results/Outcomes: The survey response rate was 61.5% (N = 99/161). Eighty-four percent of respondents reported that they had completed at least one APE at each of the student-preceptor ratios. The preferred ratio was 2:1 (52.5% of respondents), followed by 3:1 (31.3%), and 1:1 (16.1%). Students reported that the most important factor in determining APE quality was contact time with the preceptor, followed by APE workload and future career goals (i.e. if they expected to practice in the area of the APE). Most valuable activities were formal case discussions and opportunities for presentations. Implications: In 2005, ACPE released the 2006 draft accreditation standards which prescribed a student-to-preceptor ratio of 2:1, preferably 1:1. Significant concern has been raised about this requirement and whether evidence supports a specific ratio. This survey found that students preferred the 2:1 ratio, in agreement with the ACPE-proposed standard, although a 3:1 ratio was preferred over 1:1. Preceptor contact time may be more important than ratio, as this was identified by students as the most important indicator of APE quality.

Student Perceptions of Participation in a Simulated Primary Care Clinic. Erin C. Raney, Midwestern University - Glendale, Dana L. Singla, Midwestern University - Glendale. Objective: The objective is to describe the evaluation of a simulated primary care clinic model for the assessment of clinical skills in a Doctor of Pharmacy curriculum. Methods: Disease Management I and II is a core course sequence offered in the final two didactic quarters of the curriculum. The assessment of individual student’s patient interviewing, vitals assessment, written documentation, and verbal presentation skills occurs in a simulated pharmacist-managed primary care clinic. Students review a mock medical record and direct a patient visit by interviewing and performing vitals on a standardized patient. This is followed by the documentation of findings and therapeutic recommendations in a SOAP note and a verbal presentation to a clinical faculty member. Students were asked to evaluate the experience by completing a voluntary survey composed of statements scored on
a five-point Likert scale as well as open-ended questions. The results were compiled and reported using descriptive statistics. **Results:** Fifty-six of 123 students (45.5%) completed the evaluation of the simulated clinic experience. Forty-eight (85.7%) of the respondents “agreed” or “strongly agreed” that the experience would help them prepare for experiential rotations. Forty-eight (85.7%) students “agreed” or “strongly agreed” that interviewing standardized patients was preferred to role-playing with fellow students or faculty. Overall, students appreciated the real-life scenario and the ability to improve their interviewing skills. **Implications:** The simulated primary care clinic model was well-received as a comprehensive assessment of the varied clinical skills necessary to provide care in a primary care environment.

**Student's Opinion of Acquired Skills from Rx for Change Training - Mercer Southern School of Pharmacy.** Julie C. Kissack, Mercer University. Rx for Change tobacco cessation training is a program developed by University of California San Francisco faculty, funded by the National Cancer Institute and taught in pharmacy schools. Didactic lecture, case presentation and discussion and manipulation of nicotine replacement products comprise the training. The goal of this prospective evaluation was to determine students’ level of confidence in their knowledge base about nicotine dependence, smoking intervention, and pharmacotherapeutic treatments to enhance a quit smoking attempt. **Methods:** Students completed anonymous pre- and post-program surveys in the Fall 2005. A 6 hour Tobacco Cessation Curriculum was delivered in a required didactic class. The surveys assessed perceived overall counseling skills abilities, counseling skills for smoking cessation (i.e. Ask, Advise, Assess, Assist, Arrange) and confidence levels of counseling and intervention skills. **Results:** Eighty-five (60%) of the one hundred forty-two students enrolled in the class completed both surveys. The linked data of pre and post program self-evaluations revealed that twenty-two percent of students rated their overall ability to help patients quit smoking as good, very good or excellent before the training versus 83% after the training. Eighty-six percent of students felt moderately confident, very confident or extremely confident to prepare for experiential rotations. Forty-eight (85.7%) students appreciated the real-life scenario and the ability to improve their interviewing skills. **Implications:** Training modules and courses should be developed to teach pharmacy students about substance abuse specific skills, techniques, and attitudes related to patient education, patient/peer intervention, and the process of recovery. This will enhance their personal and professional development.

**Survey of colleges of pharmacy: the presence, administration, and outcome of a disciplinary process.** Elena M. Umland, University of the Sciences in Philadelphia; Cynthia A. Sanoski, University of the Sciences in Philadelphia; Andrew M. Peterson, University of the Sciences in Philadelphia. **Objectives:** The purpose of this study was to determine the types of judicial processes used within US colleges of pharmacy and how these processes would respond to a range of academic integrity violations. **Methods:** A survey was developed using SurveyMonkey® and distributed to 93 College of Pharmacy Deans. The survey contained questions regarding the structure/function of their honor codes or disciplinary processes. It also contained scenarios describing violations of academic integrity ranging from minor plagiarism to exam cheating. Respondents were asked to select the most likely academic and disciplinary sanctions that would be imposed for each scenario and how these sanctions might change as students progressed through the various years of their program. **Results:** Fifty-five responses (59.1%) were received. Forty-eight (87.3%) respondents reported having an honor code and 100% reported having a disciplinary process. Administration and oversight was provided by faculty in 87.8% of institutions having an honor code. Student responsibility for honesty/ethical behavior was the most commonly reported strength of the honor code while the most commonly reported limitation was hesitancy of students to bring charges against peers. For most of the scenarios, failure of assignment, failure of course, suspension, and expulsion were more common for students in their 5th and 6th years compared to students in their 1st and 3rd years. Sanction severity also increased in parallel with the severity of the violation. **Implications:** Judicial processes appear to take into consideration the severity of the violation and the student’s level of academic development when imposing sanctions.

**Teaching Empathy to First Year (P1) Pharmacy Students: A Multifaceted Approach.** Edward F. Foote, Wilkes University Bradford Kinney, Wilkes University; Marie Roke-Thomas, Wilkes University. **Intent:** To evaluate a new approach to teaching empathy. Empathy is critical to delivering pharmaceutical care but there is very little in the literature on optimal approaches to teaching empathy.

**Methods:** We teach empathy to P1 students in Foundations of Pharmacy Practice which is divided into two sections (35 students each). In spring 2005, section 1 was taught fairly traditionally (lecture with some discussion). Section 2 was taught using less lecture time but focused on six true-life scenarios where the practitioner failed to be empathic. Students were broken into groups and were given certain roles (patient, family, practitioner, and evaluator). Students “re-wrote” and then role-played the scenario. In addition, students were required to interview a pharmacist to discuss a time in which the pharmacist felt they “made a difference” by being empathetic. Student wrote a 2 page paper and made a 2-minute oral presentation.
Students were surveyed to assess their opinion of the activities. **Results:** Students in Section 2 were more likely to “strongly agree” or “agree” to the following statements as compared to Section 1. “Empathy and Caring is an Important Topic” 97.1% vs. 73.5%; “The lectures were informative” 71.4% vs. 61.7%, and “In class activities and discussion enhanced my understanding of empathy and caring” 60% vs. 53%. None of the differences were statistically significant. Subjectively, the faculty who were involved felt students learned more from the active-learning approach. **Conclusion:** Students somewhat favored a more active-learning approach using cases and role-playing. Specific scenarios will be shared.

**The use of instructional technology to augment the traditional classroom experience.** KarenBeth H. Bohan, Wilkes University. **Objectives:** To develop a guided self-evaluation tool to help students taking Infectious Diseases Pharmacotherapy refresh their knowledge of microbiology and focus their studying outside the classroom to improve outcomes in this course. **Methods:** Ten self-study quizzes (SSQ) were created using the WebCT e-learning system and posted online as an optional study tool. Covered material ranged from basic knowledge of microbiology to case-based application of clinical treatment guidelines. The students were encouraged to take these quizzes repeatedly. Immediate feedback was provided via automated grading after each quiz. Students were surveyed to assess their perception of the usefulness of the SSQ’s. SSQ participation was compared to exam performance and the final course grades were compared to the prior year when SSQ’s were not utilized. **Results:** Ninety-five percent of the students chose to take at least one SSQ. The number of times each student took SSQ #1 ranged 0-47 times with a median of 4.5. There was a positive correlation between the score on Exam 1 and taking SSQ’s >10 times. (p < 0.043). The mean final course grade was better in 2005 (87%) as compared to 2004 (85%). (p < 0.016) One-hundred percent of the students surveyed (who took the SSQ’s) stated that these quizzes were somewhat or very useful. **Implications:** This data suggests that the online SSQ appeals to students, may improve outcomes, and is a viable tool that can be used as a planned learning activity outside the classroom.

**Timing and Preceptor Buy-in For Pharmacy Resident Participation in a Training Course to Improve Teaching Skills.** Laura Pounders, University of Tennessee; Susannah E. Motl Moroney, University of Tennessee; Erin M. Timpe, Southern Illinois University-Edwardsville. **Objectives:** In 2004, a 15-hour residency training course was created to improve pharmacy resident teaching and precepting skills. Nineteen residents showed initial interest, 10 began the course was created to improve pharmacy resident teaching and precepting students. When planning a training course, it is essential to obtain information on availability, level of interest, as well as gain preceptor buy-in to maximize participation.

**Use of Asynchronous Web-Based Discussion Board by Students to Enhance Student-to-Student Learning in a Distance Education Course.** Maria C. Pruchnicki, The Ohio State University; Stuart J. Beatty, The Ohio State University. **Purpose:** To enhance student-to-student learning by using a web-based asynchronous discussion board in a pathophysiology and therapeutics (P&T) course for post-B.S. Doctor of Pharmacy students. **Methods:** Students in a cardiology P&T course, part of a required six-semester sequence, were offered an optional online discussion assignment. A set of 6 patient scenarios was posted for each of 3 disease state discussions (DSD): hypertension, thromboembolism, and heart failure (total = 18). To receive credit for a DSD, students provided (at minimum) one therapeutic recommendation (REC) for a case, and one response (RESP) to another posted REC. Each REC and RESP was limited to 250 words. Faculty reviewed postings, but did not contribute to discussions. Extra-credit points earned contributed to course grades. Feedback on the assignment was solicited from all students in the course evaluation. **Results:** Twenty-three students enrolled in the course, with 39.1% (n = 9) participating in all 3 DSD; 73.9% (n = 17) and 34.8% (n = 8) participated in 1 or 2 of the discussions, respectively. Students posted an average (SD) of 2.8 (1.9) REC and 2.4 (1.7) RESP per mini-case. Twelve follow-up questions for 10 postings were added by instructors after the extra-credit period. Only 50% (n = 6) received further RESP. Twenty-one students completed course evaluations and 80.9% (n = 17) read all/most of messages even if they did not participate in posting. Of all students, 80.9% (n = 17) agreed/strongly agreed that the format provided valuable learning opportunities. **Implications:** Computer-mediated communication may be an under-used but effective method to encourage peer interaction and professional exchanges between pharmacy students.

**Use of Asynchronous Web-Based Discussion Board by Students to Supplement a Problem-Based Learning Patient-Case Assignment.** Stuart J. Beatty, The Ohio State University; Nicolette S. Raya, The Ohio State University. **Objective:** Utilize an asynchronous web-based discussion board to simulate pharmacist-patient and pharmacist-provider interactions during a problem-based learning patient-case assignment. **Methods:** Post BS pharmacy students in distance education therapeutics courses work in groups to complete patient-case assignments; a web-based classroom discussion follows on patient cases and therapeutic topics. A case was developed with limited information available to students to mimic patient presentation in community pharmacy. Students posted questions for the patient or physician on the web-based discussion board to gather additional information. A course instructor responded daily to postings with subjective information from the patient or objective information the physician would have in the patient chart. Students were evaluated on perception of assignment at the end of the course. **Results:** Twenty-three students were assigned to five groups; 7 students (30.4%) representing each group posted 13 messages containing 30 questions for the patient and 23 questions for the physician. Students received 12 responses from the course instructor representing communication from the patient and physician. Of the 20 students completing evaluation, 19 (95.0%) reported reading all or most of the posted messages. Thirteen (65.0%) students felt the activity provided
Use of Humor as an Educational Engagement Tool: The Homer Simpson Effect. Michael J. Gonyeau, Northeastern University. 

**Background:** Faculty are expected to convey knowledge, skills and insight to students competently, but also in a manner that is engaging and motivating to truly be effective. 

**Purpose:** To evaluate student perceptions of the use of humor to maintain attention/engagement and material retention in lectures. 

**Methods:** Humorous images, sound, and video clips were incorporated into 9 classes covering 4 therapeutic topics. Implementation included use of Simpsons® characters as example patients during lectures to apply information and skills covered, and development of a game show format to review material. P3 and P4 Doctor of Pharmacy students were invited to complete a web-based survey regarding their perceptions of humor as a teaching strategy. Each questionnaire contained 7 questions using a 1-4 rating scale from strongly-disagree to strongly-agree and 2 open ended questions. Questions asked included humor’s ability to maintain attention/engagement, to aid in material retention, class attendance, potential for distraction, and overall learning experience impact. 

**Assessment/Evaluation:** Ninety eight questionnaires were completed (48%). Students agreed or strongly agreed that humor usage was engaging/motivating (88%), increased material retention (60%), did not decrease attendance (93%) and enhanced the overall learning experience (78%). Comments reiterated the positive use of humor and its content application by incorporating such characters into patient cases with pertinent diseases. Some students were distracted by this approach (28%), while some comments listed its use as entertaining, but not helpful. 

**Conclusions:** Students perceive utilization of humor in lectures as a tool to maintain attention, foster content retention and enhance the overall learning experience.

Use of an Audience Response System in Continuing Education. 

Ross E. Vanderbush, University of Arkansas for Medical Sciences; Jill T. Johnson, University of Arkansas for Medical Sciences; Lisa C. Hutchison, University of Arkansas for Medical Sciences; Donna S. West, University of Arkansas for Medical Sciences. 

**Objectives:** With an Audience Response System (ARS), each audience member has access to drug information software. Students were permitted to use their PDAs as a drug information resource during the second pharmacy objective structured clinical examinations (PASCE) exam. The purpose of this study was to determine the impact of using PDAs during an exam. 

**Methods:** Students received a new PDA and free access to drug information software. Students were permitted to use their PDAs as a drug information resource during the second pharmacy objective structured clinical examination. Several weeks later students were asked to complete an online anonymous survey seeking their input into future use of PDAs for exams. 

**Results:** 75 of 108 students (69%) completed the survey. 96% of students found the PDA useful during the exam; 80% agreed that using the PDA decreased their test anxiety; 91% responded that the use of a PDA allowed them to study concepts rather than memorize specific information; and 96% agreed that PDAs should be allowed on future exams. Common themes identified in written comments included: PDA use simulates real practice, decreases test anxiety, raises concerns about cheating, allows for studying application of material, and does not replace studying. 

**Conclusion:** Students perceived that the use of PDAs for examinations decreased test anxiety, allowed them to study concepts and application more than memorizing facts. PDA use was viewed favorably by most students completing the survey.

Use of an Audience Response System to Assess Baseline Knowledge in First Year Pharmacy Students. Kenneth E. Record, University of Kentucky; Jeff Cain, University of Kentucky. 

**Objectives:** To describe the instructors’ perceptions of the use of an ARS; and to evaluate the usefulness of an ARS to their impressions of ARS. 

**Outcomes:** The use of an ARS system in a CE program was beneficial from both the instructors’ and attendees’ perspectives. 

**Implications:** The use of an ARS system shows promise in increasing the information conveyed at CE meetings via allowing all attendees to repeatedly interact with the instructor during the presentation as well as testing the audience during the presentation for immediate instructor feedback.
American Journal of Pharmaceutical Education 2006; 70 (3) Article 65.

M. Pick, Creighton University. Objectives: Compare the performance of campus students to that of distance students in the fourth year of the program to assess parity between the pathways. Methods: Our abilities-based curriculum has 12 terminal educational ability-based outcomes (ABOs). Faculty teams drafted 12 cases, one for each ABO, and the corresponding performance criteria used in grading. All cases were validated by a national review panel. The cases were then converted into the Pharmacy Objective Structured Clinical Examination (P-OSCE) format for programmatic assessment at the end of the 2005 school year. All P4 students participated in the assessment. Student performances were evaluated by a two-member faculty grading panel for satisfactory achievement of performance criteria indicated on checklists. Checklist items were scored dichotomously and each student’s score was based on the number of satisfactorily achieved performance criteria for each case. The two grader’s scores were averaged and this average represented the student’s score. An overall mean for all cases was calculated for each student. Class means were then calculated and used to compare student performances for campus and distance pathways using a Mann-Whitney U test. Results: Campus versus distance overall scores for the P4 class were 50.2% and 49.1%, respectively, (p = .46). Implications: Our results demonstrated that students receiving their pharmacy education via a distance pathway scored similarly on performance-based assessments when compared with students receiving their education via the traditional campus pathway. This, in our view, indicates that our distance students are receiving an equivalent curricular experience throughout the program.

Value of Offering a Voluntary, Noncredit Pharmacy-based Spanish Language Skills Program to Pharmacy Students. Roberto W. Linares, Oregon State University; Ann Zweber, Oregon State University. Objectives: The program is intended to: Improve communication with Spanish speaking patients in the pharmacy setting, Increase awareness of cultural issues. Methods: In 1999 Oregon Pacific Allied Health Education Center consulted with OSU College of Pharmacy to create a Spanish for Pharmacy Professionals program. The 10 hours of video and accompanying workbook are designed to focus on Spanish communication and cultural issues commonly encountered in a community pharmacy setting. Since 2002, the course has been offered to first and second year pharmacy students as a voluntary, noncredit enrichment program. One-hour sessions meet once a week throughout a term. Students who complete 90% of the sessions are awarded with a certificate and a “fiesta” to celebrate their commitment. Results: Each year approximately 60% of first year students enroll in the program. Approximately half of these (30% of the class) complete 90% of the program. Initial surveys indicate that students found the program worthwhile and applicable to their practice. Many students wanted additional instruction and resources. In 2006 the course was extended over two terms to accommodate more in-class activities and discussion. Results: of a survey of the 2006 participants will be available. Implications: Significant interest in and commitment to the Spanish for Pharmacy Professionals program demonstrates the perceived value of the program to pharmacy students. Survey data also supports the value of the program. The usefulness of the program may be assessed with surveys of students after their internships. Expansion of the program is also being considered.

Would You Like a Degree With That? A Survey of Student Consumeristic Attitudes. Donald R. Miller, North Dakota State University; Tricia L. Dissmore, North Dakota State University; Erin R. Westby, North Dakota State University. Objectives: To determine and compare the level of consumerism between professional pharmacy students and non-pharmacy students at North Dakota State University. The influence of student age was also examined. Methods: A 14-item survey was given to professional pharmacy and non-pharmacy students at North Dakota State University. The questions were designed to assess student attitudes regarding expectations of their administration, faculty, and university. The students were asked to rate their attitudes from “strongly disagree” to “strongly agree” on a 5-point Likert scale. The hypotheses were that pharmacy students would tend to be more consumeristic than non-pharmacy students and that younger students would tend to be more consumeristic than older students. Results: 288 pharmacy students and 230 non-pharmacy students, respectively, completed the survey. Pharmacy students had a mildly consumeristic orientation to their education. While the differences in opinions between pharmacy and non-pharmacy students were small, non-pharmacy students were more likely to think of education as a product they are buying, while pharmacy students had higher expectations of their professors. Younger students tended to have a more consumeristic orientation than older students. Implications: Compared to their peers, pharmacy students were less likely to see education as a commodity, but have higher expectations of their instructors. This information may be helpful in understanding students’ sense of entitlement.

Theoretical Models

APPLE: How to create a “core” competency course. Laura A. Morgan, Virginia Commonwealth University; Beverly A. Talluto, Virginia Commonwealth University; Donna Francioni-Proffitt, Virginia Commonwealth University; Amy L. Whitaker, Virginia Commonwealth University; Joanne Peart, Virginia Commonwealth University; Kimberly A. Cappuzzo, Virginia Commonwealth University; Nancy S. Yunker, Virginia Commonwealth University. Objectives: To critically examine the content of the Skills Lab and Practicum series of courses to determine the feasibility of combining two sequences, add an experiential component and determine if the courses are meeting the curricular goal statements and CAPE outcomes. Methods: The school’s educational goals for the Pharm.D. Program and syllabi of Skills Lab and Practicum courses were reviewed. Current educational objectives and activities were mapped to identify where and how content was being delivered. A Microsoft Access database was created to facilitate this process and examine curricular content for balance and omission. The group reviewed multiple documents and solicited input from preceptors and faculty to identify essential competencies needed in the evolving roles of pharmacists. Members also reviewed curricula of several pharmacy schools to benchmark similar activities and surveyed the PEP Sig group to determine how other schools of pharmacy are teaching these topics/skills. Results: The core competency course, Applied Pharmacy Practice Laboratory Experience (APPLE) was developed. This 6-semester course sequence is designed to introduce, reinforce and develop essential skills needed to provide enhanced patient care. The course will integrate knowledge with practice by the use of multiple content delivery methods including traditional large group lecture, interactive small group discussions enhanced by technology, compounding and site visit exercises. Implications: This systematic, organized method of critically evaluating courses allowed the group to objectively assess current course content and reorganize it into a new course sequence reflecting contemporary validity of patient-centered care and meet current and future practice needs.

Development and Implementation of a Virtual Chart Case Series. Jennifer K. Hagerman, Ferris State University; Nabila Ahmed, Ferris State University; Vicki J. Delgado, Ferris State University; Michael
Development and Initiation of a Peer Evaluation Process for Classroom Teaching. Marc LaPointe, South Carolina College of Pharmacy – MUSC Campus; Marlea G. Wellein, South Carolina College of Pharmacy – MUSC Campus; Kelly R. Ragucci, South Carolina College of Pharmacy – MUSC Campus; Ronald O. Nickel, South Carolina College of Pharmacy – MUSC Campus; Deborah R. Holly, South Carolina College of Pharmacy – MUSC Campus.

Objectives: To develop an objective method to evaluate and improve classroom teaching, which will complement student evaluations.

Methods: Faculty within our department developed criteria to define the “Best Practices in Classroom Teaching”. Literature searches were performed to determine different methods and processes that could evaluate these criteria by means other than student evaluations. Colleges of pharmacy and colleges on the Medical University of South Carolina campus were contacted to discover what, if any, methods/processes they utilized. Results: In keeping with the philosophy of the American Association for Higher Education, peer evaluation was chosen as the method for performance assessment. The peer evaluation process and tool, which specifically assesses the “Best Practices in Classroom Teaching”, were voted upon and accepted by the department. The faculty then evaluated a seminar with “Best Practices in Classroom Teaching”. Literature searches were performed to determine different methods and processes that could evaluate these criteria by means other than student evaluations. In collaboration with the pharmacist preceptor, students generate ideas that will be useful to the current practice at the site. Background lectures on entrepreneurship in pharmacy and business plan development will be given during class. Students must consider the resources necessary to implement their plan and the obstacles that could prevent their success. Outcomes: The preceptor will receive project proposals and rate the project on value, feasibility, professionalism and completeness. Follow up will be done with the sites to evaluate the implementation of projects. Implications: This project is one way to infuse entrepreneurship into the pharmacy curriculum. By working with pharmacy students to develop these skills, they will be better equipped to effect change during their pharmacy career.

Experience in Community Voluntary Service at CEBNAD Diabetes Summer Camp as an Elective Course. Francisco Javier Jiménez Ramírez, University of Puerto Rico; Mirza D. Martínez, University of Puerto Rico. The humanistic and ability-based curriculum promotes human and professional development through a liberal education model emphasizing service as a concept and the expected abilities. Innovative strategies with active participation providing services are required to develop the identified abilities. Objective: Develop a course to provide community service with the objective of developing the abilities and service commitment. Methodology: The School of Pharmacy, in partnership with CEBNAD, a non-profit organization directed to educate people with diabetes type 1 and their relatives, developed an elective course. Volunteers are invited to participate, oriented about CEBNAD and its objectives, and trained in areas related to diabetes as pathophysiology, pharmacotherapy and self-management skills. First aid and cardio-pulmonary reanimation (CPR) training is required. Responsibilities are serving as group leaders, daily activities coordinators, nutrition assistants, self-management tasks and camp rules compliance officers. Results: Since 2002, forty-nine Pharm.D Candidates (10 without elective credits) have participated and several have participated in more than one session. Participants evaluated the course as an effective method to develop the abilities and to increase their awareness about the community with diabetes needs, their professional responsibilities and the opportunity they have to serve patients with diabetes. Implications: The director of the camp, a pediatric endocrinologist, is very satisfied with the Pharm.D Candidates’ performance and has continued requesting their service. Course evaluations’ demonstrate the contribution to the development of the following abilities: Pharmaceutical Care, Social Conscience and Responsibility, Social Interaction and Relations, Communication, Problem Solving and Decision Making, Critical Thinking and Self-learning and Professional Development.
Arkansas for Medical Sciences. The use of pharmacy technicians has increased dramatically in the last twenty years with most states requiring some documentation of training and education. Current programs for pharmacy technician training do not meet the practice needs of nuclear pharmacy and PTCB certified technicians are not prepared to work in this setting. The Nuclear Education Online (NEO) program developed a nuclear pharmacy technician training program specific to the needs of radiopharmacy practice. The curriculum was developed using the APhA Nuclear Pharmacy Practice Section’s Guidelines for Nuclear Pharmacy Technician Training. Didactic components of the curriculum were developed for distance learning using WebCT as a learning management system and supplementing online education with other media. Site-specific experiential training is delivered with nuclear pharmacists as preceptors. This program consists of a self-study program representing a minimum of ten weeks, or 300 hours of self-study and supervised instruction. The nuclear pharmacy technician training program is currently available to the industry and meets the training requirements for most state Boards of Pharmacy via petition. The NPT program is not intended to prepare an individual for practice outside of the specialty practice area of radiopharmacy nor to prepare for the national Pharmacist Technician Training Certificate examination. The overall impact of the program will assure continuous standards throughout the practice of pharmacy, even in areas of specialty practice. This model may be duplicated to serve other areas of technician training or pharmacy practice.

The use of a teratology information service as a drug information clerkship for pharmacy students. Beth W. Young, University of Utah; Marsha Leen-Mitchell, University of Utah. Objectives: To develop a complementary clerkship site that would enhance literature evaluation, communication and writing skills for pharmacy students. Methods: The Pregnancy Risk Line (PRL), a teratology information service within the State Health Department, was approached to develop a drug information-type clerkship for pharmacy students. The clerkship was piloted in the fall of 2004. Student activities included communicating health information to consumers and healthcare providers regarding chemical exposures during pregnancy and lactation; presenting at PRL journal club, case presentations; and writing an information monograph. Standardized course evaluations were used to assess the clerkship. Results: Since its inception, a total of 15 students have taken this clerkship to meet their requirement in drug information services. Students average about 50 calls per 6-week clerkship. The majority of calls received were from consumers (79.4%), of which 68.1% were pregnant. Patients were most often referred by their providers (76.8%). A majority of calls involved over the counter products (47%). Students overall ranking of this clerkship, based on the statement “I learned a great deal from this clerkship,” were 4.3 out 5 points. In terms of skills sets learned, students ranked the clerkship 4.6 out of 5 points. Implications: Students developed a better understanding of pregnancy and lactation exposures found in the community setting, especially with regard to OTC products. Students participated in activities which improved their literature evaluation and communication skills. This collaborative effort between the College and the Health Department offers pharmacy students a unique clerkship enhancing drug information skills.

Work in Progress

A Medication Reconciliation and Evaluation Project Conducted by Pharm. D. Students in a Multi-site Health System. Laurie L. Briceland, Albany College of Pharmacy; Leigh A. Briscoe-Dwyer, Bassett Healthcare Cooperstown; Laurie M. Cronin, Bassett Hospital of Schoharie County; Robert W. Pavelka, O’Connor Hospital; Robert A. Hamilton, Albany College of Pharmacy; Teresa J. Lubowski, Albany College of Pharmacy. Objectives: This study evaluated a medication reconciliation project conducted by Pharm. D. students as part of an advanced practice institutional experience. Methods: Students assigned to 3 hospitals in the Bassett Health Care System for a 10 week rotation participated. Patients admitted within 36 hours to a non-ICU general medicine or surgery unit were included. Students were instructed to interview each patient to obtain a medication history, reconcile this medication list to the current medical chart listing and identify and solve drug related problems. Results: Nine students reconciled medications for 288 patients over 7 months. This represented 30% of site 1 (40 bed), 13% of site 2 (160 bed) and 68% of site 3 (23 bed) patient admissions. Students contacted a community pharmacist 24 (8%) times for clarification of medications. A total of 732 discrepancies were identified including prescription, over the counter (OTC) and herbal products. The median discrepancies per patient were 2, interquartile range (0-4). A drug allergy was identified in 14 (5%) of the patients. The average amount of time spent to conduct the interview was 8.8 + 4.7 minutes (2-35 minutes). The students made 44 recommendations for drug related problems. The most common intervention was recommending a drug. Implications: Pharm. D. students can provide a valuable medication reconciliation service to advanced practice rotation experience sites. This service can be incorporated as part of a hospital wide program or support a pharmacy directed program.

A Strategy to Improve the Quality and Quantity of Advanced Pharmacy Practice Experiential Training Sites. Christopher J. Turner, University of Colorado Health Sciences Center, Ralph J. Alliere, University of Colorado Health Sciences Center, Sam L. Ellis, University of Colorado Health Sciences Center, Heather Ulrich, University of Colorado Health Sciences Center, Joel T. Giles, King Soopers, Carrie M. Maffeo, Butler University. Objective: To improve the quality and quantity of experiential training sites by implementing disease state management (DSM) programs staffed year-round by students in advanced pharmacy practice experience (APPE) courses. Design: Pharmacists in Colorado interested in developing DSM programs in hospitals, community health centers and community pharmacies were trained to offer their choice of program. Each pharmacy was equipped with “point-of-care” technology, guaranteed a year-round supply of APPE students to deliver patient care services under the trained pharmacists’ supervision, and links established with local prescribers. Patients, referred by physicians, are educated by the students in a series of lessons about their disease(s). The students establish, monitor, update and document patients’ pharmaceutical care plans; perform laboratory investigations; and liaise with the patients’ physicians under their preceptors’ supervision. Evaluation: Nine DSM programs including oral anticoagulation, diabetes, dyslipidemia and hypertension offering 72 APPE rotations annually have been implemented in a 5-year span and three more are in development. Health outcomes data demonstrates that the students deliver patient care services under supervision which meets national standards of care. Conclusion: Pharmacy-based DSM programs that rely on students to provide patient care services, and which meet national standards for patient care, have been established. A strategy to improve the quality and quantity of APPE training sites has been successfully implemented.

A Survey to Determine Influences on Pharmacy Students’ Choice of Pharmacy as a Major. Douglas C. Anderson, The University of Georgia, Melody C. Sheffield, The University of Georgia, Angela M. Massey, Florida A&M University, Henry H. Cobb, The University of...
Active Learning in a Geriatrics Pharmacotherapy Course: Outcomes Associated with a Diaper Experience Exercise. Eric G. Boyce, Wingate University; Christian R. Dolder, Wingate University. Objectives: To evaluate the acceptance and effects of a novel active learning exercise. Methods: Fifty-five third-year pharmacy students were enrolled in a required geriatrics pharmacotherapy course. Two lectures were developed to teach students about urinary and fecal incontinence in older adults. Learning objectives for these lectures included students being able to describe, compare, and contrast the clinical features of incontinence; describe common pharmacologic and nonpharmacologic treatment options for incontinence; and discuss the impact of incontinence on patients. A voluntary active learning exercise that involved students wearing an adult diaper throughout a day of classes (“Diaper Experience”) and then writing a paper reflecting on the experience was created. The responses of participating students were recorded. In addition, student performance on quiz and test questions related to incontinence-related test questions will be discussed. Implications: The Diaper Experience was well received by students, was reported by students to increase their insight into incontinence, and has the potential to enhance test performance.

Active Learning Techniques for Successful Inpatient Preceptorship. Susan A. Krikorian, Massachusetts College of Pharmacy and Health Sciences – Boston; Dorothea C. Rudorf, Massachusetts College of Pharmacy and Health Sciences – Boston. Lack of inpatient work experience as pharmacy interns and insufficient clinical skills may influence pharmacy students’ ability to optimally perform and successfully complete the requirements of inpatient experiential rotations. Our challenge as inpatient faculty preceptors is to provide an optimal learning experience for the students in a short time period and to overcome the disparity of student knowledge level and preceptor/site expectations. This led the authors to investigate various problem-based learning techniques. Consequently, different active teaching strategies have been implemented at their clinical site to enhance student performance and student/preceptor satisfaction. A major emphasis is given to individualized student coaching. In addition to site-specific advanced oral and written clerkship assignments, the following innovative techniques are discussed: Drug Information Forum, Pharmacy Attending Rounds, Pharmacist Shadowing Program, Daily Written Drug Information Response Log to MD/Self-initiated inquiries, and Portfolio Documentation. These teaching and learning techniques will be described later and may be helpful for other inpatient preceptors to utilize in their experiential rotations. Implementation of these teaching techniques and strategies has led to a change in student attitudes and capabilities. Consequently, the authors have observed an improvement in students’ contributions to patient care activities, professionalism, oral and written communication skills, and acceptability by the medical team. In addition, through the pharmacist shadowing program, students learn to appreciate various roles associated with inpatient pharmacy practice. Unsolicited student feedback and formal preceptor/rotation evaluations indicate that these strategies provide a satisfying valuable learning experience that is beneficial for future rotations and their professional career.

An Indirect Assessment of Available Community Pharmacy Drug Information Resources. Amy H. Schwartz, University of Southern Nevada. Objectives: To provide students the opportunity to orientate themselves to their new early practice experience site and identify...
available resources to assist with the completion of subsequent assignments. To gain an appreciation of available drug information resources across local community practice sites. **Methods:** Early experiential training is administered as 20, eight-hour site visits, distributed evenly throughout the didactic year. Each EPPE site visit includes an assignment derived from materials being presented in the corresponding didactic block. The drug information and literature evaluation block starts off the second didactic year of training and is associated with the first EPPE site visit. The EPPE assignment included twelve questions that required students to search for available drug information resources, and discuss with the preceptor the number and types of drug information questions most commonly received, preceptor approaches to life long learning/continuing education, and a resource wish-list. Assignment responses were discussed with the class so that all could appreciate the similarities and differences across sites. **Results:** Responses from the fall of 2004 and 2005 assignments will be collated, reviewed per year and in aggregate. Observed commonalities, differences, and significant omissions will be presented. **Implications:** The information obtained will be shared with faculty so they are aware of the drug information resources available to students for the completion of assignments. The information may be used to identify resources that the College can provide to preceptors (e.g., adjunct faculty perks), and preceptor training opportunities.

**An Innovative Approach to Teaching Case Studies in a Large Classroom Setting.** Regina Ginzburg, St. John’s University; Damary C. Torres, St. John’s University; Heidi J. Wehring, St. John’s University; Sharon See, St. John’s University; Michael S. Torre, St. John’s University; John Conry, St. John’s University; Olga Hilas, St. John’s University; Joseph M. Brocovich, St. John’s University. **Objectives:** To assess the feasibility of developing an interactive case studies course in further enhancing pharmacy students’ approach to pharmaceutical care. **Methods:** This is a 3 credit required course for all St. John’s University Pharm.D. students in their final year. Students are assigned various cases specifically focusing on distinctive issues in pharmaceutical care. The typical class consists of approximately 100 students. At the start of the semester, the students are divided into 12 groups. In each class, one case is distributed to which the student groups have 45 minutes to develop a pharmaceutical care plan. Faculty members post required readings one week prior to class and facilitate the group discussions in class. One predetermined group will then present the case to the class and lead the discussion on appropriate management for the remaining 45 minutes of class. All other groups submit their written case for grading before the oral group presents. Assessment forms have been developed to evaluate the oral group as well as written assignments. The final exam will consist of one pharmaceutical care plan that students will have to work up individually on any of the 24 topics covered in class. **Results:** We will measure the mean and range of final grades and assess the appropriateness of the teaching methods in a large classroom setting. Student feedback will also be assessed by means of questionnaire. **Implications:** This novel teaching method will show the achievability of interactive learning involving a large classroom size.

**Application of Didactic Knowledge in Real World Pharmaceutical Care Situations.** Patricia M. Grace, University at Buffalo; Karl D. Fiebelkorn, University at Buffalo; Peter M. Brody, University at Buffalo; Nicole M. Paolini, University at Buffalo; Robert G. Wahler, University at Buffalo; Daniel Burger, University at Buffalo. **Objective:** Engage first-year pharmacy students in simulated activities to demonstrate the relevance of didactic material to real pharmaceutical care situations. **Process:** Pharmaceutical Care I/II, a two-semester course sequence for first-year pharmacy students, is designed to enable students to develop and practice skills that will be used to integrate and apply knowledge in complex pharmaceutical care situations latter in the curriculum. Real World Pharmaceutical Care Situations are designed to engage first-year pharmacy students in simulations that demonstrate the relevance of didactic material to real situations. Student volunteers play the role of a pharmacist in a simulated pharmacy set up in the front of a lecture room with an audience of students and faculty. Scenarios are developed based on legal, clinical, ethical, moral, cultural and interpersonal communication issues. The student pharmacist is provided with patient profiles, electronic drug databases, and a telephone, in order to resolve conflicts or issues. At the completion of the exercise, a faculty member facilitates a discussion with the class. The student pharmacist is responsible for posting a reflective summary of the situation and an article related to the topic. **Outcomes:** Students will be surveyed to determine the effectiveness of the Real World Pharmaceutical Care Situations as a method for demonstrating the relevance of didactic knowledge in realistic situations. **Implications:** The results will indicate if simulated situations are an effective method for application of didactic knowledge and are an effective means for preparing students for interactions with patients in real pharmacy settings.

**Assessing Prospective Students Attitudes Regarding Admissions Criteria for Pharmacy Schools.** Carmita A. Coleman, University of the Incarnate Word; Kristen M. Dicianna, University of the Incarnate Word. **Objective:** Many studies have assessed the importance of requirements in the selection of health profession students. Some criteria include GPA, Pharmacy College Admissions Test, interview/communication skills, critical thinking skills, and the like.
Several studies have also correlated admission criteria with performance and attrition rates. However, few, if any, of these studies have assessed the importance of these criteria from the students’ perspective. The investigators seek to identify which admission qualifications are considered essential to the student for a successful application based on their response. Hypothesis: Students in the process of obtaining prerequisite coursework for application to a professional program have significant opinions regarding the weight of admissions criteria. They will also be asked to complete an open response section. Appropriate statistical analyses will be performed on the responses. Results: will be considered statistically significant if \( p < 0.05 \). Outcomes/Implications: This survey forces the students to think about what they consider important traits for admission. This survey could be given to external pre-pharmacy students to determine overlap or exclusion. The results could be correlated with previous studies that identified admission criteria found to be important by admission officers in health professions schools. The results could also be correlated with previous studies that identified predictors of success for matriculation in pharmacy school.

Assessing the Impact of a Preceptor Training Program on the Behavior of Pharmacy Preceptors. Rondall E. Allen, Xavier University of Louisiana; Dana J. Jamero, Xavier University of Louisiana. Objectives: A training program was developed for preceptors to improve their effectiveness in orienting students to the rotation site; setting goals, objectives, and performance expectations; creating opportunities for independent learning and completing formative and summative evaluations. Relative to these four areas, this study will 1) assess the impact of the training program on its attendees and 2) determine if there are any differences among the preceptors who attended the program and those who did not. Methods: A five-hour training program was given on six occasions in southern Louisiana. The responses from student evaluations will be used to assess the impact of the training program. The student evaluations that were completed before the training program will be used as baseline data and compared to the student evaluations completed after the training program. Also, student evaluations of preceptors who did not attend the training program will be compared to those who attended the program. Results: Over two hundred preceptors attended one of the six programs. The majority of the preceptors completed an evaluation and indicated that all of the objectives were met. Data from the student evaluations will be collected and analyzed with the intent to present in poster format at the AACP Annual meeting. Implications: Because ACPE requires all pharmacy students to complete experiential training, there is a need for more qualified preceptors. Preceptor Training Programs may be an effective tool to standardize and improve the quality of pharmacy training in our experiential program.

Assessment of Experiences in Community Practice Settings for Pharmacy Students in their First Professional Year. Jennifer McFee, University of Illinois – Chicago; Charles E. McPherson, III, University of Illinois – Chicago. Objectives: The difficulty of designing and coordinating quality Introductory Pharmacy Practice Experiences (IPPE) in community practice settings has been documented in the literature. To address the challenges faced in a course for first year students, a study of IPPE preceptors and pharmacy students was conducted to: 1) Evaluate student and preceptor attitudes regarding the structure and value of the community pharmacy practice experience for 1st year pharmacy students. 2) Identify the factors that impact preceptor and student preparedness for effective IPPE participation. 3) Identify potential solutions as suggested by survey respondents. Methods: An assessment tool was developed for pharmacy students and preceptors to evaluate the programmatic structure and on-site activities in assigned community pharmacy practice settings. The survey, consisting of 50 items, was administered to community pharmacy students registered in IPPE. Results: All responses were compiled at the conclusion of the 1st professional year community pharmacy IPPE and results will be presented at the annual AACP meeting. Implications: It is anticipated that study results will assist in program redesign and quality enhancements for the community pharmacy IPPE’s. Strengthening of the current model will help identify the preparation method needed for subsequent IPPE-based courses and enable students to realize the full value of this component of the curriculum.

Assessment of Experiential Training: Program Differences in the Health Sciences. Richard L. Slaughter, Wayne State University. The Eugene Applebaum College of Pharmacy and Health Sciences, Wayne State University, has developed a common assessment program which crosses over the many health care disciplines within the college. For the past 2 years common survey instruments have been administered to students just prior to graduation. Data obtained from questions dealing with experiential training are from the Doctor of Pharmacy program (PharmD, n = 60), Master of Physical Therapy program (MPT, n = 44) and Master of Science in Physician Assistant Studies (PAS, n = 72). Students were asked to assess their competency level (very high to very low) in 7 skills common across all programs. Significant program differences were seen with the following: ethical decision making \((p < 0.005, \text{MPT} > \text{PAS} > \text{PharmD})\), information management and reporting \((p < 0.025, \text{MPT} > \text{PAS} > \text{PharmD})\), patient interviewing \((p < 0.0005, \text{MPT} = \text{PAS}) > \text{PharmD}\), communication with other health professionals \((p < 0.025, \text{PAS} > \text{MPT} > \text{PharmD})\). Ability to give a presentation or seminar \((p < 0.0001, \text{MPT} > \text{PharmD} > \text{PAS})\). Trend differences \((p < 0.10)\) were seen with use of technology \((\text{MPT} > \text{PAS} > \text{PharmD})\). No differences were seen concerning self assessment of clinical decision making skills. A trend towards a difference was also seen when students compared the overall quality of their experiential program \((\text{PT} > \text{PharmD} > \text{PAS})\). No program differences were seen with respect students’ ability to perform patient care services, variety of clinical experiences seen on rotation or with exposure to patients from cultures different from their own. Using common assessment strategies across multiple health science programs allows for program comparisons which can be utilized to better identify programmatic strengths and weaknesses and inform continuous improvement efforts in the college.

Capturing the Action! Development of a Valid and Reliable Active Learning Inventory Tool. Jenny A. Van Amburgh, Northeastern University; John W. Devlin, Northeastern University; Jennifer L. Kirwin, Northeastern University; Donna M. Qualters, Northeastern University. Objective: To develop a valid and reliable active learning inventory tool (ALIT) for use in the classroom of large, turn-taught courses. Methods: Using a focused literature review, an active learning inventory tool (ALIT) was developed, reviewed by 3 national educational research experts and revised based on their comments. Subsequently, 4 pre-trained faculty observers used ALIT to concomitantly, but independently, review 3 pre-recorded and 2 ‘live’ 1 hour pharmacy therapeutics lectures. After each lecture, agreement
Collaborative development of a longitudinal patient case in a team-taught introductory pharmacotherapy module. Nicole M. Stack, Albany College of Pharmacy; Mario M. Zeolla, Albany College of Pharmacy; Sarah L. Scarpace, Albany College of Pharmacy; Michael R. Brodeur, Albany College of Pharmacy; Darren W. Grabe, Albany College of Pharmacy. Intent: In 2004, the 4-semester Pharmacotherapy (PT) Course was modified into a disease-based modular format. Student feedback from the initial offering of the introductory module, Principles of PT, indicated the module was disconnected and there was difficulty in understanding the topic relevance in the context of patient care. To address these concerns, course faculty designed an integrated, longitudinal, adaptable patient case to be used by each of the modular faculty. Process: The longitudinal case was introduced during the summer 2005 course offering. Module faculty were requested to make any necessary changes to ensure legitimacy during the teaching of their topic. Feedback forms were distributed to enrolled students (n = 46) at the end of the course. Questions were designed to collect opinions on the modular format, longitudinal case, and suggestions for change. Outcomes: Feedback forms were collected from 76% of enrolled students. The course materials and format were identified as the most desirable course characteristic (46%). Approximately half of the students (49%) indicated that the longitudinal case aided in the understanding of course content and 31% said it did not (20% did not respond). The great majority (83%) of students enjoyed the modular format with 6% replying in the converse (11% did not respond). Implications: The modular format of the course was clearly well-received by students. The use of a longitudinal case may assist students in understanding the relevance of introductory topics. Additional research is warranted in a larger group of students before the utility of the longitudinal case can be determined.

Collaborative effort to adapt a pre-pharmacy course for distance learning. Lynda H. Oderda, University of Utah; Nancy T. Lombardo, University of Utah. Objectives: To successfully develop an online version of a pharmacy exposure course for pre-pharmacy students to reach more students with information about the profession. Methods: An online course was developed through a cooperative effort of a College of Pharmacy faculty member, the Health Sciences Library (HSL) and the Technical Assistance Center. Fall semester lectures were videotaped with written consent of presenters. Videos were “streamed” from the HSL server and linked to a Web-CT course. Students in the live course provided input on the proposed online course including lecture availability, attendance and grading criteria. Requirements for passing included viewing 13 lectures, posting one question/completing a quiz per lecture, and receiving a passing grade on a final paper. Students were encouraged to post additional comments. The course master logged onto Web-CT daily to answer questions. After three weeks, lectures were removed from view. Results: Eight students registered for the Spring online course. Students posted 1-5 comments/questions per lecture with a mean of 2.08. Course evaluations were positive for this method of teaching. Implications: Distance learning offers distinct advantages for students unable to meet mandatory attendance requirements of the live class. Flexibility in viewing lectures resulted in disjointed discussions, since questions from three different lectures might be posted during any week. Disadvantages included technical difficulties, students postponing viewing lectures and posting questions, and the inability to interact directly with lecturers. The Spring 2006 course has been modified to provide more structure to lecture availability, and to encourage more interaction between students and/or instructors.

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Community Pharmacy Residents’ Pursuit of Academic Positions: Assessment of Key Factors Influencing Career Paths. Colleen A. Clark, The Ohio State University; Bella H. Mehta, The Ohio State University; Jennifer L. Rodis, The Ohio State University; Maria C. Pruchnicki, The Ohio State University. Objectives: To 1) determine percentage of residents accepting faculty positions after APhA Community Pharmacy Residency Program (CPRP) completion, 2) identify factors influencing a CPRP resident’s decision to pursue a career in academia, and 3) compare perceived characteristics of ideal position versus characteristics of position accepted. Methods: CPRP residency directors and preceptors were contacted to compile a current roster of residents. Pre- and post-surveys were developed then field-tested on hospital pharmacy residents. The pre-survey was sent via email to all CPRP residents in October 2005 and the post-survey will follow in June 2006. Surveys detail resident demographics, program characteristics, and resident experience with clinical practice, teaching, and research. The pre-survey also requests information on job preferences; while the post-survey focuses on job selection. Results: Fifty-three CPRP residents were identified, 85% (n = 45) completed the pre-survey. One hundred percent of respondents anticipated teaching experience through precepting, lecturing, and/or facilitating workshops, recitations, or labs. Top three job preferences included community pharmacy, faculty, and ambulatory clinic. Ideal job characteristics most important to respondents included flexibility, collaboration with other healthcare professionals, and a variety of daily activities. Analysis of the post-survey will provide percentage accepting faculty positions, evaluate factors influencing decisions to pursue academic careers, and compare characteristics of ideal job versus accepted position. Implications: Study results are expected to show residency preceptors and potential residents how CPRP experience and training relates to the pursuit of academic careers. It will also provide valuable information to colleges of pharmacy to assist in the recruitment of new faculty.

Comparing Student Drug Information Skills Before and After Clinical Rotations. Sheryl L. Gutierrez, University of Oklahoma; Machelle A. Davison, Oklahoma State University; Tracy M. Hagemann, University of Oklahoma. Objective: The purpose of this study was to determine students’ perceptions (before rotations and after rotations) of drug information skills, efficacy of course activities in preparing them for rotations, and any differences in a drug information skills course taught face-to-face versus at a distance. Methods: A two-page survey was developed and administered to both the third year pharmacy students taught at a distance and the fourth-year
pharmacy students taught through traditional methods. Results: Results showed that the two most important class activities in preparing students for rotations were the Micromedex® and Medline® exercises. Students from both groups felt most confident using Micromedex® and the Drug Information Handbook. Both groups felt least confident using the USP-Dispensing Information. Fourth year students showed a higher level of confidence and rated their drug information skills higher than third year students. The highest level of additional training was requested by third year students in database searches. A majority from both groups felt remediation of skills was needed before or during rotations and were seeking help from rotation faculty to improve skills. There were no significant differences based on site location or instructional method. Implications: This exploratory study will help course instructors identify and develop drug information techniques and activities to best prepare students to search for drug information during clinical rotations and while working in the pharmacy profession.

Comparison of Computer-Based versus Paper Examinations for Doctor of Pharmacy Students in a Drug Information Course. Maria C. Pruchnicki, The Ohio State University; Jennifer L. Rodis, The Ohio State University; Allyson Bowman, The Ohio State University; Anand Khurma, The Ohio State University. Objectives: Examinations delivered via computer provide advantages over paper-based exams, but are not routinely offered in on-campus pharmacy classes. Our purpose was to assess residential students’ perceptions and satisfaction with a computer-based midterm, compared to conventional paper examination. Secondary goals were to observe operational/grading difficulties with technology, determine practicality of a question bank, and track time required for implementation. Methods: A computer-generated midterm was delivered to students in a first-year drug information course. A bank of 114 questions was developed in 17 content areas. Questions were stratified by difficulty (easy-medium-hard), resulting in 34 total categories. A course management platform randomly assigned 40 questions per student by content area and difficulty, with a mode of 1 (range:1-5) questions per category. A practice quiz was offered to students prior to the examination. After grades were released, students’ feedback was solicited via a voluntary survey. Feedback from instructors, including time commitment, will also be collected. Results: Fifty-nine (51.8%) students utilized the practice quiz. One hundred thirteen completed the survey, representing 99.2% of the class. Respondents were primarily females (72.6%) between 19-25 years of age (85.0%); >90% expressed comfort with computers. Ninety (79.6%) reported having taken at least one prior computer-based test. The majority (66.7%) felt the midterm was not unfair, though few (17.7%) expressed a preference for more computer-based examinations. Implications: Preliminary results indicate contemporary pharmacy students are comfortable with computers but exhibit a strong preference for paper examinations. Factors besides test performance appear to influence satisfaction with this method of delivery.

Comparison of Standardized Participant Grader versus Faculty Grader for an Objective Structured Clinical Examination (OSCE) in a Pharmacy Curriculum. Jeany K. Jun, Western University of Health Sciences; Eunice P. Chung, Western University of Health Sciences; Robert W. McGory, Western University of Health Science. Objective: To compare the evaluation of OSCE performance by professional actors/standardized participants (SP) and faculty graders (FG) for assessing the reliability of SP as independent graders. Methods: Grading student performance by both SP and FG requires duplicate resources and potentially conflicting outcomes. Two scenarios were developed by three faculty involving 1) counseling on oral contraceptives and 2) assessment of inhaler technique. An evaluation form was created that contained 8-9 questions on skills and 5-6 questions on communication for a total of 15 points. Each question assigned 1pt for success and 0 for failure. SP interacted directly with the student in clinic setting while the FG monitored via live video. SP and FG graded each student upon completion of the interaction. The total score for each student was compared between SP and FG. The difference between the means was computed by the t-test and Pearson’s correlation. Results: Station 1 had 57 students with SP mean ± SD of 13.04 ± 1.22 and FG mean of 12.11 ± 1.46 (p = <0.0001, r = 0.52). Station 2 had 59 students with SP mean of 14.48 ± 0.82 and FG mean of 14.50 ± 0.86 (p = 0.66, r = 0.83). Implications: SP and FG had statistically significantly different scores during evaluation of the counseling exercise but not during teaching of inhaler skills. The expectation for information exchanged during counseling exercise is different between consumers (SP) and providers (FG). However, both groups expect similar success in teaching use of devices. Further experience needs to be gained to create appropriate evaluation tools before SP are used as independent graders.

Conversion to Online Submission of Pharmaceutical Care Evaluations of Students during Advanced Experiential Rotations. Andrea J. Cameron, University of Toronto; Annie Lee, University of Toronto; Lesley Lavack, University of Toronto. Objective: To determine the impact of converting an evaluation tool to online format. Methods: In 2005, 41 students and preceptors piloted an online version of a form used bi-weekly to assess pharmaceutical care (PC) performance during 8-week rotations. The form includes rating scales and comments fields for 7 components of PC. Positive pilot results justified full implementation. The following class of 173 students and their preceptors received instructions one week before the first submission date. Two subsequent emails emphasized the importance of online submission and conveyed positive reinforcement and clarification as needed. An end-of-rotation survey will seek views from users regarding: time required, ease of use, benefits, difficulties and suggestions. Results: Survey results of 13 users (from the pilot of 18 students, 23 preceptors) reported: ‘very easy’ to use (85 %), ‘less time’ to complete (82%), and ‘no concerns’ (92%). Some had login difficulties. Full implementation in 2006 required some initial clarifications. Data-entry time was reduced since 95% of week-2 forms were completed online by preceptors. Survey of all users in April will measure effect on time, preceptor-student discussion process, and quality and quantity of comments. Advantages to Faculty are: ‘desktop’ access to submissions, ease of reading, and summary reports to flag problems. An added field ‘other comments’ provides a valuable perspective on progress. Implications: With large class size, technology is needed to make processes efficient for preceptors and faculty. The online form enables ease of use, timely monitoring and intervention by faculty. Further electronic documentation will occur.

Cooperative Approach to Alleviate Barriers in Graduating Pharmacy Students: Focus on Advanced Pharmacy Practice Experiences. Patrick D. Brackett, Auburn University; Debbie C. Byrd, Auburn University; James W. Fetterman, South University; Lori J. Duke, The University of Georgia; Whitney L. Unterwagner, Mercer University; April G. Staton, Auburn University; Mindi S. Miller, The University of Georgia; Melody C. Sheffield, The University of Georgia; William K. Kennedy, The University of Georgia; Charles H. McDuffie, The University of Georgia. Intent: Explain current and
future barriers and potential solutions to the supply of and demand for willing and qualified advanced pharmacy practice experience (APPE) sites and preceptors in Alabama, Georgia, and neighboring states sharing experiential resources. **Process:** We describe current and projected APPE needs for Alabama and Georgia Colleges of Pharmacy. Data on APPE needs and availability will be gathered from established and emerging schools in the region. Data will be evaluated relative to current pharmacy school enrollment and relative to projections of future enrollment increases driven by growth of current schools and arrival of new schools. We will also evaluate the potential impact of newly proposed ACPE standards for experiential learning. We will report our experience using a cooperative approach to address barriers. **Outcomes:** Current rotation needs are 4133 and current rotation resources are 5951 (difference = 1818). Future needs are estimated to be an additional 4590 rotations (difference = -2772) within the next 4 years. We will further analyze data relative to rotation type, individual schools, impact on specific rotation sites, and consequences of new ACPE standards. **Implications:** Pharmacy schools must produce more graduates to address the profession’s manpower shortage. However, the need for quality experiential education placed on the healthcare community represents a significant barrier and rate-limiting step in the matriculation of increased numbers of pharmacists. Approaches employed by our consortium include standardizing evaluations, rotation dates, objectives, preceptor development and application process; utilizing and sharing regional resources, preceptors, sites, faculty, and educational software.

**Creating a Culture of Professionalism: A Survey of Student Opinions.** Patricia R. Freeman, University of Kentucky; Eleanora R. Bird, University of Kentucky; Karen Blumenschein, University of Kentucky. **Objectives:** In response to the growing impression that professionalism is declining among pharmacy and other healthcare professions students, much discussion has been devoted to creating a ‘culture of professionalism’ at our nation’s colleges and schools of pharmacy. Activities designed with professional socialization in mind have been widely implemented, although little is known regarding their effectiveness in positively influencing student professional development. If efforts to inculcate professional attitudes and behaviors in students are to succeed, students must first realize the importance of professional development, and be immersed in classroom and experiential environments that are positive influences. The present survey collects student opinions on professionalism and professional development during pharmacy school. **Methods:** Students from professional years 1-4 were asked to complete an 18-item survey regarding professionalism. The survey sought to collect student opinions on whether pharmacy is a profession, the public’s view of pharmacy as a profession, the relative importance of professional development to their future careers, the influence of faculty and preceptors as role models, the influence of the pharmacy curriculum, the influence of involvement in professional organizations, and the obstacles to professional development. Faculty will be asked to complete the survey instrument to determine if faculty opinions on the factors impacting student professionalism differ from those of the students. **Implications:** Understanding students’ perceptions of professionalism and factors that positively influence professional growth can assist faculty in identifying barriers to professional socialization and in developing educational activities to inculcate professional attitudes and behaviors.

**Creating a Mentor Program for Experiential Personnel through an “Ask the Expert” Resource and the “PEPSIG Mentor Experience”**. Beverly A. Talluto, Virginia Commonwealth University; Tricia M. Berry, St. Louis College of Pharmacy; Cynthia J. Boyle, University of Maryland; Joan M. Rider, Ferris State University College of Pharmacy; Geralynn B. Smith, Wayne State University; Avery L. Spunt, Midwestern University – Chicago; Whitney L. Unterwager, Mercer University. **Objectives:** Develop a system to capture, organize, archive and retrieve PEPSIG questions and responses; create a mentor program to link novice experiential personnel with expertise among PEPSIG members. **Methods:** A committee of experiential program directors was convened to strategize on methods to develop a web-based “Ask the Expert” resource and a Mentor Program. To create the “Ask the Expert” resource, a process will be developed to capture, archive and retrieve PEPSIG questions. A form will be developed to categorize questions, capture contact information, response date, response and any attachments. To create the Mentor Program, methods to identify mentors, methods to specify mentor qualifications and disseminate information to PEPSIG members will be developed. Committee members will create a mentor signup form and determine mentor criteria such as providing a brief biosketch, indicating years of experience, highlighting accomplishments/areas of expertise, describing reasons for wanting to be a mentor, and providing preferred method of contact. Using web-based technology, the Mentor Program would provide access to the mentor’s information to facilitate appropriate alignment with the mentee’s developmental needs. Mentors and mentees will be surveyed in one year to assess effectiveness of the program. **Results:** The complete processes for the “Ask the Expert” resource and the Mentor Program will be described. **Implications:** These programs should facilitate novice transitions, improve communication, promote collaboration, foster innovation, facilitate program development and advancements in experiential education, and increase professional satisfaction.

**Current Practices and Beliefs Regarding the Use of Capstone Experiences in U.S. Schools of Pharmacy.** Michael J. Gonyeau, Northeastern University; John W. Devlin, Northeastern University; Margarita V. DiVall, Northeastern University; Mark A. Douglass, Northeastern University; Thomas C. Pomfret, Northeastern University; Jennifer M. Trujillo, Northeastern University. **Background:** There exists a paucity of pharmacy education literature addressing use of capstones, their development and implementation strategies, or outcome assessments. In an effort to emphasize, integrate and apply content and skills acquired over several core courses in our curriculum, Northeastern University School of Pharmacy (NUSOP) faculty have attempted to develop a strategy for student assessment at the completion of the didactic experience. If executed and monitored carefully, a capstone could provide a culminating experience integrating students’ skills and abilities to provide pharmaceutical care in preparation for Advanced Pharmacy Practice Experiences, while allowing documentation of achievement of many NUSOP educational outcomes. **Objectives:** To characterize current and planned use of capstone courses in U.S. schools of pharmacy; obtain specific information regarding the definition of capstones, goals and objectives, format, assessment strategies and overall beliefs and perceptions about the use and/or development of such experiences. **Methods:** Curriculum committee chairpersons from each U.S. pharmacy school are invited to complete a validated, web-based survey regarding current practices and beliefs surrounding the use of a capstone course in their Doctor of Pharmacy programs. Specific questions to be assessed include: use of capstones in the curriculum, reason(s) for capstone development, capstone structure, method of content integration, goals and objectives, faculty involvement, assessment strategies utilized, and overall perceived benefit(s) of the course. **Assessment/Evaluation:** Survey results will be presented.
Developing an Assessment Tool to Evaluate Practice-related Skills in an Abilities-based Physical Assessment Laboratory. Karen W. Lee, Massachusetts College of Pharmacy and Health Sciences – Boston. Objective: To develop a performance-based assessment tool to measure students’ abilities in demonstrating competency in practice-related physical assessment skills in PY3. Methods: Key abilities required during a given clinic visit utilizing physical assessment skills were identified. A rubric was designed to measure these abilities. A checklist was created as an extension of the rubric specific to the physical assessment being assessed. Self-evaluations of practice-related skills were completed by students before and after each laboratory. A mini-Objective Structured Clinical Examination (OSCE), focused on physical assessment, was incorporated as a final examination. The raters using the assessment tool varied from lab to lab. Effectiveness of the assessment methodology is determined by evaluating student self-assessments and actual grades obtained, using the assessment tool, for student performance in each lab and during the OSCE. Data is being collected over a 2-year time frame. Results: Preliminary data shows that students improved in self-evaluation scores after each laboratory. Student grades for each laboratory closely correlated to respective OSCE grades. Minimal grade intravariability implies objectivity of the assessment tool, despite variability of raters. Student feedback regarding the experience was largely positive. Implications: Standardized patients were needed to assess student abilities in performing these skills. Due to the large class size, students were evaluated in teams of 5 to 7 students every 4 weeks on different skills over 2 semesters. Students were individually evaluated during a final practicum to assure competency. Enlisting PY4 students as teaching assistants strengthened the teaching and learning experience.

Development and Assessment of Cultural Sensitivity in Pharmacy Students. Judith L. Kristeller, Wilkes University; Alan E. Zellner, Wilkes University. Objectives: This program is designed to increase awareness about cultural diversity with an emphasis on developing cultural sensitivity. Students will examine their own assumptions and stereotypes, assess their perception of cultural differences, discuss and write about their attitudes of racism, and develop their personal goals related to cultural diversity. Methods: Our professional practice lab will be used to incorporate issues of cultural sensitivity into the curriculum. For homework, students will first view “The Color of Fear”, a 90-minute film that examines cultural differences and the basis of hostility between different cultures. Subsequently, students will write a reflection about their attitudes of racism and their interpretation of the film. The following week, students will participate in a 3-hour lab that centers on self-evaluation. Several small group exercises will be used to help students to identify their biases, misconceptions, and assumptions about different cultures. We will discuss the etiology of hostility and mistrust between cultures in order to raise awareness and help students develop cultural sensitivity. Following a discussion of how to promote equity and celebrate diversity, students will be asked to develop a personal goal of how they can contribute to improving relations between cultures. Student attitudes regarding cultural sensitivity will be assessed using a questionnaire that is administered before and after the lab. Results: The impact of this program will be assessed using the student reflections, discussions during the lab, and the questionnaire. Implications: This program can be used as a model for incorporating cultural sensitivity into the pharmacy curriculum.

Development and Application of a Disaster Pharmaceutical Cache. Jeffrey P. Bratberg, University of Rhode Island. Objectives: Identify, describe, and evaluate the criteria involved with preparing a pharmaceutical cache for a nonspecific disaster, select the items for the inventory of the cache using pre-existing therapeutic categories, and demonstrate clinical and organization skills using the cache as a group in a simulated disaster situation. Methods: In this semester-long project, five groups of students will prepare a specific list and quantity of medications to treat acute conditions of and provide continuity of pharmaceutical care to disaster survivors. Each medication and dosage form must be justified based on published reports of common and disaster types of acute and chronic conditions. Student groups will be assessed using two rubrics, one regarding the assembly and justification of their written list of medications and equipment, and another outlining the evaluation of their groups’ interpersonal, clinical, and organizational performance using the cache in a training exercise. Results: Students groups will create cache inventories and write justifications of the inventories, as well as peer review each group members’ participation in the preparation of the cache. The students will also provide written and oral feedback on the usefulness of another group’s cache in the practical evaluation. Implications: This unique and timely innovation will not only fulfill several CAPE standards, but also will prepare students to meet health professional competencies for emergency preparedness. The role of pharmacists in both preparedness for and response to disasters is expanding, and this educational technique will immerse and push pharmacy students to fulfill these roles in the future.

Development and Evaluation of a Unique Methodology for Teaching Spanish to Pharmacy Students. Kristi M. Quairoli, Candace Wilt Barnett, Mercer University. Objectives: To develop a methodology for teaching Spanish in the absence of a bilingual pharmacy faculty member; and to document students’ perceptions of confidence and subsequent use of Spanish. Methods: A 16 week elective course was offered consisting of weekly self-study lessons using commercially available audiotapes and readings on Hispanic culture and health care. Participants met weekly with bilingual teaching assistants (TAs) who were also pharmacy students to practice speaking. A rubric was developed to assess vocabulary, pronunciation, and comprehension (all measured on a 4-point scale) and grammar and nonverbal communication (both measured on a 3-point scale). A bilingual faculty member from the School’s English Language Institute trained the TAs to use the rubric by using videotapes portraying pharmacists counseling in Spanish. TAs grade students weekly using the rubric and will grade mock counseling sessions at the mid- and end-points of the course. Students will self-assess confidence in speaking Spanish overall, counseling in Spanish, and knowledge of Hispanic culture and health care using a 5-point scale. Students will document subsequent counseling with Spanish-speaking patients. Results: The TAs had an inter-rater reliability of 0.93. Other data collection is in progress. Implications: This methodology may facilitate the teaching of Spanish in the absence of a bilingual faculty member and could be applied to instruction of other languages or include students from other health care professions. Potential benefits include the ability to send students to new practice sites with non-English speaking patients.

Development and Implementation of an Introduction to Clerkship Course. Lisa S. Smith, Wingate University; Joy B. Greene, Wingate University. Objective: To develop, implement, and evaluate an Introduction to Clerkship course to maximize the learning process during the 4th year Advanced Practice Experience (APE) program.
Development of a PDA based Database to Track Faculty and Student Interventions during Experiential Coursework. Roger D. Lander, Samford University; Michael D. Hogue, Samford University; Josh P. Thomas, Samford University; John G. Sowell, Samford University. **Objective:** To develop and evaluate a patient tracking database using the Palm PDA to assess student and faculty participation.

**Methods:** Utilizing commercially available database software (HanDBase 3.0), databases were developed and linked in order to collect patient information outlined in the literature as necessary for documentation of pharmacist delivered medication therapy management services (MTMS). This includes patient specific demographics, medication history, medical presentation and history, drug-related problem categorization, and time spent by the pharmacist or student. Data is being collected via a web-based, multi-user synchronization process and will be analyzed using descriptive statistics.

Faculty and student feedback regarding usefulness, ease of patient follow up, and any suggested changes will also be sought. **Results:** The database is developed and being utilized to collect data at the present time. Results will be available prior to presentation.

**Implications:** This should improve the data collection process for provision of MTMS by pharmacists, and may serve as a model for other colleges of pharmacy. Because of the nature of this database and its flexibility, it should be adaptable to a variety of situations and educational/practice tracking programs.

Development of a Peer Teaching Evaluation System in a Department of Pharmacy Practice. Samuel J. Matthews, Northeastern University; Michael J. Gonyea, Northeastern University; Judith T. Barr, Northeastern University; Mark A. Douglass, Northeastern University; Jennifer L. Kirwin, Northeastern University; Thomas C. Pomfret, Northeastern University; Donna M. Qualters, Northeastern University; Jennifer Trujillo, Northeastern University; Jenny A. Van Amburgh, Northeastern University; Margarita V. DiVall, Northeastern University. **Objectives:** To establish a formative peer evaluation (PE) instrument and process with inter-rater/intra-rater reliability and validity of the instrument and fine-tuning of the peer evaluation process. **Results:** Will be presented during the poster session. **Implications:** A reliable and valid PE instrument and process will enhance teaching effectiveness in large classroom settings and contribute to faculty development.

Diabetes Certificate Program Assessment. Gina Ryan, Mercer University; Karla T. Foster, Mercer University; Whitney L. Unterwager, Mercer University; Cynthia W. Coffey, Mercer University. **Intent:** Students are able to receive a diabetes certificate upon graduation if they complete a didactic diabetes care elective, an advanced practice experience with emphasis in diabetes, and pass an examination at the end of their fourth year. The objective of this study is to determine the effect of the diabetes certificate program on student performance in a written and oral examination that evaluates diabetes disease state
management and patient education skills. **Process:** This is a non-randomized single blinded controlled two year study. The certificate students’ examination grades are compared to a group of control students’ examination grades. The grade of the written examination is blinded to the students’ name and oral exam proctor is blinded to the control or certificate status of the student. **Outcomes:** The data from the first year of this study is presented. The certificate students’ (N = 15) average oral examination grade is 78.5 + 17.9% and the control students’ (N = 7) average oral examination grade is 60.3 + 16.3% (p = 0.61). The certificate students’ and control students’ grades on the written exam are 82.3 + 11.1% and 60.3 + 16.3% (p = 0.02), respectively. More certificate and control students will complete the examination this spring and additional data will be presented. **Implications:** The preliminary results suggest that a diabetes certificate program improves students’ comprehension of diabetes disease state management and patient education skills compared to students who do not graduate with a certificate.

**Diabetes experts in every classroom: pilot of an integrated web based comprehensive diabetes elective.** Deanne L. Hall, University of Pittsburgh; Scott R. Drab, University of Pittsburgh; Randall B. Smith, University of Pittsburgh. Technology has opened a vast array of pathways to bring the most comprehensive education to students. The DM Educate Comprehensive Diabetes Management web based elective course has been developed to provide a multidisciplinary foundation for health professionals in the principles of diabetes management. The contributing faculty are outstanding educators and practitioners from the fields of pharmacy, nursing, medicine, behavioral psychology, dietetics, and exercise physiology located across the country. Utilizing this web based course, a pilot elective course was designed for 15 pharmacy students to view video lectures, integrated with discussion sessions, assignments and exams. The overall direction for the course is provided by two faculty course coordinators. Students access video lectures via the web at their convenience, consisting of approximately 45 hours of content (equivalent to 3 credit course), completing approximately one section per week. In addition, the students will also complete two case assignments and two examinations. A pre- and post-test will be utilized to evaluate the students’ interpretation of course content. The students will also be active in providing feedback on the usability and function of the web site through surveys, as well as a pre- and post test on general views of web based teaching. Outcomes from the students’ surveys and evaluated course materials will be presented.

**Differences in knowledge-acquisition strategies and information source use as a function of confidence in self-learning.** Suzanne G. Bollmeier, St. Louis College of Pharmacy; Alicia B. Forinash, St. Louis College of Pharmacy; Thomas D. Zlatic, St. Louis College of Pharmacy; Claude J. Gaebelein, St. Louis College of Pharmacy. **Objectives:** The primary objective was to identify the knowledge acquisition strengths and sources used by professional pharmacy students in a self learning environment. **Methods:** This preliminary study was conducted to gather baseline data regarding how 2nd year professional students rate themselves as self learners. 123 students enrolled in a Therapeutics course, spring 2005, received an eligibility survey to identify variables that affect learning style, confidence regarding learning material on their own, and the extent to which they valued feedback. Students had two self learning practice opportunities. Prior to the first practice opportunity, students ranked themselves with regard to self learning ability. **Results:** Students who ranked themselves as very confident (40%) or somewhat confident (50%) self learners were more likely to rely on self-learning strategies, whereas less confident students relied upon input from classmates. Very confident self learners were more likely to research material beyond course requirements (p < 0.05) and, when faced with material not understood, pursued further. Others relied on their peers. (p < 0.05). Few in either group sought feedback from instructors. **Implications:** Proficiency as a pharmacist requires the intellectual curiosity, the motivation, and the skill set to be lifelong self learner. These results suggest that pharmacy students differ in self-learning confidence, and that this is associated with important differences in information-acquisition strategies. Thus, it may be necessary to implement interventions that enhance self-learning confidence and that teach more productive self-learning strategies to assure professional competence.

**Discovering the Learning Experiences of Pharmacy Students: Using Grounded Theory.** Winter J. Gibbs, University of Oklahoma; Nelson L. Er, University of Oklahoma. **Objective:** Rather than predicting the factors which influence student performance, the objective of this qualitative study is to discover the learning experiences of high achieving Doctor of Pharmacy students. **Methods:** This study utilized a grounded theory approach. High achieving pharmacy students who have completed their third professional year were purposefully selected. To develop an “experience-near” perspective on pharmacy student learning experiences, the qualitative data will include student portfolios and assignments, meetings between the two researchers, and researcher notes. Using open, axial, and selective coding, our interpretations will be “grounded” in the data. Through these coding processes, the data and the emergent hypotheses will interact in a dialectic fashion, reciprocity informing and being informed by the other and allowing us to develop heightened sensitivity to the research issues. Using this approach, we seek to gain a deep understanding of their learning experiences and identify the specific emergent hypotheses that characterized these experiences. With this understanding, researchers can establish detailed meaning about their learning experiences; thus generating or revising theoretical framework. **Results:** We expect there are different categories of learning experiences of the high-achieving pharmacy students and emergent hypotheses which reflect the relationship among the categories. Further, we anticipate discovering a process which reflects these learning experiences. **Implications:** As a result of these findings, administrators and faculty can potentially adopt the grounded framework in order to assist in the selection of highly qualified pharmacy school applicants and to plan intervention programs to enhance the curricular learning experiences of pharmacy students.

**Enhancing students’ ability to identify and manage drug related problems throughout a therapeutics course series.** Margarita V. DiVall, Northeastern University; John W. Devlin, Northeastern University; Mark A. Douglass, Northeastern University; Michael J. Gonyeau, Northeastern University; Thomas C. Pomfret, Northeastern University; Jennifer M. Trujillo, Northeastern University. **Background:** Identifying and resolving drug-related problems (DRPs) are essential skills for pharmacy graduates. Although the development of these skills is a major focus of advanced pharmacy practice experiences (APPEs) at our school, they are not systematically taught in our content-driven didactic courses. **Objective:** To develop and implement a strategy to improve DRP identification and management skills into all educational and assessment components of a 12-month, five-module, therapeutics course series. **Methods:** DRP management skills were introduced in the first module. Subsequent weekly seminars required students to identify and resolve DRPs for complex patient cases and develop pharmaceutical care plans utilizing the
SOAP process. DRPs were not limited to the content being covered in a particular week or module. Assessment strategies included evaluation of SOAP notes by the seminar facilitators and 10% of each exam’s questions were devoted to content from previous modules in the form of DRPs. Therapeutics coordinators constructed seminar and exam maps to track DRP type and content and provide direction in developing seminar and exam content in subsequent modules. The seminar DRP map outlined the disease states and types of DRPs included in the seminar cases in each module as well as the lecture content not reinforced during seminar. Exam DRP maps described each module’s content assessment, including the content used to evaluate DRP skills. Assessment: Item analyses of exams will be presented. Implications: This innovative approach should enhance students’ DRP identification and management skills and enable them to provide quality pharmaceutical care at the start of APPEs.

Entry-Level PharmD Degree Programs in Canada: Some Facts and Stakeholder Opinions. Peter J. Jewesson, The University of British Columbia, Tamar Koleba, The University of British Columbia, Judith Marin, The University of British Columbia. Background: Pharmacy education in Canada is about to change radically with the initiation of its first Entry-to-Practice Level PharmD (ELPD) degree program. As we move toward a potential nation-wide change to our entry-to-licensure requirement, a review existing and planned programs is warranted. Objective: To update information about existing Canadian and pharmacy degree programs, characterize the new “made in Quebec” ELPD degree program, and obtain some stakeholder opinions about the merits of such a curricula conversion. Methods: We assessed multiple sources of information in order to gather information on the characteristics of existing and planned programs, and stakeholder opinions. Results: Eight provinces offer nine pharmacy programs leading to a baccalaureate degree. As of 2005, there were 1,137 1st year students enrolled in these 4-year programs. The University of Montreal (UM) plans to transition from its existing baccalaureate program to an ELPD degree program in 2006. The new degree program will reportedly remain as a 4-year program, but will expand from eight to nine 4-month semesters in length. Required course credits will increase from 142 to 164 credits (15%). Support for conversion to ELPD degree programs is divided, and six national stakeholder groups have declared their opposition. Conclusion: Many parallels between pharmacy education in Canada and the US exist. While the likelihood of conversion to an all ELPD degree requirement in this country appears high, we also have an apparent absence of unified support for this transition. Yogi Berra’s infamous quotation “…this is like déjà vu all over again” seems appropriate.

Evaluating Dietary Supplement Information Resources Currently Used by Practicing Pharmacists. Mario M. Zeolla, Albany College of Pharmacy, Jennifer Cerulli, Albany College of Pharmacy. Objectives: Despite availability of numerous dietary supplement (DS) information resources, studies suggest pharmacists may not utilize them. The objective of this study was to survey practicing pharmacists regarding their use of DS information resources. A secondary objective is to determine the impact of a continuing education (CE) program on resource use. Methods: An anonymous 14-item survey was administered to pharmacists prior to a CE program about DS drug interactions and information resources. Gender, professional degree, practice setting and years of experience were assessed. Subjects rated the overall adequacy of resources available in their practice. Adequacy and the usefulness of six common DS resources was rated on a scale of 1 to 5 [1 = reference(s) completely useless/inadequate, 5 = very useful/adequate]. A 1-year follow-up survey assessing current resource use will be mailed to participants. Results: 58 completed surveys were returned. 53% of respondents were female and 97% held a Bachelors degree. Community/retail and hospital settings were most common (43% each). 51 (88%) of respondents had more than 10 years of experience. A median score of 3 (range 1-5) was reported for adequacy of currently available resources. Overall, use of the six references was low. The most common, Micromedex:AltMedDex, was used by only 18 (32%) of respondents, reporting a median usefulness of 3 (range 2-5). The remaining five were used by 25% or less of respondents. Conclusions: Experienced pharmacists in both community and hospital settings infrequently utilize DS information resources. Education on the availability and features of these resources could change usage patterns.

Evaluating the impact of pharmacy experience, scholastic performance, age, education, and self review on knowledge retention and clinical confidence of second year pharmacy students. Connie A. Valdez, University of Colorado Health Sciences Center; Brian A. Hemstreet, University of Colorado Health Sciences Center; Heather Ulrich, University of Colorado Health Sciences Center. Objective: To evaluate the impact of pharmacy experience, scholastic performance, age, education, and self review on clinical confidence and knowledge retention in second year pharmacy students. Methods: This sequential cross-sectional study evaluated second-year pharmacy students in the Spring 2006 semester. An 11-item demographic questionnaire was administered to evaluate pharmacy experience over the summer of 2005, during the previous academic year, and prior to admission. Information regarding grade point average (GPA), age, education, and student self review of therapeutics was also collected. To measure retention of knowledge, two 90-question assessment tests, evaluating 18 therapeutic topics on previously taught material were administered. Test #1 was administered to section A (50% of the class). Test #2 was administered to section B (remaining 50%). To assess clinical confidence, a 28-item questionnaire using a 5-point Likert attitude scale related to the topics covered on the assessment tests was administered. To evaluate the effects of pharmacy experience, GPA, age, education, and self review on knowledge retention and clinical confidence, correlation of results from the demographic questionnaire with both the assessment test and the clinical confidence questionnaire will be performed. Results: Data analysis will be completed by May 2006. Results will be presented. Implications: Its unknown if pharmacy experience, GPA, age, education, or self review impact clinical confidence and knowledge retention of pharmacy students. Data from this study will provide information regarding this issue and may be used in curricular development and modification, as well as for setting standards for prerequisite knowledge of pharmacy school applicants.

Evaluation of a Pharm.D. Curriculum Using a Survey of Preceptors of Final Year Rotations. Elena Meecker, University of Washington. Objectives: The University of Washington School of Pharmacy (UWSOP) is currently evaluating its existing Pharm.D. curriculum. The goal is to produce a generalist pharmacy practitioner capable of practicing in multiple patient care environments. In order to determine strengths and weaknesses of the curriculum in meeting this goal, preceptors of final year rotations were asked to evaluate their students with respect to several key traits of effective generalist practitioners. These traits were defined according to the five competencies described as essential for all health care providers in the 2003 Institute of Medicine (IOM) report entitled “Health Professions Education: A Bridge to Quality”. Methods: An anonymous, voluntary
online survey of preceptors at the 49 most active UWSOP sites in 2004-2005 was conducted. Among other things, questions asked preceptors to rate how well students met the IOM core competencies. Permission to conduct the survey was obtained from the University of Washington Human Subjects Review Division. Results: Results are still being analyzed at present. Implications: The survey results are expected to provide insight into whether the UWSOP curriculum effectively assists students in acquiring the five IOM competencies and, thus, succeeds in preparing them to become skilled generalist practitioners. Results will be compiled and presented to the UWSOP Curricular Review and Planning Committee with the aim of informing the School of preceptor perceptions of progress toward demonstration of the IOM core competencies and focusing the Committee’s efforts on the areas most in need of review or revision.

Evaluation of a pharmacy school-wide web-based clinical intervention system. Margarita V. DiVall, Northeastern University; Debra A. Copeland, Northeastern University; Michael J. Gonyeau, Northeastern University. Purpose: To implement and evaluate a school-wide, web-based, clinical intervention system to document types and impact of clinical activities of pharmacy faculty and students during advanced pharmacy practice experiences (APPEs). Methods: A clinical intervention form was developed based on pharmacy practice faculty consensus and was placed on a secure web site utilizing the Education Management System (EMS) software. All pharmacy students were trained about the purpose and use of the system and how to appropriately document interventions in a clinical setting before APPE initiation. Participation in the first year pilot phase was voluntary for preceptors. Students and faculty will be surveyed at the end of the APPE cycle to access overall form utility and data utilization. Results: Preliminary data analysis is available for 5 APPE rotations, in which 77 students at 54 different sites (4 ambulatory care (7%), 28 community (52%), 20 institutional (37%), 2 managed care (4%) documented 2,478 interventions. The most common types of interventions were: new drug for untreated indication (17%); drug information (13%); inappropriate dose (12%); and patient education (10%). Ninety-one percent of interventions, with completed follow-up, were accepted by the medical team, while 89% of interventions were categorized as clinically significant. The majority of interventions (61%) were student initiated. Implications: Our school-wide system allows students and faculty to document clinical activities, which can serve a number of purposes, including incorporation into student portfolios, faculty merit and promotion dossiers, and potential utilization to aid in establishing new clinical sites for our school.

Evaluation of Student Learning with Patient Oriented Technology in a Physical Assessment Workshop. Celia P. MacDonnell, University of Rhode Island; Tracey H. Taveira, University of Rhode Island; Greg Low, University of Rhode Island. Objective: Evaluate student learning and perception of learning when a traditionally “hands on” curriculum is supplemented with technology. Methods: The effectiveness of traditional didactic instruction and supervised skills assessment are a challenge in today’s physical assessment courses, having large class size and fewer skills instructors. Fiscal constraints have prevented the hiring of greater numbers of standardized patients required for the training. To meet these challenges, the instructional format of the Physical Assessment curriculum was modified to include: adult patient simulators and audio and visual presentations on WebCT. Students gained additional time to practice their assessment skills using this technology. Students also used stethophones with “standardized patients” during cardiac evaluation sessions, thus optimizing the use of available patients. The perceived effectiveness of this new format to develop physical assessment skills was assessed through a student survey. Results: After the introduction of technology enhanced instruction, skill confidence ratings were high, with a mean confidence score from six survey items of 3.69 (n = 84) on a five point Likert scale and standard deviation of 0.89. The use of Web CT technology, patient simulator and stethophones saved time for participants and provided students additional opportunities to practice outside of the training session. Implications: Introducing technology in a previously hands-on course enhanced academic quality as measured by student skill and confidence levels. Furthermore it provides both cost and time saving benefits. This baseline data will allow us to measure the effectiveness of future enhancements.

Evaluation of the Effectiveness of Web CT Self-Assessment Questions within a Pharmacotherapy Module. Kalen B. Porter, Mercer University; Jennifer R. Montgomery, Mercer University. Objective: To determine if the use of Web CT self-assessment questions can enhance student performance on examinations. Background: The addition of self-assessment questions to a pharmacotherapy module gives students the opportunity to learn by doing and provides feedback regarding retention and understanding of lecture material. Allowing students to access questions outside of class may enhance and reinforce the concepts learned during class, and provides a snapshot of the instructor’s test question format. Methods: Students enrolled in Cardiovascular/Renal Disorders III (PHA 454) for Spring 2005 and Spring 2006 will be compared. The Spring 2005 students will serve as the control group. Three to four Web CT self assessment questions per learning objective will be developed for use by students enrolled in PHA 454 in Spring 2006 along with an explanation. The learning objectives and examination questions will remain constant. Class performance on 32 examination questions will be analyzed and compared. In addition, the 2006 students will be asked to complete an online satisfaction survey. Results: 130 students from Spring 2005 completed the 32 examination questions. The overall average on the examination was 70%. Five questions were answered correctly by >90%, 80-89%, 70-79% of students, respectively. Three questions were answered correctly by 60-69% of students, and eight questions were answered correctly by 50-59% of students. Six questions were missed by > 50% of the class. Once the Spring 2006 students complete their examination in May 2006, data will be analyzed to determine if the use of self-assessment questions improves examination performance.

Expanding Pharmacists’ Roles in Disasters: A Scientific Poster Project. Jeffrey P. Bratberg, University of Rhode Island. Objectives: To create and promote the generation of innovative hypotheses on the role of the pharmacist in disaster settings using the scientific poster format. Methods: Students will self-assemble into ten small groups and use literature searches to generate hypotheses that connect the crucial abilities and knowledge of the pharmacist in unique non-disaster environments to disasters. Pre-selected research topics include the use of collaborative practice agreements to manage pharmaceutically complex chronic diseases in disasters (HIV/AIDS, COPD/asthma, diabetes, psychiatric disorders), controlling and preventing highly transmissible infections, educating special population patient care centers on disaster preparedness and mitigation, and using patient simulators to optimize the provision of scarce critical care resources to victims of disasters. Student group members are equally evaluated using a rubric evaluating their hypothesis, evidence/methods, reproducibility, written content, and format/design of the poster. Student groups will be expected to create posters worthy of
Faculty and Students’ Attitudes toward Elements of Complementary and Alternative Medicine Incorporation into Required Pharmacy Curriculum, Pilot Survey. Lana Dvorkin, Massachusetts College of Pharmacy and Health Sciences – Boston; Maria D. Kostka-Rokosz, Massachusetts College of Pharmacy and Health Sciences – Boston. Massachusetts College of Pharmacy and Health Sciences is one of the leaders in Complementary and Alternative Medicine (CAM) education for pharmacy students. Some of the courses that are offered on an annual or biannual basis include Survey of Alternative/Healing Practices, Herbal Medicine and Mind-Body Medicine. A new elective class in Non-herbal Dietary Supplements is currently being piloted prior to becoming a part of the new Master’s Degree Program in Applied Natural Products. The course collaborators are faculty members from the departments of Pharmacy Practice and Pharmaceutical Sciences, librarians and CAM practitioners from the community. Upon completion, lecturing college faculty and students enrolled in the course will be surveyed. Areas of interest in the faculty portion will include sufficient time for preparation and presentation, helpfulness and availability of resources for lecture preparation, enhancement of professional knowledge, and necessity or desire to incorporate the information into a required course in the pharmacy curriculum. Areas of interest in the student portion will include usefulness of the material presented in the assimilation of information from other courses, helpfulness in taking other CAM-related courses in preparation for this course, ability to incorporate information learned in a work environment and students perception of course’s necessity in the required curriculum. Another area of interest is the students’ prediction of the effect of this course on their life-long CAM education as future conventional health-care practitioners.

Faculty Perceptions of Student Competencies in Utilizing Drug Information Skills during Clinical Rotations. Sheryl L. Gutierres, University of Oklahoma; Machelle A. Davison, Oklahoma State University; Tracy M. Hagemann, University of Oklahoma. Objective: Clinical rotation faculty and industry professionals frequently comment on the importance of drug information skills and students’ lack of long term retention of these skills from courses into rotations. Faculty have stated that students must be remediated in these areas at the beginning of clinical rotations, which takes time from the actual focus of each rotational site. This study was conducted to determine faculty perception of students’ drug information skills and capture the problems/needs that they encounter on rotations with students. Methods: A two-page survey was developed and administered to full time and adjunct faculty involved in precepting fourth-year students. Results: Results showed that the drug information sources used the most on rotations were Micromedex® and Facts & Comparisons. Faculty felt students needed the most additional training using databases such as Micromedex® or OVID. The majority of faculty did not feel they had to remediate student skills before rotations. If students required remediation, the majority of faculty provided it themselves. Most faculty felt somewhat confident that students were getting the best results in their information searches. Implications: This study will help course instructors understand students’ drug information skills during rotations and the different needs/problems that full-time versus part-time clinical rotation faculty face in working with students.

Finding the Controversy to Gain Global Awareness. Jeffrey P. Bratberg, University of Rhode Island. Objective: To use informal primary literature analysis as a stepping stone for active classroom discussion of controversial issues in the management of infectious diseases with global, emerging, and/or public health importance. Methods: Throughout the semester, ten groups of students will analyze, and informally present a recent piece of primary literature. Students are assessed on their group’s ability to succinctly evaluate each of the papers’ sections, focusing on strengths, limitations, and the related global controversies in either the sections and/or the paper overall. Groups are encouraged to use non-traditional means of content delivery to ensure that every student in the audience participates. Although students must prepare for the controversy discussions by reading the pre-selected papers, two of ten student groups are also assigned as discussants to further facilitate discussion. Students will be given two rubrics, one to help guide the instructor’s assessment of audience participation, and another to assist the presenting groups with the mechanisms of presenting their literature analysis. Results: Students will complete surveys of this innovative teaching method assessing their knowledge and experience with 1.) Analyzing and summarizing primary literature, 2.) Presenting and leading classroom discussions, 3.) Connecting literature results to broader issues and action items. Implications: This transferable technique will permit students to take ownership in the analysis and the creative discussion of primary literature. While this technique will be implemented in an advanced infectious diseases elective, it can be used in any class to encourage organic links between literature and issues in the public sphere.

Getting the most from the data: improving student-standardized patient interaction assessment using the Rasch model. Eleonora R. Bird, University of Kentucky; Melody H. Ryan, University of Kentucky. Objectives: To use the Rasch model for analysis of performance-based assessments to enhance qualitative data. The model allowed transformation of ordinal data into interval data. To measure inter-rater reliability of standardized patients. Methods: In their third professional year, students participate in several Structured Clinical Instructional Modules (SCIMs) using standardized patients. Prior to topical lectures or SCIM participation, students completed an online pre-test. The standardized patients gave students immediate feedback via a scored standardized grading sheet. Upon completion of the SCIM, students completed a post-test and an evaluation regarding attitudes, their knowledge of the subject, skill development, and level of comfort with the interaction. Results: Data analysis is ongoing. Implications: Quality assessment measures enhance student outcomes and reinforce effective teaching methods. Undetected latent variables can affect student-standardized patient interactions in SCIM activities. Using the Rasch model, item difficulty and levels of student ability or attitude endorsement can be specifically measured. In addition, inter-rater reliability can be calculated through Rasch techniques.

Impact of Increased Number of Pharmacy Schools and Student Enrollment on Preceptor Workload. Maryann Z. Skrabal, Creighton University; Rhonda M. Jones, Creighton University; Rondall E. Allen, Xavier University of Louisiana; Mitra Assemi, University of California at San Francisco; Cynthia J. Boyle, University of Maryland; Philip Michael Hritcko, The University of Connecticut;
Abir A. Kahaleh, Ohio Northern University; Ruth E. Nemire, Nova Southeastern University; Teresa A. O’Sullivan, University of Washington; Denise A. Soltis, Drake University. Objectives: The increase in the number of schools/colleges of pharmacy and the enrollment of existing Doctor of Pharmacy programs is creating the need for educational institutions to find more pharmacy practice training sites. The purpose of this study is to assess the impact of the increase in students on pharmacy preceptor workload associated with experiential education. Methods: A cross-sectional survey design will be used. The survey will consist of both Likert-scale questions and qualifying statements. The questionnaire will assess the following issues: number of students precepted, number of schools that sent them students, ability to accommodate all of the schools’ requests for precepting students, reasons for declining to precept students, quality of experiential teaching, and compensation. The experiential offices of nine different schools/colleges of pharmacy across the United States will administer the survey to their preceptors in various pharmacy practice settings, both urban and rural, who routinely take students for them. Results: The mean and median responses to quantitative survey questions will be presented. Qualifying statements will be categorized according to themes. Implications: The results of this survey will assist pharmacy schools by assessing the current experiential environment, preceptor perceptions, and trends. Understanding the current preceptor workload issues will benefit the schools/colleges of pharmacy as they work to improve the experiential training of pharmacy students during a time when there is great difficulty in securing quality pharmacy practice sites.

Impact of Patient Challenge Simulations on Clerkship Students. Devra K. Dang, The University of Connecticut; Judy T. Chen, Purdue University. Objective: To determine the impact of patient challenge simulations on clerkship students’ empathy towards caring for underserved patients. Methods: Research have shown that healthcare professionals’ lack of understanding about caring for patients who face economic, cultural, or linguistic barriers can generate negative attitudes toward this vulnerable population and potentially affect the quality of care provided. Pharmacy students completing a structured experiential rotation at two primary care clinics that provide healthcare for underserved patients were assigned to one of four patient simulation exercises for 10 days. These simulations required students to participate in activities that mimic the life of a homeless patient, a Hispanic patient, an illiterate patient, or a hearing-impaired patient coping with multiple chronic diseases. Results: Pre- and post-results from the Jefferson Scale of Physician Empathy questionnaire and basic demographic information will be retrospectively compared to determine the impact of the patient challenge simulations. Review of student journals will provide insights on day-to-day experiences of how students learned to cope with the barriers of living as an economically, culturally, or linguistically challenged patient. Implications: Empathy and cultural competency are essential for pharmacists to provide quality pharmaceutical care. It is hoped that patient challenge simulations mimicking the lives of underserved patients encountered during clerkships will enhance students’ understanding of challenges faced by this vulnerable population. Results from this project will determine the impact of simulated exercises with clerkship students and provide evidence for faculty who may wish to incorporate patient simulation challenges in pharmacy courses or during clerkship.

Implementation of a Culture Competency Curriculum Content Development Workshop for Pharmacy Educators. Sunita Mutha, University of California at San Francisco; Karen S. Hudmon, University of California at San Francisco. Objectives: To develop, implement and evaluate the impact of a cultural competency curriculum content development workshop for pharmacy educators. Methods: A two-day faculty development workshop for pharmacy educators was developed based on previous cultural competency train-the-trainer models utilized by The Network in the Center for the Health Professionals at UCSF. The workshop was offered twice over the last 2 years. In order to evaluate its efficacy, three linked surveys were designed to measure 1) changes in workshop participant perceptions and 2) the impact of the workshop on the development and implementation of cultural competency training content within the PharmD curriculum at various colleges/schools of pharmacy. Surveys were administered to participants prior to, at the immediate conclusion of, and nine months following completion of the workshop. Results: An overview of the faculty development course will be presented at the meeting. Survey data collection in progress, with results to be analyzed and presented at the meeting. Implications: There have been no published studies to date evaluating the impact of faculty development training for pharmacy educators in the area of cultural competence. In addition, to date, no standardized or validated evaluation tools have been developed for use to assess such trainings. The results of these surveys may aid in the development of a validated evaluation tool for assessing faculty training in cultural competence-related curricular content development.

Implementation and Evaluation of Cultural Competence Training Content in the First Year Core Curriculum. Mitra Assemi, University of California at San Francisco; Karen S. Hudmon, University of California at San Francisco. Objectives: To develop, implement and evaluate the impact of integration of cultural competence training content into the first year core curriculum. Methods: A curriculum structured to provide basic foundations for awareness, attitudes, knowledge and skills related to providing culturally competent care was developed and integrated into a 3-quarter, first year pharmacy practice core course. The curriculum was delivered using a combination of interactive lectures, conference sections, and scheduled project days. Student assessment included participation, observed performance in case conferences, and questions on written exams. In order to evaluate the impact of the curriculum on student perceptions of their own attitudes, knowledge and skills related to the provision of culturally competent care, two linked surveys were designed using a previously published survey instrument. Surveys were administered before and after the curriculum was delivered. Results: An overview of the curriculum to be presented at the meeting. Survey data collection in progress, with results to be analyzed and presented at the meeting. Implications: There have been few studies published to date describing cultural competency-related curricular content and delivery in pharmacy education. In addition, few studies have provided information regarding assessment of such curricular content. The results of our surveys, based on a previous survey instrument currently undergoing validation, may provide information helpful to educators seeking to develop effective content and delivery strategies for this subject area.

Implementation of a Cardiac Surgery Patient Call-Back Program by Doctor of Pharmacy Students. Karen J. Kopacek, University of Wisconsin - Madison, Angel J. Kubly, University of Wisconsin Hospitals and Clinics. Background: Medication counseling for cardiac surgery patients at time of hospital discharge can be difficult due to multiple factors that affect information retention. Medication related problems may not be reported until days or weeks after discharge and many patients voice feelings of isolation during recovery.

American Journal of Pharmaceutical Education 2006; 70 (3) Article 65.
Objective: To implement a pharmacist-initiated call-back program using Doctor of Pharmacy students on clerkship at the University of Wisconsin Hospital and Clinics (UWHC). This program aimed to reinforce medication counseling, offer support to cardiac surgery patients, and provide a unique teaching opportunity for clerkship students. Method: Patients at risk for medication complications were identified during discharge counseling and offered a follow-up call within 7-10 days. A standardized form of open-ended and direct medication related questions were used to guide each call. Data were gathered to identify medication concerns and evaluate patient satisfaction with the program. Students were asked to evaluate the clerkship and the quality of patient teaching provided by the program. Results: Seventy-eight patients were contacted during a fourteen month period. Thirty-nine interventions were made involving pre- and post-surgery medications, adherence issues, side effects, symptoms, and refills. Sixty-five participants (85.5%) reported the call helpful in answering questions and providing support. Students strongly agreed the program was successful in providing continuity of care and a positive learning experience. Conclusions: Cardiac surgery patients frequently have medication questions despite discharge counseling by pharmacists. A call-back program using Doctor of Pharmacy clerkship students can reinforce counseling, provide reassurance, and help bridge the gap between hospital and home.

Implementing a standardized asthma program across all community care advanced practice experiences. Ashley Butler Pole, St. Louis College of Pharmacy; Tricia M. Berry, St. Louis College of Pharmacy; Theresa R. Prosser, St. Louis College of Pharmacy. Objectives: Maintaining or developing consistent, quality student activities across required Community Care Advanced Practice Experiences (CCAPE) is challenging due to large number of preceptors with varying experience levels in different practice environments. A standardized asthma management program was created and integrated into our CCAPE. The objectives were to 1) enhance student, preceptor, and practice development, 2) develop consistency and quality of activities, and 3) improve documentation of clinical interventions. Methods: Current and prospective CCAPE preceptors were trained on procedures to implement the Asthma Friendly Pharmacy (AFP) Program. Participating pharmacies received on-site AFP training and tools to facilitate implementation. Tools provided include marketing pieces, patient and staff educational materials, fax templates to efficiently communicate with other providers, and items to increase communication and follow-up within the pharmacy. During the CCAPE orientation, students review the asthma guidelines and are trained to make asthma interventions within the community setting workflow. The experiential team then reviews documented interventions. Results: In the first year, 35 CCAPE preceptors and 121 students will receive AFP training. The number and type of asthma interventions and the percentage of students documenting interventions will be described. The orientation and on-site training materials, student syllabus, and asthma program tools will be shared. Implications: By adapting this standardized, disease-specific program, preceptors have a structured framework to improve their practice and uniform opportunities for patient care activities during CCAPE. Intervention data collected provides an opportunity to objectively compare student activities and abilities across CCAPE as one component of a comprehensive quality control plan.

Improving Communications with Experiential Education Preceptors. Laurie Briceland, Albany College of Pharmacy; Teresa J. Lubowski, Albany College of Pharmacy. Objectives: The goal of this education initiative was to increase and improve the quality of college communication with experiential education preceptors, particularly volunteer, off-campus preceptors. Methods: The experiential education division targeted a revision of the preceptor training format, development of an experiential education newsletter and initiation of a site visit process. Results: The revised preceptor training format included program updates and 4 hours of CE credit topics. Meeting Attendance was doubled compared to the previous year. One CE credit consisted of a videotaped program featuring faculty and volunteer preceptors providing advice for solving rotation issues such as determining rotation grades and developing objectives. This video will be made available to all preceptors in home study format. The evaluations of the program were positive. A newsletter was developed which features unique student projects completed as part of advanced and introductory practice rotations. The 4 page newsletter is distributed in paper format to all current preceptors three times yearly. Eight preceptors have contacted the college to suggest an article for future editions of the publication. A site visit process was developed using the PEMS system. The site visit form includes data on the person visited, reason for the visit, time spent on the visit, and review of objectives and capability checklist items. Implications: Volunteer preceptors make up approximately 75% of the college practice sites in a given year. Excellent communication with experiential education preceptors is imperative to improve and maintain relationships, highlight best practices examples and raise the quality of rotation activities.

Incorporating contemporary issues in pharmacy practice into a pharmacy curriculum through a 6th year elective. Daniella C. Ezzo, St. John’s University; Maria M. Sulli, St. John’s University. Objective: To show students that community pharmacy practice has moved from “lick, stick and pour” towards offering enhanced pharmaceutical care. Methods: The course is offered as an elective and is taught in the spring semester of the final year of the pharmacy curriculum and has 29 students registered this semester. Topics discussed are of current issues that challenge pharmacists in community practice everyday. Discussions are created to review counseling techniques, the role of community pharmacists in preventative medicine and self-care, development of disease management and wellness programs, and advanced opportunities for offering pharmaceutical care in the community. Three active workshops will be held. First students will counsel a patient based on a prescription and patient profile presented to them. The second workshop is designed to focus on pharmacists’ role in evaluating and prescribing methods for self-care. Finally, students will combine all skills and perform a patient counseling scenario in front of the class and be evaluated by both the faculty and their peers. Students will work in small groups on all assignments. Results: Multiple workshops will reflect student’s progress throughout the course and results will be available by the end of the semester. Implications: Discussions held in class should better prepare a student pharmacist to be a leading role model in community pharmacy practice by giving them the tools otherwise only learned through experience.

Incorporating Pharmacy Students in Early Experiential Learning Opportunities into Medication Reconciliation Processes in Hospital Sites. Denise A. Solis, Drake University; Angela Boord, Iowa Lutheran Hospital; Johnna S. Neary, Drake University. Background: JCAHO approved the 2006 National Patient Safety Goals. Goal 8 requires hospitals to obtain an accurate medication list for patients prior to hospitalization, align medications throughout hospitalization, as well as communicate the current list to the next provider upon discharge. Hospital settings are working on protocols to satisfy this requirement. Objective: To involve pharmacy students in the
Medication Reconciliation process allowing students to gain experience in the process, to increase exposure to practice in the hospital setting, and to facilitate completion of the medication reconciliation process. **Methods:** Run a pilot program with a small group of students. Assign the student to a hospital setting where they are paired with a P4 student on rotation. The P2 and the P4 student will look at all the new admissions for the previous day, examine the medication list and look for discrepancies. During the process they will review med charts, contact prior medication providers, and potentially interview the patients. A pharmacist preceptor will provide oversight of the student team. **Outcomes:** The number of discrepancies can be tracked through the process to determine the value of the process. **Implications:** Students will be better prepared for rotations through this early exposure to working with real patients. Rotation students will gain experience teaching and mentoring younger students. Hospital sites will be better able to meet the medication reconciliation requirement by utilizing student from different years in the curriculum.

**Incorporating TabletPC and Streaming Video Technology into the Education and Assessment of Parenteral Product Preparation.** Jeanmine M. Conway, University of Minnesota; Michael C. Brown, University of Minnesota; Todd D. Sorensen, University of Minnesota. **Intent:** To use technology to improve efficiency in education and assessment of parenteral technique. **Process:** An online parenteral technique training module was developed to augment live instructor training. The online training module utilized Marcome-dia® Breeze® and RealMedia® streaming files (13 total) to deliver descriptions and demonstrations of good and poor technique. Based on early success, the content was also made available to students. In addition, a previously developed paper based parenteral technique rubric was converted to an online rubric. Instructors used the online rubric on TabletPCs to evaluate students’ performances in real time. Students were given the opportunity to use the rubric on TabletPCs for peer evaluations. **Outcomes:** Through the first semester, 12 instructors accessed the online training materials 207 times, while 158 students did a total of 1347 times. Instructors’ use of the TabletPCs markedly improved the timeliness of feedback from days to minutes via automated emails. When technique was rated ‘likely harmful’, the mean number of words of feedback provided in the paper-based and TabletPC-based rubric did not substantially change (17.9 vs 14.7 words, respectively). Students’ initial TabletPC peer-evaluation efforts had mixed results as students lacked the repetition to effectively use the technology. Early student performance suggests learning outcomes similar to previous years, but a full year needs to be completed to truly assess educational outcomes. **Implications:** The incorporation of TabletPCs and streaming media was successful. Future developments will engage instructors in practice evaluation sessions to further enhance accurate application of the technique rubric.

**Inter-professional similarities were found in a classroom cultural exercise.** Karen M. Bastianelli, University of Minnesota; Glenn H. Nordenh, University of Minnesota. Inter-professional similarities were found in a classroom exercise. Pharmacy and medical students (in their first or second years) described a culture foreign to them: the Hmong culture as presented by Anne Fadiman in The Spirit Catches You and You Fall Down. This book chronicles a recently immigrated Hmong family’s experiences with Western medicine. The assignment used the definition of culture found in the Dictionary of Modern Sociology (1969, 93): values, norms, and artifacts. Students were asked to list three values, three norms, and three artifacts using only a word (or short phrase). For clarity, we also provided the following definitions: *Values:* general statements that specific behaviors are socially preferable to other alternatives (i.e. things people think) *Norms:* guidelines for action, standards of behavior, social rules that prescribes acceptable behavior (i.e. things people do). *Artifacts:* man-made items that may be common to all (things people make or use). The vast majority of both pharmacy and medical student responses were contrasts from their own cultures, not similarities. References to spirituality were predominant. Spirituality references were present in the lists of values, norms, and artifacts 28%, 52%, and 32% of the time, respectfully, for pharmacy students; the percents were 37%, 63%, and 56% for medical students. Pharmacy and medical students were similar in their use of contrasts and the predominance of spirituality in their responses. Drawing conclusions is not possible due to the small numbers of participants. However, the findings are interesting and warrant further investigation.

**Knowledge retention of second year pharmacy students: impact of incorporating mock rounds into the Professional Skills Development Course.** Connie A. Valdez, University of Colorado; Heather Ulrich, University of Colorado. **Objective:** To evaluate knowledge retention of second-year pharmacy students prior to, and following an educational intervention. **Methods:** To measure pre-intervention student retention of knowledge, two 90-question assessment tests, evaluating a total of 18 therapeutic topics (nine topics per test), on previously taught material, will be administered. Test #1 will be administered to section A (approximately 50% of the class). Test #2 will be administered to section B (remaining 50% of the class). Four “mock rounds” will be incorporated throughout the course and serve as the intervention. In a simulated clinical practice setting, each “mock round” will require students to work-up a complex patient with several medical conditions, as a method to revisit and apply key concepts previously taught. Students will then be required to thoroughly discuss the patient in a small group with a faculty member. To measure post-intervention student retention of knowledge, the same assessment tests will be administered. 3.5 months after the initial assessment test, but to the opposite sections (test #1, administered to section B and test #2, administered to section A). Mean student performance, on individual questions and therapeutic topics, will be used to assess knowledge retention for pre and post assessment tests.

**Results:** Results will be presented. **Implications:** Retention of knowledge is problematic at the University of Colorado. If this model proves to be successful in enhancing knowledge retention, results will be used to guide curriculum modifications and assist other schools with similar problems related to knowledge retention.

**Learning Styles, Personality Type, and Pedagogy: How Do They Relate?** Katherine A. Kelley, The Ohio State University; Carolyn L. Brackett, Ohio State University; James D. Coyle, The Ohio State University; Maria C. Pruchnicki, The Ohio State University College of Pharmacy. **Objectives:** The first objective is to characterize PharmD student learning preferences as determined by the Learning Styles Inventory (LSI) and personality preferences as determined by the Myers-Briggs Type Indicator (MBTI). The second objective is to determine if learning preferences and personality preferences correlate with students’ reported preferences for method of content delivery in two didactic, entry-level PharmD courses. **Methods:** Two didactic courses employed narrated PowerPoint lectures available via the internet coupled with workshop or laboratory-based in-class sessions. At the beginning of a quarter, second year PharmD students were asked to complete the LSI, MBTI, and also to report their anticipated personal preferences for course content delivery. At the end of the quarter they were asked specifically about how well the
Maximizing Limited Resources to Facilitate Instruction of an Elective Course in Advanced Pharmaceutical Compounding. Alfred T. Reiman, University at Buffalo; Sarah E. Calnek, University at Buffalo; Gayle A. Brazeau, University at Buffalo; Gene D. Morse, University at Buffalo School. Objectives: To develop and implement an elective advanced pharmaceutical compounding course in a setting of limited: budgets, personnel and specialized equipment. To offer students exposure to various contemporary dosage forms as well as to the innovative procedures and novel apparatus used in their formulation, all in a setting where conventional lab teaching methods are otherwise cost prohibitive and/or impractical. Methods: A weekly three-hour laboratory, organized into five parenteral and five non-sterile compounding workstations, was developed. Each station represents a different product where students formulate, compound and dispense one product weekly. Students rotate to a new position weekly and eventually progress through all ten stations. Instructor(s) circulate among stations providing individual assistance. In this way many are served in a laboratory having only one: ointment mill, TPN compounder, etc., Outside class students review video lectures in which instructor(s) demonstrate equipment use, procedures and calculations. Six stations currently have such videos. The remaining four are a work in progress. Students are evaluated by laboratory reports, product analysis and written examinations. Results: An advanced pharmaceutical compounding course has been developed and successfully implemented in a setting where conventional laboratory teaching methods were cost prohibitive and impractical. Implications: First offered in Spring 2002 with three students, this course has since evolved to accommodate 20 (target: 30). Per student surveys and course evaluations, this course has been widely accepted. This rotational format has enabled an individual instructor to maximize the potential of limited resources while providing a professionally relevant and challenging experience in pharmaceutical compounding.

Measuring Student Outcomes In A Cultural Competence Course. Katherine A. Kelley, Ohio State University, Patty Fan-Havard, Ohio State University. Objective: The purpose of this work was to measure student outcomes in a pharmacy course designed to build cultural sensitivity and multicultural awareness. Methods: Students enrolled in a cultural competence course were assessed for learning on two components of cross-cultural education - cultural sensitivity (attitude) and multicultural awareness (knowledge). Cultural sensitivity was measured via instructor evaluations of written and oral reflection exercises showed a trend of increasing evidence of empathy, respect, and sensitivity toward others. The mean scores on all ten of the self-assessed competencies increased from the pre to the post course assessment, and results from the definitions rubric will be presented. Implications: Students enrolled in a cultural competence course demonstrated positive gains in their measured cultural sensitivity (attitude) and multicultural awareness (knowledge) at the end of the course. Overall student ratings of the course were high and their perceptions of the course were extremely positive.

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Medical Informatics: A Collaborative Course with University Libraries. Richard L. Slaughter, Wayne State University; Deborah H. Charbonneau, Wayne State University. The curriculum revision that implemented the entry-level doctor of pharmacy program at Wayne State University resulted in a substantive change in where drug information was placed in the curriculum. The course Drug Literature Evaluation (a third professional year course) was replaced by a first professional year course titled Medical Informatics. The focus of the course also substantial shifted towards obtaining and developing early skills in evaluating information from electronic resources. This initiated a collaboration with the university libraries. This course is co-taught between faculty in the Eugene Applebaum College of Pharmacy and Health Sciences and academic staff from the Shiffman University Medical Library. This allows for an early introduction into the resources (primarily electronic) of the library and to the library staff. Both of these benefit students throughout their career at our college. The library staff instructs about 40% of the course on sources and databases available for obtaining medical information. These include databases available through OVID® (MEDLINE, Cochrane, databases (controlled trials and systematic reviews), ACP Journal Club, DARE), websites for consumer health information, public health information and lectures on evidenced based medicine and practice guidelines. Active learning strategies are imbedded in the course and include small group (n = 4) workshops that reinforce concepts discussed in class, provide hands-on experience, and further develop critical appraisal skills. Pre and post assessment strategies evaluate students’ knowledge and utilization of medical information resources. This course demonstrates a successful collaboration between university medical libraries and the college of pharmacy and health sciences.

National Tuberculosis Curriculum Consortium (NTCC): Developing Teaching Tools for Educators. David S. Adler, University of California, San Diego; Kathleen K. Graham, Nova Southeastern University; Charles A. Peloquin, University of Colorado Health Sciences Center. Tuberculosis (TB) is a leading infectious killer globally. In the US, over 50% of all TB cases are in foreign born patients, reaching 80% in some locations. The National Tuberculosis Curriculum Consortium (NTCC) was established in 2003 through the NIH National Heart, Lung and Blood Institute (N01-HR-36157). In line with the National Academy of Science Institute of Medicine report for reforming healthcare, the NTCC consists of a national faculty representing Clinical Laboratory Science, Medicine, Nursing, Pharmacy, Public Health, Respiratory Therapy, and Physician Assistants. Participants include TB experts, program directors, and professional educators from 20 universities. The mission of the NTCC is to evaluate current teaching practices for TB, and to create, design, implement, and evaluate new teaching tools for TB. The NTCC has developed knowledge-based competencies for TB, and conducted
The Ohio State University

Implications:
To date, mixed results were found regarding students’ experiences and grades on subject matter. A second semester will be of value including a second experience and performance utilizing different case presenters online. Data from these teaching tools for use at their institutions.

Online problem-based learning experience for second year pharmacy students. Justine S. Gortney, Mercer University. Objectives: To develop an online problem-based learning experience for second year pharmacy students (P2s) in a computer lab setting connecting with a practice site. Methods: A case presentation and discussion was generated online for the P-2s using “chatroom function” on WebCT. From a clerkship site, a case presenter described a hospitalized patient. Online, P2s asked questions and discussed their medical and drug-related problem list and solutions to the case. One group of students had a faculty member as their case presenter, the other a supervised fourth year pharmacy student (P4). By evaluating the online transcripts and the P2s’ pharmaceutical care plans, data was to be collected for two semesters. Primary endpoints described below were evaluated using the student’s t-test. Hypothesis was that given educational level, the P2 students would have an equal online experience regardless of presenter. Goals included motivating the P2 students by exposing them to “live” cases, comparing case analysis utilizing different facilitators, and creating an interactive learning environment for the P2s. IRB approval was obtained in 6/05. Results: No difference was found between groups in the number of online interactions and questions regarding pharmacotherapy (p>0.05 for both, N = 141). Students with a faculty member presenter identified more problems than those with the supervised P4 (p < 0.0001). Implications: To date, mixed results were found regarding students’ performance utilizing different case presenters online. Data from second semester will be of value including a second experience and collection of secondary endpoints such as student experience evaluations and grades on subject matter.

Partner for Promotion: An Advanced Practice Longitudinal Rotation to Enhance Community Pharmacy Practice. Jennifer L. Rodis, The Ohio State University; Kristin A. Casper, The Ohio State University; Jerry L. Cable, The Ohio State University. Objectives: 1) To train pharmacists and pharmacy students to develop expanded patient care services in community pharmacies and 2) mentor pharmacist-student pairs (PSPs) through implementation of a patient care service. Methods: Students complete a 10-month longitudinal rotation with community pharmacists to establish a self-sustaining, expanded patient care service. Community pharmacists serve as primary preceptors for the rotations. A clinical practice faculty member provides training, mentorship, and feedback on ideas and materials to the PSPs throughout service implementation. Prior to the rotation, PSPs participated in a workshop with sessions on preceptor development, documentation and outcomes, and administrative aspects of implementing expanded patient care services. Throughout the rotation, PSPs continue to improve their administrative skills, including marketing, human resource management, workflow, and billing and reimbursement. Impact will be assessed at the conclusion of the rotation. Results: 7 PSPs are developing services including lipid screening and management; diabetes education, screening, and management; comprehensive medication reviews; and immunization clinics. 2 PSPs received external grant-funding for their projects. Program-specific outcomes to be evaluated via surveys include: student and preceptor satisfaction with the rotation (end of rotation), career directions of students (6 months, 12 months, 24 months post-graduation), sustainability of the patient care services at individual sites (6 months, 12 months, and 24 months post-graduation), and changes in pharmacists’ job satisfaction (beginning and end of rotation). Implications: This project describes an experiential teaching model which provides pharmacy students and pharmacists with patient care service implementation skills and promotes the evolution of clinical community pharmacy practice.

Patients Perspectives on Pharmacy Students’ Abilities to Provide Information on Medicare Part D. Maureen E. Knell, University of Missouri-Kansas City; Rafia S. Rasu, University of Missouri - Kansas City. Objective: To determine if pharmacy students can provide valuable information to assist patients with understanding and enrolling in new Medicare Part D programs. Methods: An informational fair for patients of three hospital owned community services clinics was held in November 2005. Pharmacy students either in their early experiential or advanced experiential rotations were trained regarding Medicare Part D education. In addition, students individually pre-screened patients’ clinic medical records to identify and provide a list of plans covering most, or all patient medications prior to the fair. A questionnaire assessing the satisfaction of patients who attended the fair was distributed to patients attending at the time of the event. Results: A total of 40 (67%) questionnaires were returned. Almost 60% of the patients reported to be highly satisfied with the overall fair. While answering questions specific to pharmacy students’ involvement, 52.4% of the patients reported high satisfaction with pharmacy students’ involvement in identifying plans to cover most or all of their medications. In addition, 90.5% of the patients mentioned that pharmacy students were able to help patient chose a plan under Medicare part D. Patients’ decision to choose/identify a Medicare Part D drug plan correlated (p < 0.05) with students’ ability to communicate information about options or with the opportunity to meet with a pharmacy student prior to enrolling. Implications: Early and advanced experiential pharmacy students can play a valuable role in assisting patients in choosing a Medicare Part D program.

Patterns of Alcohol and other Drug Use within Pharmacy Students, University of Missouri - Kansas City. Karen P. Norris, University of Missouri - Kansas City; Sarah A. Kleffner, University of Missouri - Kansas City. Objectives: While data exist describing substance usage patterns for health care professionals in general, only very limited data are published specifically characterizing use by pharmacy students. The Pharmacists’ Alcohol (and other drug) Awareness, Lifeline and Support Program (PAALS) is a recently launched awareness and support program for students within the University of Missouri-Kansas City (UMKC) School of Pharmacy (SOP) with the mission to promote awareness of and resources for substance use and abuse within the profession of pharmacy. As part of Directed Individual Study coursework supporting the PAALS Program, a decision was made to survey patterns of alcohol and other drug use within UMKC SOP and compare results with other published pharmacy student data. Results will be presented and published in order to contribute to this scarce body of literature regarding pharmacy students. Methods: Medline, IDIS, and IPA were searched to identify relevant literature and to assist with development of a survey. A survey was created and administered to all students within UMKC SOP. Anonymity was assured to encourage honest responses. Data
were stratified according to curriculum year, and aggregate student demographic data were obtained. Results: Presented with final tabulations completed and analyzed. Presentation of similarities and differences between previously reported pharmacy school-specific results compared with UMKC SOP students. Implications: Validation and further elucidation of alcohol and other drug usage patterns within school of pharmacy students.

Pharmacy Socialization: Comparing students in a Co-op Program to Students in a Traditional School Calendar. Mark L. Yorra, Northeastern University. Objective: Professional socialization is the transition from a student to a professional. Using some existing tools and modifying some questions, a scale was developed to compare the level of student at different points in the curriculum.

Methods: Surveys are administered to the student population at Northeastern University at the end of the second preprofessional year prior to entering the P1 year and starting their first co-op experience. It will be administered to students at a school comparable in size and demographics to students at either the end of their preprofessional second year if available, or at the beginning of the P1 year. The survey will be administered to the same cohort of students at each school at the end of their P2 year. The comparison of students who participated in three co-op experiences will be made to students who work on their own during the summers to determine if there is a difference in their level of professional socialization. Results: Pretesting of the survey provided some useful data. This information will be summarized and presented. The actual study is planned for the 2006-2008 time frame. Implications: The examination of the Cooperative Education structure will be compared to a summer internship program, demonstrating that there is either a value added by a Cooperative Education program or there is no difference compared to a traditional program. If there is a value added, some of the components can be extrapolated to schools of pharmacy for inclusion in their pharmacy experiential programs.

Pros: A Contemporary Approach To Introductory Practice Experience. William R. Wuller, Southern Illinois University-Edwardsville. Objectives: Develop a rigorous Introductory Practice Experience (IPE) utilizing a contemporary curricular model that demonstrates quality educational outcomes. Methods: Scheduling of the first professional year curriculum placed the IPE experience in consecutive weeks at the mid point of the first semester. Students completed 32 hours per week in two distinct practice environments. The educational plan was based on a series of exercises designed to be rigorous, foster self learning, and cultivate student preceptor interaction while not being “an intrusion” into the experiential sites daily workflow. Students kept logs documenting their experiences, answered reflective questions and participated in small group, faculty facilitated post experience debriefings. Preceptors assessed the students’ achievement and professionalism on an honors/pass/no credit basis utilizing guidelines provided by the course coordinator. Preceptors were sampled on their satisfaction with program design and also provided unsolicited comments. Results: Preceptors and students were highly receptive of the contemporary scheduling process with a strong preference over shorter learning intervals spread out longitudinally or a summer program. The provision of learning exercises which encouraged preceptors to be creative and adapt to the site’s learning strengths was well received. Preceptors’ assessments of students and journal reviews by faculty documented excellent educational outcomes. Numerous preceptors and students suggested reconsidering the volume of required self learning exercises and journaling. Action on suggestions will be available at presentation.

Implications: A rigorous IPE model utilizing a contemporary curricular schedule and demonstrating high quality educational outcomes can be beneficial to the learner, the preceptor and experiential education programs.

Redesigning an Early Hospital Practice Experience to Improve Quality and Consistency. Joan L. Settlemyer, University of North Carolina, Kristen B. Campbell, University of North Carolina, Susan M. Miller, University of North Carolina, Tracie R. Rothrock-Christian, University of North Carolina, Kim I. Leadon, University of North Carolina at Chapel Hill. Objectives: Anecdotal and routine evaluative student and preceptor feedback prompted efforts to improve the early hospital pharmacy practice experience (EHPPE). This project sought to assess current strengths and weaknesses of the EHPPE and to use collected data to guide a comprehensive redesign of the goals, objectives, competencies and instructional activities for the experience. Methods: A 38-item survey was distributed to 84 preceptors of the introductory and advanced hospital practice experiences to determine the types of instructional activities provided to students and the time allocated for each activity. Concurrently, a similar survey was distributed to 229 students regarding their perceptions of their introductory and advanced hospital practice experiences.

Results: Survey results have not yet been analyzed. Survey findings will be compared to the anecdotal feedback regarding the need for a more structured EHPPE. In addition, survey data will be used to further refine the EHPPE curriculum, related preceptor development materials and student assessment tools. Discussion: Based upon anecdotal and routine evaluative student and preceptor feedback, variations and deficiencies in instructional activities during the hospital practice experiences were identified. Opportunities to practice fundamental skills in hospital pharmacy practice were not uniformly provided. A group of experiential faculty initiated a redesign of the EHPPE to ensure that all students achieve competency in medication dispensing, preparation, and communication. Future preceptor and student surveys are planned to assess the effectiveness of these changes and to guide further redesign. Analysis of survey data and resulting curricular redesign will be reported at the AACP Annual Meeting.

Secure Database for Student Scheduling and Operational Management of an Advanced Pharmacy Practice Experience Program. Michael A Richardson, University of Kentucky; John J. Piecoco, University of Kentucky; Ann B. Amerson, University of Kentucky. Objectives: A system was devised to meet the following objectives: improve the speed and accuracy in the rotation request and assignment process; increase efficiency in communication with preceptors and students; provide an on-line evaluation submission process for students and preceptors; facilitate day-to-day operational management of the rotation program. Methods: An open viewing web site is linked to a secure database. Preceptors and students are provided an ID and password for access to the database. The database provides access to the rotation schedule, rotation syllabi, evaluation forms for on-line submission and contact information for students, preceptors and program faculty and staff. Prior to the beginning of the rotation year, an on-line process matches and assigns students to rotation sites using preceptor availability, student preferences and a computer-generated random selection process. Results: The on-line request and selection process resulted in an 87% time savings over manual methods. A survey of the students showed a high level of satisfaction with the procedures and fairness of the request and assignment process. A survey of preceptors showed a high level of satisfaction with on-line communication methods. Use of the web
Standardizing the Experiential Education Quality Assurance Process. Rhonda M. Jones, Creighton University; Jay D. Currie, The University of Iowa; Raquel Rodriguez, University of Minnesota; Rebecca K. Baer, South Dakota State University; Bernard D. Hendricks, South Dakota State University; Sandra J. Johnson, The University of Iowa; Wanda R. Kearney, North Dakota State University; John E. Ridgway, University of Nebraska Medical Center; Debra C. Sisson, University of Minnesota; Denise A. Soltis, Drake University; Maryann Z. Skrabal, Creighton University. Objectives: The Accreditation Council on 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 inter-rater reliability in assessment of student performance. During the annual NABP/AACP District V meeting, the experiential directors were asked to explore the possibility of standardizing QA procedures among the schools/colleges of pharmacy. This report will describe the process used by the regional schools/college to exchange information and develop standardized QA criteria and procedures for experiential sites and preceptors. Methods: At an initial meeting, experiential directors established areas of beneficial collaboration regarding QA procedures. Current criteria for sites and preceptors, as well as currently used QA procedures and forms were discussed and reviewed. A subcommittee merged current criteria, procedures and forms into standardized documents that all District V schools/colleges could use. At a second meeting proposed documents and methods were reviewed, modified and approved. Results: Specific site and preceptor criteria, QA procedures and evaluation forms that were developed will be presented. Descriptive information regarding how these standardized documents will be used among District V schools/colleges of pharmacy will also be presented. Implications: Data presented will 1) provide a structured, standardized QA criteria and process for sites and preceptors who routinely take pharmacy students from District V schools/colleges, 2) enhance the quality of experiential education and 3) assist other schools in developing experiential QA procedures.

Student Attitudes Towards the Use of Games to Promote Learning in the Large Classroom Setting. Sarah E. Grady, Midwestern University – Chicago; Kathleen M. Dennis, Midwestern University – Chicago; Timothy J. Todd, Midwestern University – Chicago. Objectives: In recent years, educators have attempted to add active learning components to their lectures in order to engage students. One innovative approach is to utilize games, which educators use in different ways. The purpose of this research is to evaluate student attitudes towards the use of games in order to introduce a subject, to provide a review of a subject, and to assist in the teaching of a new subject. Methods: 160 third year students at Midwestern University Chicago College of Pharmacy are presently enrolled in an elective course entitled Advanced Psychiatric Pharmacy. This course has employed the use of games in their design that mimic “Who Wants to Be a Millionaire”, “Jeopardy”, and “Survivor.” At the completion of the quarter, the students will be asked to complete a satisfaction survey using a five point Likert scale. This survey will evaluate their attitudes towards the use of games in the three different approaches. Results: Research in progress. Implications: The results of this survey will provide insight into students’ perceptions of the use of games within a course. Educators will be able to apply knowledge gained from the survey to design courses that utilizes games in a method acceptable to students of the millennial generation.

Student Leadership in Health Advocacy and Policy Development. Nanci L. Murphy, University of Washington; Sarah Elliott, University of Washington. Objectives: “The Accreditation Council of Pharmacy Education, in its new proposed standards and guidelines, encourages schools to provide opportunities for students to impact current and emerging issues as positive stimulus for change. In order to be effective in this role, students must: 1) have a comprehensive understanding of important current and emerging issues, 2) be capable of effectively communicating and collaborating with a wide variety of stakeholders and 3) understand the collaborative leadership and policy development process.” Methods: Faculty from the University of Washington School of Pharmacy and a current fourth-year student have developed an elective course designed to achieve these goals. Students enrolled in this course are given opportunities to resolve identified challenges with lawmakers, policy-makers and participants in grass roots advocacy efforts. Topics include: the Conscience Clause, Medicare Part D, Minute Clinics and other unique health settings, and future directions of MTMS. Students are required to write a position paper and draft a resolution suitable for presentation at a national pharmacy association meeting or a legislative/policy development body. Partnerships have been formed with grassroots community groups, governmental agencies and professional associations. Results: Course evaluations will be available at the end of the quarter, March 2006. Future Implications: We will track these students to see if a correlation exists between students enrolled in this course and future involvement in advocacy efforts or enrollment in a graduate program related to health policy.

Student Perceptions of Introductory Pharmacy Practice Experiences. Cindy D. Stowe, University of Arkansas for Medical Sciences;
Stephanie F. Gardner, University of Arkansas for Medical Sciences. **Objective:** To determine student perceptions of their level of mastery and rate the importance of where the experiences occurred. **Methods:** All pharmacy students (n = 350) were surveyed. The survey consisted of 23 items. Each item was rated based on level of skill mastery and importance of where the experience occurred. The level of skill mastery ranged from ‘familiar with but no experience’ to ‘expert (at the level of a pharmacist)’. The level of importance was ranked least to most for the following experiences: “work for pay”; “courses/labs”; “professional service projects”; and “clerkships”. **Results:** The average level of practice experience increased across the curriculum with overall mean (median) for each class as follows: P1s = 1.9 (2); P2s = 3 (3); P3s = 3.5 (3); P4s = 3.9 (4). Items with the highest mastery were “Dispensing medications”, “Interacting with pharmacy technicians” and “Performing calculations”. Items that displayed the least mastery were “Conducting physical assessment”, “Identifying patient specific factors that affect health, pharmacotherapy, &/or disease state management”, and “Preparing & compounding sterile products”. For the P1, P2, and P3 students, of the items with the highest mastery, “work” were rated the most important followed by “courses/labs” and “service project”. However, for the items with the least mastery the students rated “courses/labs” the most important followed by “service project” and “work”. **Implications:** Students feel the most comfort with activities that they get adequate practice experience. The results of this survey will help guide implementation of early practice experiences into the curriculum.

The Impact of Role-Playing on Students’ Beliefs and Attitudes towards Geriatric Patients. Jennifer A. Tillman, Creighton University. **Objective:** Determine and assess the impact of role-playing on students’ beliefs and attitudes towards geriatric patients. **Methods:** Students in the Early Practice Experience II course participated in a role-playing activity in which they were paired up with one of their classmates. Prior to the activity, the students completed a two question reflection about physical limitations that geriatric patients may face and how the student currently accommodates for these limitations when counseling patients. For the activity, both members of the pair took turns in role-playing the pharmacist and the patient. To make the role-playing of the patient more realistic, the students were given common household items to simulate commonly occurring disease states or physical limitations seen the geriatric population. After the activity, the students were again asked to reflect on the experience of being both the patient and the pharmacist and how this activity may influence counseling geriatric patients in the future. **Results:** Currently, the results are being tabulated by themes and depth of response by the students and will then be analyzed qualitatively. **Implications:** This project provides an opportunity for students to practice empathy, compassion, and communication skills in a controlled setting. Through the patient role-playing experience, the students will have an opportunity to become more aware of the physical limitations that are frequently experienced by the geriatric population. With this experience, the students may develop a process to accommodate these limitations when counseling patients in the future.

Third Year Advanced Practice Experience Rotations: Basic Clinical Skills for Inpatient Care and Ambulatory Care. Lisa S. Smith, Wingate University; Joy B. Greene, Wingate University. **Background:** To develop and implement courses for Advanced Practice Experience (APE) rotations in inpatient and ambulatory care during the third (P3) professional year for the demonstration of basic pharmaceutical care skills prior to the start of the full-time P4 APE program. Specifically, the student will be able to: (1) describe the basic role of a pharmacist and other health care professionals in the patient care setting; (2) utilize a patient database; (3) provide responses to requests for drug information; (4) conduct medication histories; (5) conduct physical assessment; (6) for selected disease states; identify and develop goals for medical and drug related problems, recommend/justify drug treatment, and monitor/evaluate drug therapy; (7) effectively communicate with patients, pharmacists, and healthcare professionals; (8) present a patient to the preceptor; (9) write a SOAP note; and (10) prioritize practice problems/develop problem solving skills. **Methods:** Each student completes one rotation (in either the inpatient or ambulatory setting) during the P3 year. Rotations are five weeks long and meet Monday, Wednesday, and Friday from 8:00 a.m. until 12:00 p.m. The Director of APE and the Practice Faculty collaborated for the development of a student assessment form, a rotation checklist, and grading tools for a medication history, patient counseling session, SOAP note, and a patient monitoring form. Students evaluate the preceptor and practice site at the end of the rotation. **Implications:** P3 APE rotations teach students basic clinical skills useful in most clinical settings. This increases student confidence and maximizes learning early in the P4 APE program.

Utility of a website to improve the clerkship experience and enhance clinical team collaboration. Sarah L. Scarpace, Albany College of Pharmacy. **Objectives:** A web-based resource was developed to improve the organization of a clinical outpatient oncology pharmacy clerkship, provide resources to improve student knowledge, facilitate independent study, improve communication amongst the clinical team, facilitate collaboration amongst the clinical team, and to further enhance the breadth of clinical pharmacy services provided to the clinic. **Methods:** Sharepoint software was utilized to create a password-protected website supported by the information technology department at Albany College of Pharmacy (ACP). Access was granted to full-time members of the outpatient oncology clinical team at the practice site and to students/residents assigned to the clerkship. The site was formally implemented in January 2006. Students/residents were assigned to Group A (will complete clerkship Jan-June 2006) or Group B (completed clerkship June-Dec 2005); clinicians were assigned to Group C. Each group will be (A) or have been (B and C) administered a blinded electronic survey with 9-10 items relevant to the group user characteristics. The protocol was approved by the institutional review board of ACP. **Results:** Thus far, no students in Group A, 1 student in Group B, and 3 clinicians in Group C have responded to the survey. The student in Group B indicated that the website would have helped facilitate independent learning and would have improved the overall clerkship experience. All 3 clinician-respondents indicated that the website has improved communication and facilitated collaboration amongst the team. **Implications:** The incorporation of technology into the clerkship experience can benefit both students and the multidisciplinary team.

Utilizing PDA Technology to Assess Student-Patient Encounters. Keith J. Christensen, Creighton University; Steven T. Boyd, Xavier University of Louisiana. **Objectives:** To develop an assessment tool in order to attempt to improve our ability to evaluate student-patient interactions by digitally recording these interactions using a personal digital assistant (PDA). Additionally we seek to compare formative feedback versus summative feedback to ascertain any differences in student performance. **Methods:** Fourth-year students at our rotation site participated in this project. Each student was asked to provide new medication counseling to two patients during two separate weeks and record these interactions. Students were assessed using a standard grading form and were randomized into two groups. The study group
received the interaction assessment soon after and prior to the second encounter and the control group received their assessments only upon finishing both encounters. The study group receiving the encounter assessment real-time received constructive critique designed to assist the student in improving overall counseling technique. Using a pass/fail rating system, a Chi Square analysis will be performed to determine if overall performance improved within the study group and control group. **Results:** Enrollment for this project is ongoing and to date we have documented 48 patient encounters. **Implications:** Allowing the students to interact with patients without the presence of the preceptor allows for confidence building. However, this can hinder to some extent the ability to evaluate the interaction. The development of an interactive prospective assessment tool can increase a student’s autonomy, while ensuring the delivery of accurate medical information and improving student-patient encounters in clinical settings.

**Utilizing the book “Tuesday with Morrie” to focus on difficult to address outcome abilities.** Steven A. Scott, Purdue University. As it is very difficult to address, in the typical classroom environment, those outcome abilities dealing with use of values and ethical principles, social awareness, cultural diversity, developing collegial relationships, and providing care to terminally ill patients, a written assignment was developed to allow students to express thoughts and reflections related to these very important abilities necessary to provide pharmaceutical care. Following a series of lectures dealing with care for the terminally ill patients, students were assigned a reflection paper based the book: Tuesdays with Morrie. Students were instructed to include personal reflections and personal experiences in the following areas: the need and potential benefits of providing pharmaceutical care to any patient with a chronic, debilitating, or terminal illnesses; the value of building relationships with faculty, and others; the importance of life-long learning; and the overall impact of the assignment. The students were assessed on their ability to: prepare a well-written paper, with in-depth reflections; and effectively communicate, in writing. Students were then asked to evaluate the assignment at the end of the course. The student response to the assignments has been overwhelmingly positive. Eighty-five percent of students indicated: they enjoyed completing the assignment; it helped sensitize them to issues related to providing care to terminally-ill patients; it forced them to consider moral ethical issues related to the care of the terminally ill; and they would recommend this assignment continue in the future. The instructor considered reading the papers time consuming but one of the highlights of the academic year.

**Willingness of Students to Report Impaired Peers and Practitioners: A Measure of Professionalism?** Michele A. Poepplinger-Faulkner, Creighton University; Ann M. Ryan-Haddad, Creighton University. **Objectives:** To assess the willingness of current students and incoming students who have yet to matriculate within the program to report believed chemical impairment of fellow students, faculty, and practicing pharmacists. **Methods:** This study marks the first time the National College Health Assessment survey instrument has been used to evaluate pharmacy students. Students were contacted via email by the American College Health Association (ACHA) and the investigators. As part of the survey process, the investigators had the opportunity to add questions of specific interest. Three questions about the willingness of students to report impaired peers and practitioners were added. Students were asked how likely they would be to report a fellow student they believed to be chemically impaired either in the classroom or in a clinical setting where patient care might be compromised. Additionally, they were asked how likely they would be to report a pharmacist or faculty member believed to be impaired on the job. **Implications:** The professionalism of students during their time in pharmacy school has recently been a prominent topic of discussion. The willingness of a student to report an impaired practitioner or fellow student may be useful as a measure of how students perceive themselves in comparison to those already licensed to practice. Further, a comparison of students already in the program with incoming students may give insight as to how successful the program is in creating future practitioners who think of themselves as having a responsibility to represent pharmacy in a manner befitting the profession.

**Year III PharmD Students’ Community Outreach Helps Seniors Evaluate Medicare Part D Prescription Plans.** Christine C. Murphy, Ohio State University; Melissa Ferguson, Ohio State University; Ruth Emptage, Ohio State University; Laura E. Hall, Ohio State University. **Background:** From spring 2005 through spring 2006, The OSU College of Pharmacy faculty taught PharmD students about the new Medicare Part D Prescription Drug Plan (Drug Plan) and provided opportunities for community outreach. The educational portion included both voluntary lunchtime presentation and required course content (management, therapeutics and dispensing laboratory). PharmD students partnered with college of pharmacy faculty, student organizations and outside organizations to help seniors apply for the low income subsidy (LIS) and/or evaluate the Drug Plan that best met their needs. These partners included the Student Chapter of ASCP, the Columbus Neighborhood Health Center, Inc, the Cardinal Health Visiting Pharmacist Program, Catholic Social Services and the Ohio State Senior Health Insurance Program. **Objectives:** 1) Educate PharmD students about Medicare Part D Prescription Drug Plans and the tools available to help Medicare beneficiaries apply for the LIS and evaluate the Drug Plans available 2) Survey PharmD students to determine their perception of the level of knowledge achieved as a result of these educational endeavors 3) Measure the number of Medicare beneficiaries helped by PharmD students, i.e. to apply for the LIS and/or evaluate the Drug Plans; include college sponsored sites, externship/internship sites, family and friends.

**“Living” the Life of a Diabetic - Impact of Patient Simulations in a Didactic Course.** Devra K. Dang, The University of Connecticut; Judy T. Chen, Purdue University; Robert W. Bennett, Purdue University; Jennifer J. Lee, The University of Connecticut. **Objective:** To incorporate patient simulations to foster pharmacy students’ awareness of medical and psychosocial challenges faced by diabetic patients. **Methods:** Empathy for the diverse health and psychosocial challenges faced by patients with chronic diseases are essential components of effective delivery of pharmaceutical care. Pharmacy students enrolled in a diabetes elective course are required to complete a patient simulation exercise over two weeks. During week one, students simulate the life of a diabetic patient with comorbidities by performing such activities as taking multiple “medications”, “testing” blood glucose, performing daily foot exam, and adhering to a dietary regimen. Students perform these simulations as if they were diagnosed with these conditions and must learn how to manage their own care accordingly. During week two, one of four psychosocial challenges (financial, language, literacy, or age) is incorporated into the simulations and students learn how to cope with these barriers. Relevant patient counseling aids are also identified and improvised. Students write journal entries and a summary reflection paper describing their experiences. **Results:** Students’ journal entries, reflection papers, and results from the Jefferson Scale of Physician Empathy questionnaire will be reviewed to determine the impact of...
the patient simulations. **Implications:** Providing effective pharmaceutical care requires a true appreciation of the patients’ medical and psychosocial challenges. The patient simulation educational tool is directly transferable to any school of pharmacy. Similar patient simulation tools focusing on other chronic diseases can be incorporated into the pharmacy curriculum to foster students’ therapeutic and cultural competency.

**“To Do or Not to Do”: Faculty Perceptions of Active Learning in Large Classes.** John W. Devlin, Northeastern University; Jenny A. Van Amburgh, Northeastern University; Jennifer L. Kirwin, Northeastern University; Donna M. Qualters, Northeastern University. **Objective:** To compare faculty perceptions’ on the amount and type of active learning (AL) used in pharmacy classrooms to documented usage by using a validated active learning inventory tool (ALIT).

**Methods:** Four pre-trained observers evaluated 4, 1 hour lectures, recording type, number, and duration of AL techniques using the ALIT. Post-lecture, faculty were interviewed with scripted dialog to identify perceived type and duration of the AL delivered. Interviews were coded and categorized. Agreement between the 4 observers and faculty was measured. **Results:** Qualitative results showed congruence between faculty and observers regarding amount and type of AL utilized. There were different faculty perceptions about the goal of AL as a method to engage students versus increasing content retention. An interesting finding was the contradiction between faculty belief that AL increased retention and involvement in learning at the same time holding an opposing belief that AL is too time intensive for complex material. Across 4 lectures, the average percent agreement between the observers and faculty was high for all outcomes: number of AL episodes [89% (81-97%) [median (range)], number of different types of AL used [82% (79-88%)] and average time per AL episode [69.8% (61-75%)]. **Implications:** If AL is to become a part of didactic choices, the challenge is having faculty feel comfortable doing AL in a time efficient way by learning a broader scope of activities.

**SOCIAL AND ADMINISTRATIVE SCIENCES**

**Completed Research**

**African American Patients’ Responses to Direct-to-Consumer Advertising of Prescription Drug Viagra®.** Yi Yang, The University of Mississippi; Dick R. Gourley, The University of Tennessee; Greta A. Gourley, The University of Tennessee; Richard J. Faris, The University of Tennessee; Robin Womeodu, The University of Tennessee; Carol Likens, The University of Tennessee. **Objectives:** This study was designed to investigate how African American patients respond to DTCA of prescription drug Viagra® and the relationships between potential influencing variables and patients’ responses.

**Methods:** Face-to-face interview was employed for this study. A convenience sample consisting of 160 African American patients were interviewed at a general medicine clinic in a public hospital. The participants were asked to view a TV advertisement of Viagra®, followed by DTCA-related interviews. Patients’ health literacy levels, locus of control beliefs, as well as their demographic and socio-economic information were also collected. Bivariate analyses and logistic regressions were used to assess the relationships between potential influencing variables and patients’ responses to DTCA.

**Results:** After watching the TV advertisement of Viagra®, 57.1% of patients agreed that they would talk to their physicians about erectile function, 44.2% agreed that they would ask their doctors to write a prescription for Viagra®. Participants who rated the advertisement as helpful responded more favorably to it. Older patients were more likely to agree to ask their doctors to write a prescription for Viagra®. History of erectile dysfunction was not found to be related to patients’ responses to the advertisement. This study also found that 26.0% of patients had inadequate functional health literacy, 17.3% had marginal, and 56.7% had adequate functional health literacy. **Conclusions:** African American patients in this study responded more favorably to DTCA. DTCA may be an effective marketing tool for pharmaceutical companies. However, the net public health and economic effects of DTCA remain to be determined.
Assessment of Pharmacy Curricular in Thailand. Nattiya Kapol, Silpakorn University, Thailand; Pugamas Maitreemit, Silpakorn University, Thailand; Petcharat Pongcharoensuk, Mahidol University, Thailand; Edward P. Armstrong, The University of Arizona. The Thai Pharmacy Council requires all pharmacy graduates to obtain three areas of competency for practice; product, patients, and social and administrative. Objective: This study aims to assess content of undergraduate pharmacy curricular based on the Thai pharmacy competency guideline. Method: A questionnaire was developed according to the Thai pharmacy competency guideline (subject area, credit hour and class time of each subject), and tested for content validity. The questionnaire was distributed to all course coordinators of all 12 pharmacy schools in Thailand. Course syllabi of pharmacy undergraduate programs in academic year 2004 were requested. Sometimes, conversations with course coordinators were done for clarification of some course contents. Results: Nine public and two private schools were included in the study. Two of the nine public schools have Doctor of Pharmacy (PharmD) program, all others are Bachelor Degree in Science (B.S.). According to the Thai pharmacy competency guidelines, PharmD programs have more contents (44 %) in the patient area than in the product area (32%). On the other hand, all except one B.S. programs have more contents (over 40% of the credit hours) in the product area. Social and administrative-oriented area was less than 20% of curricular. Implication: Thai pharmacy competency guidelines can be used as a standard guideline for pharmacy schools to evaluate their curricular. Pharmacy schools in Thailand have predominantly product-based contents. The information from this study will be beneficial for all schools to develop their curricular contents for future practice.

Assessment of Student Conflict Management Style: Impact on Patient Counseling and Communication Course Grades. Jarrett W. Coffindaffer, West Virginia University; Jan Kavookjian, West Virginia University; Virginia Scott, West Virginia University; Abhijeet Bhaneaonkar, West Virginia University. Background: It is relevant for pharmacy students to understand their conflict management style (CMS) as they prepare for practice experiences. The objective of this study was to assess student CMS to determine 1) which style(s) are prevalent, 2) how they relate to student characteristics (gender and communication apprehension), and 3) what associations they have with student outcomes (overall course grade and patient counseling exercise grade). Methods: Students (n = 242) in the 1st and 2nd professional years completed the Thomas-Kilmann Conflict Mode Instrument which identifies presence of skills for five CMSs (competing, collaborating, compromising, avoiding, and accommodating). Students also completed the Personal Report of Communication Apprehension (PRCA). Descriptive and analytic statistics (Pearson correlation, independent samples t tests, ANOVA) were applied. Results: Students were 68.2% female with mean counseling exercise grade of 91.7% (sd = 5.2) and mean overall course grade of 93.1% (sd = 3.2). Mean PRCA score was 63.76 (sd = 16.4). The CMS most prevalent was compromising, followed by avoiding, accommodating, collaborating and competing. Males were significantly more likely to use competing skills; females, compromising skills. Those who used collaboration skills were more likely to have a higher course grade; those using accommodation skills had a significantly lower course grade. Higher PRCA was negatively associated with competing (r = -.17) and positively associated with avoiding (r = .15) (p < .05). Discussion: The course grade includes group exercises/projects; those whose CMS is collaboration do well in the course and perhaps with patients, physicians and colleagues in practice.

Behavioral Intentions and Attitudes Towards the use of Personal Digital Assistants (PDAs) by Pharmacy Students. Mark V. Sircuse, Creighton University; John G Sowell, Samford University; Nicholas Musselman, Creighton University. Objectives: The objective of this study is to examine acceptance, intention to use, attitudes towards use and actual use of PDAs by doctor of pharmacy students. Methods: A cross-sectional study was conducted by administering a survey instrument consisting of 67 items to 376 doctor of pharmacy students (218 had just been issued a PDA and 158 had used a PDA for at least one year). A questionnaire based on the Unified Theory of Acceptance and Use of Technology (UTAUT) was extended to include the Theory of Trying. A five-point Likert scale was used. Descriptive data was collected and structural equation modeling using LISREL was used to evaluate PDA use. Results: Among students who were just issued a PDA, 6.9% reported extremely experienced or above average experience with PDAs. Among students who had the PDA for a year or more, 28.5% reported extremely experienced or above average experience with PDAs. Among students who used a PDA for at least one year, 81% used it to look up drug information at least weekly and 43% used it for other schoolwork at least weekly. The most reliable scales resulted from the constructs usefulness (α = 0.93), ease of use (α = 0.87), attitude toward behavior (α = 0.86), and use behavior (α = 0.86). Implications: Pharmacists and pharmacy students will increasingly find themselves needing to utilize handheld technology in their patient care activities. PDA usefulness, PDA ease of use and attitudes towards PDA use have the most influence on PDA use behavior.

Cultural Competency in a Pharmacy Ethics Course. Timothy P. Stratton, University of Minnesota; Ronda Marie Chakolis, University of Minnesota. Objectives: The principles of expected professional and patient behavior taught in North American schools of pharmacy generally derive from a Western European ethics tradition. Many patients, however, come from cultures which view “appropriate and inappropriate behavior” differently than the pharmacist. This poster describes a module in an elective Pharmacy Ethics course which introduces students to ethical considerations specific to various cultures they are likely to encounter in Minnesota. Methods: In one class, student teams consisted of one Anglo student and one student from a minority culture. Each team was assigned to explore the culture of the non-Anglo student. In another class, students were asked to explore a culture foreign to both members of the student team. Student teams researched the mores and healthcare practices of their assigned culture through literature reviews, web searches and interviews with persons from that culture. Findings were presented in class, and then students reflected on the module. Results: Students reported on cultural mores and healthcare practices from the African American, Chinese, Hmong, Latino, Nigerian, Ojibwe, Somali, and Vietnamese cultures, discussing how these beliefs might impact providing pharmaceutical care to these patients. Students preferred
Exploring a culture unrelated to either team member. Participants found the exercise so interesting and useful that they recommended a similar experience for all University of Minnesota student pharmacists. **Implications:** Student pharmacists recognize the increasing likelihood that as practitioners they will care for patients from various cultures, so value the opportunity to learn about mores and healthcare practices of different peoples.

**Department Chairs’ Perceptions of the Factors Affecting Recruitment of Pharmacy Faculty.** Edward T. Kelly, III, Massachusetts College of Pharmacy and Health Sciences - Worcester. The pharmacy manpower situation has caused consternation on the part of the entire system for the delivery of pharmacy care. The academic arena has not been spared from this predicament. The establishment of new colleges and additional campuses has mandated further needs for pharmacy faculty. The objective of this research was to examine the factors affecting recruitment of faculty by colleges of pharmacy. Specifically, the design was geared to determine not only the availability of faculty but also the perceived acceptability of the applicant pool. An e-mail survey was utilized for data collection and sent to 241 department heads at the colleges. This instrument sought information on salaries, start-up funding, moving expenses and non-economic attractions that might influence an applicant’s decision to accept an offer of employment. The response rate for the instrument was 28.2% (68) split about evenly between Pharmaceutical Sciences (51.5%) and Pharmacy Practice (48.5%). The data reported on 71 searches mainly at the Associate and Assistant Professor Levels. The chairs of Pharmaceutical Sciences felt that a sufficient and acceptable pool of candidates was available at both of these levels. The chairs of Pharmacy Practice indicated that a sufficient and acceptable pool was not available at the time of their search. The chairs that reported losing candidates to a competitor perceived economic issues as the prime reason. Both departments reported the most important criterion of their candidates was the reputation of potential colleagues.

**Designing Interdisciplinary Health Professions Curricula for the Future.** Marcus Droeger, Nova Southeastern University; Bini Litwin, Nova Southeastern University; Rebecca Rosenthal, Nova Southeastern University; Paula Anderson-Worts, Nova Southeastern University. **Objectives:** To investigate how health professions education is preparing students according to the five core competencies identified by the Institute of Medicine (IOM), and to compare pharmacy curricula to other health professions programs. **Methods:** Data collection used a cross-sectional, self-administered questionnaire combined with follow-up interviews for 500 individuals identified nationally as preparing professional health curricula for medicine, nursing, pharmacy and allied health academic programs. **Analysis:** Using descriptive and inferential statistics, results were reported using standard frequency analysis to examine both responses and significant differences between respondent groups according to key questions. Responses to open-ended questions were analyzed for common themes. **Results:** Most respondents were either curriculum committee chairs (36.6%) or senior college administrators (34.1%). Across disciplines, 80.5% of the respondents recognized the IOM competencies prior to receipt of the survey, with this percentage being smaller among pharmacy respondents (64.7%). On average, students of health professions programs spent more time (60 hours) with students from other disciplines than did pharmacy students (16.4 hrs.). Joint advanced experiential education was described as the primary method of curricular integration with other disciplines (65%), and the main barrier to implementing the IOM core competencies was adding more hours to the curricula. **Conclusions:** These results suggest that pharmacy curricula have implemented IOM core competencies to a similar extent, although there are differences in curricular integration and interdisciplinary offerings. Pharmacy programs will need to increase both the familiarity with the IOM core competencies, and the number of opportunities for student learning in an interdisciplinary learning environment.

**Determining Student’s Perception of Professionalism at the University of Washington SOP as a Means to Improving It.** Rachel S. Schreffer, University of Washington; Elena Meeker, University of Washington; Nicholas D. Wyatt, University of Washington; Sarah Elliott, University of Washington; Nanci L. Murphy, University of Washington; Dana P. Hammer, University of Washington. **Objectives:** This study was conducted to learn about students’ perception of professionalism displayed by UWSOP faculty, staff, and students, in order to determine where improvements could be made. **Methods:** A brief, anonymous, web-based survey was created by the UWSOP Student Professionalism Committee (SPC). The survey was reviewed by faculty, edited and piloted by the SPC. All first, second and third professional year students received an email invitation with a link to the survey. **Results:** Of 265 originally enrolled students, 105 students (40%) responded. Results demonstrated that in general, students felt they were being well prepared to practice professionally by the UWSOP. Students also reflected that their professors were nurturing their professional growth by providing timely and up-to-date materials. As well, students perceived themselves as taking an active role to develop professionally by striving for high academic standards, attending class prepared to learn and seeking activities outside of the classroom to develop professionally. (All results have been quantified and will be displayed later) Students also provided ideas on how to improve aspects of their and faculty’s professionalism that they felt were not being adequately developed in the UWSOP, including working with faculty to improve material presentation in classes as well as communicating with classmates about appropriate classroom behavior. **Implications:** The UWSOP SPC will share the data with students, faculty and staff, and devise strategies to improve areas identified as lacking professionalism.

**Development and Construct Validation of a Scale to Measure Pharmacy Academicians’ Job Satisfaction.** Mark H. Conklin, Duquesne University; Shane P. Desselle, Duquesne University. **Objective:** To develop and purify a measure of pharmacy academicians’ job satisfaction and identify the underlying structure governing their satisfaction attitudes. **Methods:** An electronic survey was delivered via email to all 4,225 US pharmacy faculty comprising AACP’s 2004-2005 Roster of Faculty & Professional Staff. The initial invitation in August 2005 was followed by two email reminders spaced approximately three weeks apart. Valid responses were obtained from 885 faculty (20.95%). The survey contained 25 items representing various aspects of a pharmacy academician’s job. The items were generated from a thorough review of the literature and a modified Delphi procedure involving 20 faculty. The responses were subjected to an exploratory principal components analysis in addition to an examination of Cronbach’s alpha reliability coefficients and item-to-total correlations for each domain. **Results:** Principal components analysis revealed a six-factor solution explaining 62.35% of the variation in satisfaction and comprising the following domains: support for scholarship, institutional support and reward, requirements for promotion and tenure, graduate program issues, collegiality, and teaching quality and autonomy. Cronbach’s alpha reliabilities ranged from 0.67 to 0.83 for each domain. Convergent validity was evidenced by higher correlations with organizational commitment.
Diabetes Outcome of a Pharmacist Managed Diabetes Service. Swu-Jane Lin, University of Illinois at Chicago; Hongjun Yin, University of Illinois at Chicago; JoAnn Stubbings, University of Illinois at Chicago; Seema Talsania, University of Illinois; Sandra Faye Durley, University of Illinois at Chicago. Background: Type 2 diabetes is prevalent among African Americans. In 2002, the Mile Square Health Center in Chicago, serving a predominantly underserved African American population, received a Clinical Pharmacy Demonstration Project grant from the Bureau of Primary Health Care to establish a pharmacist managed diabetes service. Objective: To investigate whether the pharmacist managed diabetes service reduced the burden of diabetes. Methods: A full-time pharmacist was assigned to organize and deliver the diabetes service. Patients were provided with diet and exercise modification, disease and medication education, self-monitoring of blood glucose, and medication management. Clinical outcome indicator was the glycated hemoglobin A1c level. Patients received intervention from August 2002 through March 2004 were included. The longitudinal trends of quarterly-averaged A1c level during 2.5 years before and 2 years after the first intervention were evaluated with random effects regression model. Results: 110 patients received intervention during their routine visits. Most of the patients were African American (88%), female (60%) and had a mean age of 53.6 years. The A1c differed significantly when comparing 3-month pre-and-post or 12-month pre-and-post of the initial intervention (paired-t test, P < 0.01). Significant heterogeneity was found in the baseline and trends of A1c (random effects models, p < 0.05). The A1c before the intervention showed an increasing trend (p < 0.05), while it had a downward trend after the intervention (p < 0.0001), controlling for age, gender and race. Implications: The pharmacist managed diabetes service is effective in reducing the A1c level. Random effects model is efficient in comparing trends in study with one-group pre-post design.

Enhancing Leadership Among Pharmacy Student Officers. John P. Juergens, The University of Mississippi; Marvin C Wilson, The University of Mississippi. Objectives: This poster describes the development of a program to enhance the leadership skills of the elected student body and class officers, and the officers of the student chapters of the national professional pharmacy organizations at The University of Mississippi School of Pharmacy. Methods: The program consists of regular meetings with student officers to discuss the elements of good leadership, breakout exercises, and discussions of problems and issues encountered by leaders with student input on potential strategies for resolution of those issues. The program also includes a peer evaluation of each organization president at the midpoint of their tenure with constructive feedback provided on their performance. Results: Students gained valuable insights into the effectiveness of their leadership efforts. Implications: Developing and enhancing leadership skills among students ensures a steady stream of leaders for the profession to help guide it as it continues to evolve within the larger context of the health care industry.

Evaluating a classroom response system in a research methods and biostatistics course. Judith T. Barr, Northeastern University; Gerald T. Schumacher, Northeastern University; Susan Ohman, Northeastern University. Objective. To evaluate the instructional effectiveness and student satisfaction for an interactive classroom response system (CRS). Method. The 95 students enrolled in Research Methods and Biostatistics in 2005 (graduating class of 2007, GC2007) were exposed to the first formal course use of CRS in our PharmD curriculum. Thirty-four questions common to the final exams in the GC2006 (without CRS) and GC2007 (with CRS) research courses were evaluated to determine if CRS improved student performance. Three surveys of student opinion and satisfaction (totaling 28 questions) were administered: at the beginning, middle, and end of the semester. Results. During the GC2007 research course, 78 CRS questions were posed in 13 of 26 class sessions. Of these, 48 questions were directly related to the content of 34 exam questions which were included on both GC2006 and GC2007 final research exams. Ten or 30% of common exam questions showed a significant difference in proportion of correct answers for the GC2007 compared to GC06 exams, p < 0.03. However, there was no significant difference in overall mean scores on the GC06 (74.0%) and GC07 exams (73.9%), p = 0.95. At the end of the semester, on a 5-level Likert scale (1 = strongly agree, 5 = strongly disagree), students scored the statement “CRS helped me understand the material in the class better than if we did not have it” at 2.27 Conclusion. Our first use of CRS proved useful for faculty and beneficial for students. Maximum benefit requires attention to question strategy, frequency of administration, and post-question discussion, where indicated.

Factors Associated with Research Productivity among Pharmacy Academicians. Mark H. Conklin, Duquesne University; Shane P. Desselle, Duquesne University. Objective: Examine factors associated with pharmacy academicians’ research productivity. Methods: Responses to a web-based survey were acquired from 722 full-time faculty, excluding administrators, listed in AACP’s 2004-2005 Roster of Faculty & Professional Staff. The dependent variable, research productivity, was operationally defined as the number of original research and review publications submitted and accepted in peer-reviewed journals from January 1, 2002 to the initial survey release date in August 2005. This definition was chosen as a result of evidence indicating high correlations with other indicators of research productivity. The dependent variable was regressed over a number of institutional, demographic, and quality of work life variables in a stepwise procedure. Results: The mean number of scholarly publications fitting the inclusion criteria during the time period was 6.10. The numbers of publications reported among the first 3 quartiles of respondents were 1.00, 4.00, and 8.00, respectively. Nearly 17.6% (n = 127) of respondents reported having no publications that met the inclusion criteria. Thirty-five percent of the variance in research productivity was explained by the number of hours spent in research activities per week, academic rank, research self-efficacy, gender, teaching self-efficacy (inverse), graduate programming interdisciplinary consensus, stress to fulfill academic roles (inverse), and pharmacology/toxicology discipline. Implications: There appears to be significant variation in research productivity among pharmacy academicians. Many faculty may not be able to dedicate enough time to scholarly pursuits. The results have implications for those seeking means by which to enhance scholarly productivity.

Health Related Quality of Life in Pharmacy Students: Two Year Cohort Study (First Year Results). Jan D. Hirsch, University of California, San Diego; Anthony S. Manoguerra, University of California, San Diego; David S. Adler, University of California, San Diego. Objectives: Examine Pharm.D. students’ Health Related Quality of Life (HRQOL) and relationships among stress, coping...
Impact of Different Learning Approaches among Pharmacy Students on Teaching of Children about their Asthma. Katherine M. Heller, Palm Beach Atlantic University; David A. Gettman, Palm Beach Atlantic University; B. DeeAnn Dugan, Palm Beach Atlantic University; Cindy Vallo, American Lung Association of Florida, Inc. Objectives: To determine if different approaches to learning among pharmacy students for the teaching of school children about their asthma using a standard educational program had an effect on the children’s pre- and post-program responses. Methods: In two successive years, third-year pharmacy students taught third to fifth grade children at 32 elementary schools an educational program focusing on improving the individual child’s responses to 13 questions about their asthma. In Year 1, an instructor briefly outlined the program to all the pharmacy students in a 50 minute class. Then the students were expected to prepare themselves independently. In Year 2, a different class of third-year pharmacy students were grouped into teams of four and were not only required to teach a lesson plan to each other, but also to offer teaching tips to the group utilizing active learning and feedback. Results: In Year 1, there were 166 usable paired (pre- and post program) responses to the 13 questions. Paired-samples tests for responses revealed statistically significant improvements (P < .05) on 10 of the 13 questions. In Year 2, there were 91 usable paired questionnaires. Paired-samples tests for responses to the 13 items revealed statistically significant improvements (P < .05) on 11 of the 13 questions. Furthermore, there were statistically significant improvements from the first year in the difference scores. Implications: The learning of pharmacy students utilizing active learning and feedback to teach school children about their asthma improves the impact of an educational program compared to the standard approach.

Impact of Personal Response System Utilization on the Moral Development of Pharmacy Students. David A. Gettman, Palm Beach Atlantic University; B. DeeAnn Dugan, Palm Beach Atlantic University. Objectives: The purpose of this study was to evaluate the impact of personal response system utilization on the moral development of second year pharmacy students taking a mandatory ethics course. Methods: In two successive years, small groups of students presented to the rest of the class 18 different cases in panel discussion format. Each case involved a different ethically sensitive issue that they might have to face as a practicing pharmacist. Each group had to discuss the facts of the case, the ethical principles involved, at least four options the pharmacist(s) could take, and their decision on how best to handle the ethical dilemma. In Year 1, other students in the class were invited to articulate their thoughts following each panel discussion. In Year 2, the very same format was utilized, except that this time, a secret class “vote” was taken over the options the panel presented. A second wave of discussion following this “vote” often generated more inclusive and meaningful insights not reached in Year 1. In both Year 1 and Year 2, the Defining Issues Test was administered before and after the case discussions. Results: In Year 1, there were 56 usable paired (pre- and post) p-scores. Paired-samples tests for responses revealed no statistically significant improvements. In Year 2, there were 71 usable paired p-scores. Paired-samples tests for these other p-scores revealed statistically significant improvements. Implications: The moral development of pharmacy students utilizing a personal response system improves the impact of ethical dilemma discussions.

Incorporating practice-relevant topics in the PharmD curriculum: Designing a community pharmacy based disease management clinic. Anandi V. Law, Western University of Health Sciences. Intent: The purpose of the educational innovation was 1) to improve the ability of students to integrate clinical and managerial knowledge, skills and abilities 2) to incorporate current, practice-relevant topics in the pharmacy management course and 3) to improve perceived relevance, student interest and performance in the course. Process: Third-year PharmD student teams in the required pharmacy management course designed a virtual community pharmacy and included a disease management clinic (DSM) for a chronic disease assigned to each team. Teams prepared a report by responding to 10 questions ranging from epidemiology, strategic and financial planning, regulations and clinical management pathways to outcomes measurement and feasibility analysis. Responses required application of therapeutic knowledge and managerial concepts, literature evaluation and focus on patient education and communication. Assessments included grading of team reports, team presentations and of individuals based on questions to each team member by a panel of judges. Results: Evidence of success of the innovation is reflected by student performance, positive comments about the innovation, higher scores on student course evaluations and increased interest in clerkships in the area. Implications: In addition to incorporating an area of high professional relevance (DSM) to the curriculum, the assignment is innovative in design, implementation and assessment of individual and team work. Further, it helps integrate knowledge, skills and abilities learnt through the curriculum, is topical and practical, promotes teamwork and personal responsibility, and helps students better appreciate the value of management and its role in patient care, and is easily workable in any institution.

Integration of Ethics into a Pharmacy Laws Course. Thomas K. Hazlet, University of Washington; Dana P. Hammer, University of Washington. Objectives: To incorporate bioethics instruction into a pharmacy required law course for second year students, to verify student learning through in-class discussions of cases, examinations and through a bioethics case group project. Methods: A pedagogic opportunity presented itself when the School’s Curriculum Committee sought to consolidate ethics instruction, permitting juxtaposition
of issues of law and ethics and to conduct ethics discussions in the context of specific laws. Ethics cases were largely obtained from ethics journals. Recently, students have been required to submit an ethics case derived from their practice experience following a specified format that includes a within-group case assessment. Students’ use of ethical tools in resolving dilemmas is evaluated in in-class discussions, on midterm and final examinations and through the group case write-up that includes a within-group critical evaluation. **Results:** In-class discussions of cases provide the opportunity for immediate feedback, while essay examinations assess individual learning. The group ethics write-up (case by one portion of the group, evaluation by another) reflects discernment. Items on the course evaluation rate the ethics section highly. Evaluation of cases has revealed varying levels of sophistication regarding pharmacotherapeutics contributing to misinterpretation of ethical dilemmas. **Implications:** An early motivation for having students develop practice-related ethics cases that could be used in subsequent classes will be realized with the next offering of this course. Clinical faculty are now invited to participate in in-class ethics discussions to contribute to pharmacotherapeutics understanding, and students are encouraged to seek assistance from preceptors and clinical faculty with ethics case projects.

**Is Affiliation with a Pharmacy School Related to a Community Pharmacy’s Public Health Involvements?** Jeanine K. Mount, University of Wisconsin – Madison; Minhee Kim, University of Wisconsin-Madison – Madison; Suntaree Watcharasomrongkun, University of Wisconsin – Madison; Salisa C. Westrick, Auburn University. **Background:** Changes in pharmacy education have prompted pharmacy schools to develop ties with ever-increasing numbers of pharmacy practice sites. Many posit that such affiliations foster development of expanded or innovative pharmacy services in these sites. Involvement in public health activities is one current target for expansion of pharmacy activity. We examine whether community pharmacies affiliated with schools of pharmacy are more likely than unaffiliated pharmacies to be active in immunization delivery and in health emergency preparedness activities. **Methods:** Telephone interviews were completed with key informants in 1760 of 2550 (69%) community pharmacies randomly sampled from 17 states. Data gathered included 1) whether the pharmacy provides in-house immunization services and, if not, whether there are plans to do so, 2) whether pharmacy staff participate in health emergency preparedness (at local, regional, state and/or national levels) and, if not, whether there are plans to become involved, and 3) whether the pharmacy is affiliated with a school/college of pharmacy. Data analysis used chi-square and logistic regression techniques. **Results:** School-affiliated community pharmacies were more likely than others to: 1) offer in-house immunization services (p = 0.005), 2) plan to offer in-house immunization services, if they currently did not (p = 0.000), 3) participate in health emergency preparedness activities (p = 0.02), and 4) plan to participate in health emergency preparedness activities, if they currently did not (p = 0.005). **Conclusion:** Research is needed into processes giving rise to these results (e.g., site selection, socialization). Results have encouraging implications about the ability of pharmacy curricula to attain CAPE competencies in public health.

**Job Turnover Intentions of Pharmacy Academicians.** Mark H. Conklin, Duquesne University; Shane P. Desselle, Duquesne University. **Objective:** To describe pharmacy academicians’ job turnover intentions and evaluate the relative contribution of factors explaining intentions to leave their current institution. **Methods:** A total of 880 faculty, excluding deans, responded to a web-based survey delivered to 4,225 US pharmacy faculty comprising AACP’s 2004-2005 Roster of Faculty & Professional Staff. Respondents selected up to 5 reasons supporting their intention to remain with or leave their current institution during the upcoming 2 years. Job turnover intentions were dichotomized into stayers and leavers and regressed over several institutional, demographic, and quality of work life variables in a stepwise, binary logistic procedure. A mediator of intentions, employer commitment, was regressed over the remaining variables in a stepwise multiple linear regression analysis. **Results:** Most frequently cited reasons for intentions to remain with the current institution included autonomy, geographic location, good benefits, and relationships with department colleagues. Most frequently cited reasons for intentions to leave included excessive workload, seeking a new challenge, poor salary, and relationship with university administration. Over 45% of the variance in turnover intentions was explained by employer commitment, support from the department chair, and satisfaction with departmental collegiality. Variation in employer commitment (r² = 0.64) was explained by institutional support, satisfaction with teaching quality and autonomy, intradisciplinary consensus on teaching, support from the dean, and satisfaction with school research support. **Implications:** Pharmacy academicians appear to develop loyalty to their employing institutions from a supportive environment that fosters healthy relationships with department colleagues. The results have implications for developing faculty retention strategies.

**Moderating Effect of Religious Background and Behavior on the Impact of a Pharmacy Professionalism Course.** B. DeeAnn Dugan, Palm Beach Atlantic University; David A. Gettman, Palm Beach Atlantic University; Heather Williams, Palm Beach Atlantic University. **Objectives:** The primary objective of this study was to evaluate the impact of a first year professionalism course on student responses to an instrument assessing four different domains of professionalism. The secondary objective was to assess the effect of sociodemographic variables, including age, gender, work experience, religious background, and behavior, on the impact of the same course on the same student responses. **Methods:** A battery of items were administered to 73 pharmacy students at a Christian-oriented university. Professionalism was assessed using 25 items adapted from an instrument developed by Hammer, Mason, Chalmers, Popovich, and Rupp (2000). Religious background and behavior was assessed using 3 items developed by Connors, Tonigan, and Miller (1996). Social desirability was assessed using 10 items developed by Strahan and Gerbasi (1972). Relationships were tested between the pre- and post-course scores using ANOVAs and paired t-tests. **Results:** There were statistically significant improvements on responses for all four domains of professionalism, i.e., interpersonal/social skills, responsibility, communication skills, and appearance. Furthermore, frequency of reading the Bible and chapel attendance were each shown to have a moderating effect on all these improvements except for appearance. Results also suggest that these first year students were inclined to respond in a socially desirable fashion. **Implications:** Observing professional behaviors (e.g., during early clinical rotations) and religious behaviors (i.e., during Bible study and/or chapel), will be needed to control for response bias. These yearly assessments will also need to be expanded to evaluate the impact of second and third year professionalism courses.

**Pharmacist and Pharmacy Technician Opinions on Community Pharmacy Technician Knowledge & Functions.** Debbie L. Wilson, Rehabilitation Outcomes Research Center, VA; Carole L. Kimberlin, University of Florida; David B. Brushwood, University of Florida - Gainesville; Richard Segal, University of Florida - Gainesville. **Objectives:** This study investigated areas of agreement and disagreement between pharmacists and technicians on the role of community
pharmacy technicians. Methods: A random sample of 2000 community Florida pharmacists and 2000 community Florida Pharmacy Technician Certification Board (PTCB) Certified Pharmacy Technicians (CPhT) were mailed a questionnaire. The questionnaire included 26 community pharmacy functions. Responses were dichotomized into those that “agreed” that technicians should perform the function and those that “disagreed”. Chi-square difference tests were performed using SPSS v12. The p-value for a significant result was set at 0.05/26 = 0.002. Results: Of the 4000 subjects targeted there were 383 usable cases in the pharmacist group (response rate 19%), and 579 in the technician group (29%). Of particular interest were items developed to be beyond technicians’ traditional involvement in processing prescriptions: (1) Understand the difference between an ace-inhibitor and a beta-blocker (39% of pharmacists and 82% of technicians agreed that technicians should do this), (2) Identify side effects (21% and 59%), (3) Assess medication use (45% and 60%), (4) Educate on medication use (29% and 50%), (5) Evaluate medication therapy (17% and 41%), (6) Resolve drug therapy problems (11% and 25%), (7) Evaluate whether a DUR needs to be shown to the pharmacist (60%, 83%), and (8) Answer simple patient questions about medication (60% and 82%). Conclusions: Pharmacists and technicians generally agreed on tasks surrounding prescription processing and claims adjudication, but there was considerable disagreement on patient care tasks. Technicians agreed to a much more expanded role than did pharmacists.

Pharmacoepidemiology Education at US Colleges/Schools of Pharmacy. Karen L. Rascati, The University of Texas; Esmond Nwokeji, The University of Texas; Leticia Moczyczenga, The University of Texas; James P. Wilson, The University of Texas. Objective: New curricula standards have been proposed by the Accreditation Council for Pharmacy Education (ACPE). These proposed standards include topics related to pharmacoepidemiology (PE), yet there is no information available on how many US Colleges of Pharmacy currently include PE in their curriculum. The purpose of this study was to determine the type and extent of pharmacoepidemiology education offered by U.S. colleges/schools of pharmacy in 2005. Methods: An electronic web-survey was sent to all 89 US colleges/schools of pharmacy listed in the AACP directory in 2005 in order to examine the type and extent of PE education offered to professional (PharmD) and graduate (MS/PhD) students. Results: Investigators achieved a 100 percent response rate. Among the 89 schools surveyed, 69 (78%) provided PE education to their professional students. For these 69 schools, a mean of 119 (SD 5 37 hours) PharmD students per school per year received some PE education (range 1-60 hours, mean 15 hours). In addition, 35 schools (39%) provided PE education to a mean of 6 (SD 5 5) graduate students (range 2-135 hours; mean 37 hours). A summary of the PE topics offered by these programs will be presented. Implications: A majority of U.S. colleges/schools of pharmacy offers some type of PE education in their curriculum. However, the topics offered by each school and the number of contact hours vary at both the professional and graduate level.

Pharmacy Ownership and Entrepreneurship: A Evidence-Based Course Model. Dana P. Hammer, University of Washington; Ryan Offebro, Kelley-Ross Pharmacy; Rachel S. Schreffler, University of Washington. Objective: Design and implement a course in pharmacy ownership and entrepreneurship based on a research study. Methods: Focus groups and web-based surveys were conducted with student and pharmacist NCPA members to determine: students’ interest level and perceived barriers to pursuing pharmacy ownership, and owners’ insights about educational competencies needed, and key factors and organizations that help to facilitate pharmacy ownership. Both populations were also asked what features they felt were important for an ownership and entrepreneurship course. Owners were also asked what topics should be included. Results: Most popular responses to course design questions were that a course should be taught primarily by pharmacy owners and include an experiential component. These data and evidence from literature were used to create and implement an elective course at the University of Washington School of Pharmacy. The course was taught primarily by pharmacy owners and included several out of class assignments, including write-ups of interviews with pharmacy owners and tours of independent pharmacies, as well as a preliminary business plan. Course evaluations were overwhelmingly positive, and pointed out that the features of the course most helpful to students’ learning were that the course was taught primarily by owners, as well as the independent pharmacy tours and pharmacist interviews. Full data will be presented in the poster. Implications: This course model seemed successful in inspiring students to consider careers in independent pharmacy as well as help them to learn what it takes to be a successful owner.

PharmD students’ knowledge, attitudes and evaluation of direct-to-consumer advertising. Rupali K. Naik, University of New Mexico; Matthew E. Borrego, University of New Mexico; Gireesh V. Gupchup, Southern Illinois University-Edwardsville; Melanie A. Dodd, University of New Mexico; Mike R. Sather, University of New Mexico. Objective: To assess PharmD students’ knowledge, attitudes and evaluation of direct-to-consumer advertising (DTCA) using different DTCA advertisement brief summary formats and media sources. Methods: A cross sectional, self-administered, 112-item survey was conducted in first, second and third year (P1-P3) PharmD students. The survey included sections on knowledge about DTCA regulations, attitudes toward DTCA and evaluation of actual DTCA advertisements with different brief summary formats and media sources (print and television). Mean knowledge, attitude and evaluation scores were calculated for the entire sample and compared across all three years. Results: A total of 51.3% (120/234) of all enrolled (P1-P3) students participated in the study. The mean knowledge score was 48.7 ± 12.5%. Attitude scores indicated a perceived value of DTCA advertisements in encouraging patients to take a more active role in their health care and increasing pharmacists’ role as health educators. Attitude scores revealed concerns about potentially misleading information in DTCA advertisements and DTCA resulting in inappropriate prescribing. DTCA advertisement evaluation revealed that students had an overall negative opinion of the television and the print advertisement that contained the professional (highly technical medical terminology) labeling format but an overall positive attitude toward the print advertisement containing the patient- information (easy to understand, lay language) labeling format. Students indicated that as a result of this study they would view DTCA advertisements more carefully in the future. Conclusions: The results of this study indicate that PharmD students perceive the importance of DTCA discussions and the inclusion of DTCA related topics within their curriculum.

Psychological Contract Violations in Pharmacy Students: Relationship to Students’ Attitudinal Outcomes. Alan R. Spies, Samford University; Noel E. Wilkin, The University of Mississippi; John P. Bentley, The University of Mississippi; Alicia Bouldin, The University of Mississippi; Marvin C. Wilson, The University of Mississippi. Objectives: Prior work in organizational behavior has applied psychological contract theory in the employee/employer context. This study explored the impact of violations of psychological contracts established between students and pharmacy schools. This study
(1) evaluated an instrument that measures perceived psychological contract violations and (2) examined the relationships between psychological contract violations, trust, met expectations, and three student attitudes. **Methods:** Building on past literature, the measure of psychological contract violations asked students to indicate the amount of various aspects of their education that they have received, compared to what they feel they were promised by their school. This instrument was fielded in six schools of pharmacy. Various analyses were conducted, including hierarchical regression and structural equation modeling. **Results:** A negative relationship was observed between psychological contract violations and each of the three attitudes (professional commitment, organizational commitment, and willingness to provide pharmaceutical care), even after controlling for several other variables. The largest effect was observed for organizational commitment. Results also suggest that met expectations and trust may partially mediate the relationship between psychological contract violations and students’ attitudes, particularly organizational commitment. **Implications:** Findings indicate that when schools do not deliver on what is implicitly and explicitly promised in the minds of students, erosion of students’ commitment to the profession, the school, and pharmaceutical care may result. Although it is important to consider variables such as trust and met expectations, these variables do not eliminate the impact of psychological contract violations on student attitudes, especially with respect to organizational commitment.

**Reorganization of a pharmacy law course according to functional topics improved student learning.** William E. Fassett, Washington State University. In response to declining student performance and satisfaction with our pharmacy law course, the course was reorganized in 2004 and a “User’s Guide” to our state law was developed as the primary text. Rather than the former more traditional organization which moved from the legal system to federal law to state law, the revised schedule and accompanying text were organized according to function, such as “Becoming a Pharmacist,” “Establishing a Practice Site,” and “Distributing Medications,” with state and federal law pertinent to each topic discussed at one time. Analysis of two years of student performance prior to and following the change revealed improvement in student learning. Average course grades were 2.91 and 2.92 for 2002 and 2003, in contrast to 3.46 and 3.26 in 2004 and 2005, using comparable examinations. Student evaluations of the course following the change reversed a declining trend in student satisfaction.

**Safety net hospitals’ profitability during the 1990s.** Nasreen Khan Khan, University of Illinois at Chicago; Jack Zwanziger, University of Illinois at Chicago. Safety net (SN) hospitals in the US, also known as “hospitals of the last resort” provide health care services to the uninsured, low income, underinsured, to Medicaid beneficiaries, to patients who are “undesirable”. This study examined the financial performance of these hospitals over the 1990-2000 period. We combined data (revenue, expenses) from the Medicare Cost Report data sets with a range of hospital characteristics from the American Hospital Association Annual Survey of Hospitals for all urban general acute care hospitals in the US. We created a set of safety net measures including a factor characterizing the socio-economic status of the population living in the hospital’s service area, and the proportion of Medicaid patients. We then modeled revenue, expenses and profit margin as a function of time varying hospital and market characteristics using hospital fixed effects specifications. Profit margins were consistently lower at safety net hospitals but the gap between these profit margins and those of non-safety net hospitals did not increase during the 1990s. These results must be seen as results conditional on a hospital continuing to function as a free-standing general acute care hospital. In fact, there was selective attrition for poorer performing hospitals. Safety net hospitals were disproportionately impacted by the public policy and market changes that took place in the 1990s. There is a need to focus subsidies properly to ensure the survival of the safety net in an environment where budget constraints and price competition are likely to persist and even to increase.

**Student Interest in Online and Distance Education.** Evan T. Robinson, University of Charleston; Richard E. Stull, University of Charleston. **Objective:** To evaluate the impact of technology curriculum delivery on graduating high school student in the selection of post-secondary education programs. **Methodology:** An exploratory study was conducted in collaboration with the ACT testing organization. A national random sample of 2,500 high school seniors interested in the health professions were surveyed with a 33-question questionnaire following completion who took the ACT Assessment administered at varied times. Proportional time zone sampling was used and matched to census data to give appropriate geographic weighting to the sample. Data collection was accomplished by ACT using a modified Dillman survey methodology. **Results:** 680 surveys were returned (27.7% response rate). Findings regarding respondent learning preferences indicated self-directed, motivated, and disciplined learners comfortable with an online environment. Results regarding attitudes about online learning indicated that respondents did not think Internet-based courses were as rigorous as traditional courses, had limited comfort learning online, that very few would choose an online-only program for college, and that an institution’s technology reputation was important when selecting a college or university. Finally, results regarding technology and Internet literacy found the respondents proficient in the use of technology and used it for a variety of educational uses. **Implications:** Respondents demonstrated traits consistent with successful distance learning and technology literacy sufficient to support learning online, but respondent comfort with online and distance learning was not consistent with the large growth of distance learning programs focused on this potential market.

**Students’ Views on Their Interaction with Physicians and Barriers to Raising External Groups’ Expectations.** Pallavi D. Patwardhan, University of Wisconsin - Madison; Betty A. Chewning, University of Wisconsin - Madison. In a communications class, 130 students were given three topics to choose from for a small group assignment to develop a project plan. While the majority selected ‘raising patient expectations of pharmacists’, only one group picked ‘raising external group (physicians, nurses, HMOs, etc.) expectations of pharmacists’. **Objectives:** 1) This study assessed barriers that inhibited students from choosing to work with external groups. 2) Students’ views on interaction with physicians were also explored. **Methods:** A 21-item questionnaire developed from focus group interviews was administered to all third year pharmacy students (N = 130) in April of 2005. **Results:** The net response rate was 95.38%. 1) Almost 40% of the respondents reported raising external group expectations was a ‘moderately’ or ‘very’ time consuming topic. Almost half of the respondents (48%) reported the topic was ‘very’ relevant to the pharmacy profession. More than half (52%) reported it was a ‘very’ or ‘moderately’ interesting topic. However, comfort level with this topic was low and more than two-thirds reported that they lacked adequate knowledge. 2) Respondents reported physicians’ lack of interest (agreed; 49.2% and strongly agreed; 8.1%) and physicians’ busyness (agreed; 61.3% and strongly agreed;
1700-point scale was 1297.35. Respondents reported the highest confidence in working with others in a research activity on a scale from 0 (no confidence) to 100 (extraordinary confidence). The activities were compiled from a thorough review of pharmacy and non-pharmacy literature. Self-efficacy measures were examined for validity and reliability using accepted statistical techniques. Correlates to both teaching and research self-efficacy were identified through unique stepwise linear regression procedures.

Results: The mean teaching self-efficacy response to the 1700-point scale was 1297.35. Respondents reported the highest confidence in providing alternate explanations when students are confused and lowest confidence in motivating students who show low interest in their courses. Variance in teaching self-efficacy was explained by research self-efficacy, stress of accomplishment, institutional support, age, and type of institution. The mean research self-efficacy response to the 1000-point scale was 1492.59. Respondents reported the highest confidence in working with others in a research group and lowest confidence in acquiring extramural funding. Variance in research self-efficacy was explained by 8 variables including academic rank, type of institution, and perceived intradisciplinary consensus on research and graduate programming issues.

Implications: The link between intradisciplinary consensus and teaching and research self-efficacy infers complimentary roles and warrants investigation. Future research may identify strategies to facilitate pharmacy academician self-efficacies.

Teaching and Research Self-Efficacies among Pharmacy Academicians. Mark H. Conklin, Duquesne University; Shane P. Desselle, Duquesne University. Objective: Develop means by which to assess teaching and research self-efficacies among pharmacy academicians and identify factors associated with self-efficacy. Methods: Responses to an electronically delivered survey were acquired from 722 full-time faculty, excluding administrators, listed in AACP’s 2004-2005 Roster of Faculty & Professional Staff. Academicians were asked to rate their confidence to perform certain teaching and research activities on a scale from 0 (no confidence) to 100 (extraordinary confidence). The activities were compiled from a thorough review of pharmacy and non-pharmacy literature. Self-efficacy measures were examined for validity and reliability using accepted statistical techniques. Correlates to both teaching and research self-efficacy were identified through unique stepwise linear regression procedures.

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Implications: The link between intradisciplinary consensus and teaching and research self-efficacy infers complimentary roles and warrants investigation. Future research may identify strategies to facilitate pharmacy academician self-efficacies.

Teaching the Four Ms of Diabetes Care: Meal Planning, Motion, Medication, and Monitoring. Patricia L. Darbishire, Purdue University; Christiane L. Nash, Purdue University; Kimberly S. Plake, Purdue University; Brian M. Shepler, Purdue University. Objectives: To assess students’ attitudes of an instructional approach to teaching diabetes care. Methods: Laboratory instruction for diabetes care was divided into four sections, otherwise known as the four Ms of diabetes care: meal planning, motion, medication, and monitoring. Students participated in activities that simulated situations patients with diabetes might experience. At the meal planning station, students learned the basics of carbohydrate counting, selected food from a buffet, and calculated the carbohydrate content of their meals. They then compared the nutritional value of sugar free foods against traditional foods. At the motion station, students were randomly selected to “experience” a diabetic complication, such as a hypoglycemia, during an exercise activity and asked for an appropriate medical response. Students also performed foot checks and covered the standards of care. At the monitoring station, students familiarized themselves with blood glucose meters and determined their blood sugar. At the medication station, students injected themselves with normal saline to simulate an insulin injection. Students counseled one another on giving insulin injections and blood glucose testing. At the conclusion of lab, students completed an evaluation regarding the instructional approach. Results: Students were positive in their evaluations of the instructional methods utilized. Over 90% of the students strongly agreed that the lab was interesting, assisted in learning concepts related to lecture, and would help them apply these skills in the “real” world. Implications: Students were favorable in their assessment of the instructional methods that allowed them to experience aspects of diabetes care from a patient perspective.
methods (e.g., provision of career mentoring and frequency of visits to the mentor), congruence between the mentor and mentee (e.g., alignment of personal values), and mentoring outcomes (e.g., professional development). Implications: The authors are currently testing the mentor-related constructs of this framework, and intend to test the mentor-related constructs in the near future. While the constructs of this framework were operationalized with the pharmacy education context in mind, the framework may find application in other settings.

Moving away from Grades. Arjun P. Dutta, Pacific University; Robert P. Rosenow, Pacific University; Susan M. Stein, Pacific University; Vanessa Dillman, Pacific University; Ajay Koomer, Pacific University; Willard Kneip, Pacific University. “To grade or not to grade?” has beleaguered healthcare educators since the seventies. Medical, dental, and law literature have espoused a “pass/fail” (P/F) system in lieu of grades. Students preferred P/F while faculty argued both ways. Both medical and dental literature bore positive correlation between P/F -academic performance, boards, and residencies. Although, there is a dearth of evidence regarding the merits of P/F in pharmacy education, more schools are using it for experiential and other electives. The PU, SOP has made a conscious decision to eschew traditional grading in favor of P/F for all didactic and experiential courses in their three-year curriculum. The following describes their evaluation process: Progression of students towards achievement of programmatic outcomes will be measured via formative and summative assessments. Additionally, a cumulative year-end assessment for the two didactic years and the third clinical year will be conducted. PU will use “P/F” for recording student achievement. The standard for individual student achievement is 90%. Assessments will also include a group assessment which will contribute 5% points towards an individual’s overall score. If a student does not achieve 90%, then he/she will attend a mandatory review session on a scheduled extended-learning day followed by a written reassessment to achieve 90% competency. Students failing to achieve 90% on the extended-learning day will attend summer extended-learning where they will be required to achieve 90% in order to continue in the program. The faculty will reassess the P/F system at the end of the first year and report significant correlations.

Work in Progress

A Unique Program In Healthcare Management At The University of Rhode Island College of Pharmacy. E. Paul Larrat, University of Rhode Island; Thomas J Bunz, University of Rhode Island; Rita M. Marcoux, University of Rhode Island; Brian J. Quilliam, University of Rhode Island. Objectives: A central goal of the Healthcare Utilization Management Center (HUMC) at the University of Rhode Island, College of Pharmacy is to expose students to the challenges faced by organizations managing healthcare services. Methods: Students in the HUMC partner with center staff in order to understand and provide P&T Committee support. They have also provided support for the medical and psychological committees, including literature review and guideline development. As a result of the efforts of...
the HUMC students and staff, the RIDOC was able to cut medication costs by 15% between 2000 and 2005. A partnership with the Office of Vermont Health Access (OVHA) has given students the opportunity to provide strategic planning and research support to Vermont’s Medicaid program. This project involved an in depth analysis of the care of mental health patients in this program. Implications: The partnerships developed through the HUMC have provided unique experiences for many professional students in the University of Rhode Island, College of Pharmacy. Additionally, this program offers clients the unique insight provided by highly trained students in their final year of the doctor of pharmacy program.

An Exploration of Pharmacy Students’ Mentorship-Seeking Behaviors. Erin R. Holmes, The University of Mississippi; Alicia S. Bouldin, The University of Mississippi; Shane P. Desselle, Duquesne University. Objectives: The objectives are to: 1) describe pharmacy students’ mentorship-seeking behaviors with faculty, 2) determine if students utilize their “assigned” mentors/advisors as actual mentors, 3) compare the amount of importance that students assign to mentoring functions and the satisfaction they report with their mentor’s performance of these functions, and 4) identify correlates of students’ assigned importance to mentoring and the satisfaction they report with their mentor’s performance. Methods: A questionnaire is currently being distributed to two pharmacy classes (first- and third-year professional students, and second-year professional in lieu of third-year for schools in which third-year students are on a different campus) in each of five pharmacy schools representative of university type, locale, and type of formal advising or mentoring program administered (or not administered). The questionnaire was developed from an extensive literature review, qualitative interviews with faculty, and focus groups with students. Results: Data being collected include who students identify as their mentor, how they identify their mentor, and how frequently they interact with their mentor. Demographic and other characteristics of students and their mentors being collected include students’ general self-efficacy, willingness to talk about things on their mind, concern about “bothering” faculty, and perceived time to visit faculty about issues unrelated to classes. This questionnaire also includes an importance-performance measure with items related to various mentoring functions and determines if students utilize their “assigned” mentors/advisors as actual mentors. Implications: Understanding students’ mentorship-seeking behaviors and mentoring needs has implications for the provision of formal and informal mentoring by pharmacy schools.

An Investigation of the Correlation Between Pharmacy Students’ Level of Professionalism and Emotional Intelligence (EI). Nicole A. Tagliavia, Duquesne University; David J. Tipton, Duquesne University; Vincent J. Giannetti, Duquesne University; Thomas J. Mattei, Duquesne University. Objectives: The purpose of this study is to determine if there is a correlation between a student’s level of emotional intelligence (EI) and professional behaviors and attitudes. The study will attempt to predict levels of professionalism based on emotional intelligence scores. In addition the study will measure differences in the levels of EI and professionalism based upon demographic variables. Finally the study will measure what specific dimensions of EI predict professional behaviors and attitudes. Methods: The potential participants will consist of 136 pharmacy students in their fifth professional year of pharmacy school. The Bar-On EQ-i: S Handscored self-report 51 item survey and a 33 question professionalism survey will be utilized. The 33 question professionalism survey was adapted from two standardized surveys. Results: The study will utilize multiple regression analysis to measure which specific dimensions of emotional intelligence best explain professional behaviors and attitudes in students while controlling for gender, age, participation in organized activities, a prior degree and employment. Implications: Future implications include focusing upon teaching emotional intelligence as a strategy to develop professional behaviors and attitudes in pharmacy students. The professionalism and Bar-On EQ-i surveys could also be utilized to gauge a students growth in EI and professionalism after participating in a course as well as illustrate whether these constructs can be successfully taught.

Assessment of the Integration of Chromatography and its Application in Pharmacy Practice on Student Learning. Kimberly S. Plake, Purdue University; Jean-Christophe Rochet, Purdue University; Jane E. Krause, Purdue University. Objectives: To evaluate the impact of integrating basic science content and its application to pharmacy practice in a laboratory setting on students’ learning and attitudes toward this instructional approach. Methods: Students in the professional pharmacy program complete a series of labs pertaining to basic concepts of science, as well as the practice or pharmacy. None of these labs currently integrate basic science with its application in pharmacy practice. In this laboratory for first professional year pharmacy students (N = 157), chromatography content was combined with one of its applications in pharmacy practice, pregnancy testing. Prior to the lab, students completed a content quiz, or pretest, on the material covered in the lab. Students then participated in exercises pertaining to chromatography and completed a patient case on pregnancy testing using the guided design approach. At the conclusion of the lab, students completed the same content quiz that was provided at the start of the exercise. In addition, students’ opinions regarding this instructional approach were assessed using a survey at the end of the laboratory. One year after the completion of the lab, students were asked to complete the content quiz again. Results: Students’ laboratory pre- and posttest scores will be compared. Students’ attitudes regarding this instructional approach also will be assessed. In addition, students’ laboratory post-test scores will be compared to their scores one year after completing the laboratory. Implications: By integrating basic science content and its application to pharmacy practice, it is hoped that students’ attitudes, learning, and retention are impacted favorably.

Comprehensive Review of Pharmacoconomics Research in Published Literature. Conrad Dhing, St. John’s University. Objective: Provide a brief historical background and examine the trends in pharmacoconomics research based on published literature in the pharmaceutical and medical disciplines. Method: Refereed/peer-reviewed journals in the pharmaceutical and medical disciplines were systematically reviewed to assess the trends in pharmacoconomics research. Inclusion criteria included articles/manuscripts published between 1980 and 2005; studies evaluating the use of pharmaceutical products and/or services, and review articles of pharmacoeconomic principles. The articles will be classified into the different pharmacoeconomic models (cost of illness, cost-minimization, cost-benefit, cost-effectiveness, cost-utility), type of study (empirical research, database analysis, review articles, opinions), and countries of origin where the research/data was conducted/collected. Results: This study presented the trends in pharmacoconomics research based on published literature as well as a bibliography of the published literature. Implication: Pharmacoconomics research has become more prevalent and critical in both published literature and pharmaceutical education. This study provided a brief historical review of, as well as the trend in pharmacoconomics research.
Continuous Quality Improvement of Student Progress and Pharmacy Education at a New School of Pharmacy. Elvin A. Hernandez, Loma Linda University, Rashid Mosavin, Loma Linda University, Willie L. Davis, Loma Linda University. Objectives: Instruction and curriculum development continually require evaluation and assessment to ensure quality educational and professional success. Traditional instruction and curriculum evaluation occur through quantitative course evaluations administered following course completion. Objectives included: 1) presenting a qualitative evaluation of instruction and curriculum based on student perceptions not captured in standardized course evaluations, 2) exploring student perceptions, attitudes, and beliefs regarding curriculum design and faculty instruction, and 3) developing appropriate recommendations for improving the curriculum and instruction. Methods: We assembled three focus groups consisting of professional year 1 through year 3 students. Participants were recruited on a voluntary basis. No more than 10 participants from each professional year participated. Interviews lasted 90 minutes in a closed-door, confidential environment. One focus group facilitator conducted interviews to ask questions and promote discussion. Interviews were tape-recorded for transcription and qualitative analysis. Participants read and signed a consent form prior to participating. Identities remained confidential and anonymous during transcription and analysis. Results: Students identified interactive, proactive, and participatory teaching that promoted academic success, particularly in pharmaceutical sciences and pharmacy practice. Courses which integrated practical examples of lecture content were most effective in the learning process. Experiential courses such as IPDM could be integrated earlier in Year 1 to promote proactive learning. Implications: Focus group interviews are effective in contextualizing student perceptions, attitudes, and beliefs that may not be captured in quantitative evaluations such as assessment exams or standardized course evaluations. Integrating student perceptions into curricular and instructional practices will continually enhance quality of education.

Developing the impact: Phase I - establishing a database of relevant instruments. Mark Bounthavong, Western University of Health Sciences; Anandi V. Law, Western University of Health Sciences. Intent: The purpose of this research was to establish a database of disease-specific quality-of-life (DSQOL) instruments for common chronic diseases usually managed by pharmacists in community-based disease state management (DSM) clinics. This database is the first step in a larger study that is focused on developing a universal Instrument to Measure the impact of Pharmacist Activities and Care on Treatment outcomes (IMPACT) that comprises DSQOL for several chronic diseases, satisfaction with treatment and with pharmacist services. Methods: A review of literature in QOL and evaluation of pharmacist services was conducted using PubMed database from 1988 to 2005, using keywords: development, validation, reliability, comparison, evaluation, or review. QOL articles were categorized based on focus and disease states. The search was narrowed to extract and sort DSQOL instruments for specific chronic conditions. Results: The search yielded 648 articles, of which rheumatoid arthritis and pulmonology had the most number. The database is a classification of relevant DSQOL articles and instruments sorted by the disease evaluated and the focus of QoL instrument being used. The number of instruments extracted was: Diabetes:13, Pulmonology (COPD, Asthma): 8, Hypertension (domain specific): 10, Hyperlipidemia: 1, Heart Failure: 8, Rheumatoid arthritis: 8 and Evaluation of pharmacist services:1. Items from individual instruments are currently being explored in order to develop the IMPACT. Implications: The database provides a valuable review of existing DSQOL instruments in the areas most relevant to pharmacists conducting DSM and potentially, Medication Therapy Management Services. The IMPACT will serve as an overall instrument and reduce respondent fatigue.

Emergency Preparedness Curriculum Enhancements for Pharmacy, Nursing, and Allied Health: Year Two. Jean T. Carter, The University of Montana; Sandra Kuntz, Montana State University; Steven Fehrer, The University of Montana; Wade Hill, Montana State University; Steven Glow, Montana State University; Earl Hall, The University of Montana; Jacqueline Elam, The University of Montana; Lisa Wrobel, The University of Montana; Sare Michele, The University of Montana; Michael Minnick, The University of Montana. Objective: The purpose of the two-year project was to develop a set of curricular enhancements for students enrolled in several different allied health training programs. Methods: Faculty from a variety of disciplines worked together to create learning experiences that could be used to enhance their curricula. The faculty met monthly, garnered input from folks with expertise in emergency preparedness, public health, and education. Students also provided input. Faculty were asked to find ways to integrate the modules into their respective curricula. Electronic version of the modules will be completed and tested by April 2006. Results: To date, over 550 students have been trained in eight programs at four different institutions. Modules were used as either classroom lectures or outside readings. Some instructors offered all modules in one day while others used several class periods. Post-test scores for knowledge and attitude varied by group and timing of the exam. The test scores across the four modules ranged from 25 to 100%. Allowing time between the presentation of materials and testing appears to improve scores. Attitudes about risk and need to participate was high across all student groups regardless of instructional method employed, although it did vary from year to year within the same discipline. Copies of the electronic modules will be made available to interested faculty. Implications: There are several effective ways to incorporate emergency preparedness training into curricula, and students accept that someday they may be involved in a disaster response.

Health Literacy-Writing Readable Text: The Movie. Donna E. Dolinsky, Long Island University. Objective: As part of a self-instructional module designed to teach pharmacy students to increase patient health literacy, we created short movies with voiceover to deliver content on how to write readable text about health and medications. The purpose of this poster is to teach faculty to create their own instructional movies with voiceover. The objective for the module was that students be able to identify and solve fourteen problems of poorly written medication/health information. Method: We wrote a script for the voiceover to teach students to identify these fourteen problems, analyze the causes of the problems, generate solutions and evaluate their solutions. We created 71 animated Keynote slides (an Apple product) to graphically support the verbal instruction in the voiceover. These 71 slides were grouped into 21 short movies, from two to five minutes long. The voiceover was added to Keynote using GarageBand, another Apple product. The files were saved as QuickTime movies, imported into Final Cut Express HD, edited, and saved to a DVD. Results: The DVD will be sent to each College of Pharmacy after final editing. We will follow up with an electronic email survey at two different intervals following the initial sending.

Identifying Factors that Influence Student Leadership. Melanie P. Petilla, University of Washington. Objectives: The future growth and vitality of the pharmacy profession requires strong leaders prepared to confront its critical challenges. The University of Washington
School of Pharmacy strives to offer leadership programs that empower students to transform current challenges into future opportunities. Although there is a strong leadership core, efforts are underway to involve more students in professional extracurricular activities. The purpose of this study is to identify factors that encourage or deter pharmacy student leadership and determine which factors can be positively addressed by the University of Washington School of Pharmacy’s newly established Center for Pharmacy Leadership and Professional Excellence. **Methods:** Administer a voluntary, catalyst-based, exploratory survey to current UW School of Pharmacy students. Students will be asked to respond to questions on their leadership involvement since their acceptance into pharmacy school and their reasons for pursuing or not pursuing these activities. **Results:** Approval has been received by the Human Subjects Division of the University of Washington. Survey results are still pending. **Implications:** By identifying which modifiable factors influence student leadership pharmacy schools can tailor and improve their current activities to better serve student interests and needs. Ultimately, such modifications can result in increased student involvement and thereby enhance the development of future pharmacy leaders.

**Implementation and Evaluation of a Standardized Patient Program in a Pharmacy Communication Course.** Nathaniel M. Rickles, Northeastern University; Phuong Tieu, Northeastern University. The standardized patient program has been successfully employed in medical schools to teach medical students critical diagnostic skills. There have been relatively few reports of using standardized patients to actively teach pharmacy student communication skills. A standardized patient program was implemented into a second year pharmacy communications course at Northeastern University during the Spring 2006 semester. Approximately 35 individuals from the Boston community were recruited and participated in a 2 hour training session. These individuals are given scenarios each week that provide students an opportunity to apply skills such as listening, probing, empathy, managing confusion and conflict, and motivating patients toward change. The course was modified to include 6 two-hour lab sections to accommodate approximately 125 students. During each week for eight weeks, students are assigned a time to come to lab, review a patient profile and prescription, and conduct a taped counseling session with a standardized patient. Lab activities also involve students reviewing their tapes and completing self-assessments of their sessions. The instructor and student complete together an assessment of the midpoint and final tapes. Communication experts will be asked to evaluate student baseline and final tapes using a standardized assessment form. Experts will be blinded to the timing of the tapes. Both the standardized patients and the students will complete program evaluations. Descriptive tests will be conducted to describe results of these program evaluations. Bivariate tests will be used to compare differences in expert assessments of student skills at the beginning and end of the program.

**Integration of PY1 students into a PY3 Practice Laboratory Setting.** Joseph M. Calomo, Massachusetts College of Pharmacy and Health Sciences - Boston. Faculty at the Massachusetts College of Pharmacy and Health Sciences, School of Pharmacy-Boston (MCPHS, SOP-B) have developed an innovative program for providing management application to students in a laboratory based introductory pharmacy practice experience. At the MCPHS, SOP-B, two courses have been developed to simultaneously provide students with the knowledge and skills needed to manage their practice. These courses are Introduction to Practice Management (IPM) and Advanced Practice Management (APM) taught in the first professional year and the third professional year respectively. Both courses consist of a laboratory component where students fill prescriptions in a mock pharmacy. In this new integrated model PY3 students function as the pharmacist and provides oversight to two PY1 students who function as interns. The team of three is given an escalating number of prescriptions over the course of the year. The PY3 student is also responsible for contacting the prescriber and making any necessary interventions, identifying counseling points and monitoring parameters, ensuring that all federal and state laws are followed in the prescription filling process and overall final verification of each prescription. PY1 students gain experience in the roles and responsibilities of being an efficient and effective intern prior to entering our off-campus Introductory Pharmacy Experiences (IPE). PY3 students are provided with the opportunity to apply their previously obtained clinical and management knowledge and skills prior to their final year of Advanced Pharmacy Experiences.

**Medicare Part D Education and Implementation: Survey of Assisted Living Facility Administrators in Nebraska.** Jayashri Sankaranarayanan, University of Nebraska Medical Center; Sarah Elizabeth Martin, University of Nebraska Medical Center. **Background:** The Medicare prescription drug coverage, Medicare Part D is offered to beneficiaries starting January 1, 2006. Literature reports the dependence of Assisted Living Facility (ALF) residents on their administrators for Medicare information. **Objectives:** To describe the Medicare Part D related educational and enrollment programs at ALFs, to provide relevant Part D information and assess metro and non-metro differences in confidence of ALF administrators about Medicare Part D. **Methods:** University of Nebraska Medical Center’s Institutional Review Board classified the cross-sectional exploratory study as “exempt”. The ALF-administrators (n = 273) from the publicly available State of Nebraska ALF Roster are being surveyed. Items on the phone survey include questions on: Medicare Part D education of residents, caregivers and staff; type of information resources (including pharmacy services) for educational programs; help for enrollment decisions; and respondent’s confidence about Medicare Part D, helping and directing beneficiaries; and demographics (age, gender, education, metro vs. non-metro county location). Relevant Medicare Part D information is provided and its usefulness to respondents is assessed. **Results:** Our preliminary results included 55 ALF-administrator respondents, 96.4% of whom primarily used pharmacies and 85.5% used Medicare-website as educational resources, and 93% found the information provided “useful.” Survey and further analyses are ongoing. Descriptive and inferential statistics (SAS ver9.1, alpha = 0.05) of ALF-administrator’s responses will be presented. **Implications:** In the absence of prior information, this is one of the first studies that evaluates ALF-administrator’s activities and confidence for Medicare Part D education and enrollment implementation, and has implications for future health insurance education programs.

**Patient Safety issues from multi-cultural, third year pharmacy students’ perspectives.** Joan K. Langlois, Long Island University. **Objective:** The purpose of this study is to determine what multi-cultural, third year pharmacy students believe is important regarding patient safety issues. Patient safety is an important topic in health care in general, and in pharmacy, specifically. An entire issue of the International Pharmacy Journal (IPJ) from the International Pharmaceutical Federation (FIP) was devoted to this topic in Volume 19, No. 1, August 2005. **Methods:** With permission from the FIP, students were given Volume 19, No. 1, August 2005, from the IPJ to read. They were then asked to write several paragraphs about a specific
patient safety topic that is important to them as pharmacists. Their hand written answers were transcribed into a text form compatible with Atlas.ti, a qualitative data analysis program, to aid this research.

Results: The data is collected and qualitative analysis is in progress. Initial data analysis shows a range of patient safety topics that are important to these multi-cultural, third year pharmacy students.

Perceived Stress Levels in University of Washington PharmD Students. Ashley N. Bean, University of Washington; Dana P. Hammer, University of Washington. Objective: The purpose of this study was to examine University of Washington PharmD (UWSOP) students’ perceived level of stress in relation to their academic workloads for a particular quarter. Methods: A brief, web based survey was created and piloted to a convenience sample. Questions related to credit load, time spent studying outside of class, and perceived levels of stress and overwhelm regarding a particular quarter. Basic demographic information was also collected. First, second, and third year PharmD students were emailed a web link to participate in the survey. Results: 130/351 students completed the survey. Preliminary results indicate that the mean number of credits taken was 17.65 ± 1.82. The mean number of hours studied outside of class per hour in class was 3.10 hours ± 1.42. Fifty-five percent of students moderately agreed that they had to ignore one course to prepare for another and 42.5% moderately agreed that their sense of overwhelm was not minimized by the structure of the quarter. Twenty-seven percent moderately disagreed that their stress was kept to a manageable level. Complete results will be available for presentation in July. Implications: Results from this study should be explored further to determine if the structure of the UWSOP PharmD program could be modified to decrease student feelings of stress and overwhelm. Stress in health sciences students has been studied extensively, but little work has been completed in pharmacy students. Similar studies should be conducted with other pharmacy schools to see if similar trends exist.

Performance of Positively and Negatively Worded Questions on a Classroom Exam. Jean T. Carter, The University of Montana; Sarah J. Miller, The University of Montana. Objective: A retrospective study several years ago found no difference between the positively and negatively question performance. This follow-up study incorporated stricter controls on the preparation of items and number of content areas tested to see if differences could be detected. Methods: Four questions on iron supplements were used to create a total of four versions that were tested. Item Analysis, t tests, and nonparametric statistics were used to analyze the performance of the questions. Results: Each version of the exam was completed by 16 students (N = 64). Item difficulty ranged from 47% to 77%. On the tests where the two negatively-worded items appeared first, the students who encountered the first item later in the exam were more likely to select the correct answer than those who encountered the same question early in the exam (p = 0.0108). There was no significant difference between the early and middle placement groups when the first two questions were positively-worded. Implications: No trend emerged across all four questions to indicate that positively or negatively worded questions had a superior or inferior performance when used in a classroom exam. Further testing on the subgroups will be conducted this spring.

Teaching and Assessing Continual Quality Improvement Programs in a PY3 Practice Laboratory. Joseph M. Calomo, Massachusetts College of Pharmacy and Health Sciences – Boston; Joseph W. Ferullo, Massachusetts College of Pharmacy and Health Sciences – Boston; Timothy Hudd, Massachusetts College of Pharmacy and Health Sciences – Boston; Donney John, Massachusetts College of Pharmacy and Health Sciences – Boston. With the development and expansion of Continual Quality Improvement (CQI) programs within the practice of pharmacy, practice faculty have developed a method of teaching students the importance of utilizing CQI programs as well as providing students with the opportunity to apply this knowledge in a mock pharmacy setting. Students are trained on the role of CQI in the practice of pharmacy in the didactic component of a course entitled Advanced Practice Management. This is a year long course taught in the third professional year of the pharmacy curriculum at the Massachusetts College of Pharmacy and Health Sciences -Boston. In the second semester of this course students are asked to utilize a CQI program to engage in a root cause analysis for any medication errors they have made while filling prescriptions within the laboratory aspect of this course. If errors are documented and handled correctly, students can earn quality points towards their final assessment for each laboratory session. Faculty will utilize gathered data to show current students common pitfalls and errors being made as well as identify trends to improve future teaching programs.

Teaching Problem-Based Communication to Pharmacy Students: The Pharmacist SOAP Process. Elizabeth James, University of Washington; Peggy Soule Odegard, University of Washington. Objective: To prepare pharmacy students for optimal written clinical communication within an interdisciplinary health care system through the use of “SOAP” notes. Meeting this objective requires training students in pharmacist-specific written communication skills, including formatting and use of pharmaceutical evidence. Methods: Students attend a clinical communication lecture at the beginning of the pharmacotherapeutics course sequence. A distinction is drawn between pharmacists’ and other clinicians’ SOAP notes in that pharmacists’ notes address only information pertinent to pharmacist decision-making. Assessment statements should be written as drug-related problems rather than diagnoses. During the lecture, one faculty member interviews another faculty member acting as a patient in a role-play. The interaction is staged to demonstrate critical interviewing and pharmacist assessment and recommendation. A laboratory accompanying the pharmacotherapeutics sequence provides students opportunities to practice written clinical communication. Students are expected to incorporate disease-specific evidence-based medicine recommendations. Student evaluation has evolved from a numerical scale to a pass/fail rubric to emphasize the content and communication of the note rather than the score. Results: Students average five written SOAP notes per quarter, about half of which are returned for rewrite. Of final SOAP notes submitted, <10% are not satisfactorily corrected. Student evaluations of the clinical communication lecture are excellent with preference for the role-play and laboratory activities as compared to lecture. Implications: This teaching method facilitates use of pharmacist-specific SOAP notes in interdisciplinary communications in health care delivery. Teaching effective communication strategies within pharmacy education is one way to ensure professional integration and optimal patient care.

The Development of a Medication Therapy Management Program for Chain Pharmacies. Thomas J. Mattie, Duquesne University; Rachel L. Henderson, Duquesne University; Christine K. O’Neil, Duquesne University; Kevin Lynch, Pfizer; Debbie Krasnow, Giant Eagle Inc.. Medication Therapy Management (MTM) continues to be an area in the healthcare field that is currently receiving attention.
Starting January 1, 2006 the pharmacist will be reimbursed for cognitive services in addition to prescription services. The definition of what MTM encompasses in this amendment is very vague. Thus it is left up to the individual providers to determine how MTM will be delivered. The objectives of this project are to develop and implement a MTM process with adequate guidelines and appropriate forms, select and implement a documentation and reporting system, train pharmacist to use this process and measure patient satisfaction. The MTM documentation/reporting system will be created by choosing a computer system that can document patient meetings, interventions, and create reports. Appropriate forms will be designed with clarity and uniformity. A user guide of information containing background on what MTM is, the process of MTM, how to use the computer system, copies of all forms, and a review of hypertension, diabetes, hyperlipidemia, asthma, and pain management will be given to all pharmacists involved or connected to the MTM Program. All pharmacists involved with the MTM program will be trained to use the process by attending required training classes. Patient satisfaction will be measured using “The Service Satisfaction Scale (SSS-30).” The implementation of MTM in a chain pharmacy is currently underway. Evaluation of pharmacist acceptance and patient satisfaction of MTM are anticipated to be positive.

The Initial Help Seeking Experiences of Women with Depression. John M. Lonie, Long Island University; Fantone Moretta, Long Island University. Objective: Depression is the most common affective disorder in women and it is twice as common in females as in males. Research shows that the average amount of time it takes for women to seek their initial treatment for depression is between 6 months and several years after the onset of symptoms. The purpose of this study is to better understand the personal experiences which lead women to seek treatment for depression relatively soon after their symptoms began (within 12 months of onset of symptoms). Methods: In order to better understand the phenomena in question, a multiple case study qualitative methodology was used. Advertisements for potential participants were placed in local newspapers and on Craigslist, a community bulletin website. After initial screening interviews via telephone, nine semi-structured interview participants were selected based upon explicit inclusion criteria. Each interview was audiotaped and transcribed. The transcribed data were analyzed for significant themes using an open-coding method. Results: Work in progress. Initial data analyses suggest that close relationships with others who had experienced depression was a major determinant in initial help seeking behaviors. The precise nature of this relationship is currently under investigation. Implications: If researchers can better understand what motivates women with depression to seek help relatively quickly after the onset of initial symptoms, educators, public health specialists and others can create programs which utilize this study’s findings to encourage faster help-seeking behaviors.

The racial/ethnic representation of pharmacy faculty. Caroline A. Gaither, University of Michigan; Marie A. Chisholm, The University of Georgia; Angela Hagan, University of Michigan; Daniel C. Lane, University of Michigan. While racial/ethnic minorities (Black/African American, Hispanic/Latino/a, American Indian/Alaska Native, Asian/Native Hawaiian/Pacific Islander) make up approximately 28% of the United States population, 12% of first professional degrees, 17% of post-baccalaureate PharmD degrees, 12% of MS degrees and 5% of Ph.D. degrees were awarded to Black/African Americans, Hispanic/Latino/as and American Indian/Alaska Natives; respectively, in 2004. Asian/Native Hawaiian/Pacific Islanders received 23% of the first professional, 12% of the post-baccalaureate, 14% of the MS and 9% of the PhD degrees in this same year. These numbers are significant since they represent the pool from which future faculty can be drawn. In addition, they represent individuals whose perspectives are increasing important to the delivery of health care. Objectives: The purpose of this analysis is to examine the distribution of faculty by various demographic factors (gender, age, rank, etc.) and race/ethnicity. Trends over time will also be investigated. Methods: Data will be obtained from the AACP Institutional database which maintains data on all faculty in United States schools and colleges and published reports. The data will be analyzed by racial/ethnic background utilizing SPSS statistical software, with appropriate non-parametric and parametric statistics. Results: Preliminary review of published reports found that 6% of pharmacy faculty are Black/African American, 3% Hispanic/Latino/a, 11% Asian/Native Hawaiian/Pacific Islander, and 0.12% American Indian/Alaska Native. Implications: As the number of racial/ethnic minority populations continue to rise, it is imperative that schools/colleges increase the number of these individuals to their representation in the population.

Using a Fashion Show to Assess Students’ Perceptions of Professional Dress. Kimberly S. Plake, Purdue University; Nicholas E. Hagemeier, Purdue University. Objective: To identify pharmacy students’ views of professional dress. Methods: During a lecture period focusing on professionalism, first professional year pharmacy students (N = 157) observed a fashion show in which second professional year students posed as models dressed in what would be considered “appropriate” and “inappropriate” attire for pharmacists. Students wrote structured reflection papers regarding their thoughts on the appropriateness of each model’s dress/attire. In order to have students think about patients’ perceptions, they also addressed how they believed their parents and grandparents would perceive the appearance of the fashion show participants. Students also were instructed to choose the model that they would trust the most as their pharmacist and explain why. A retrospective analysis of the reflection paper responses will be performed to identify patterns in students’ perceptions of professional dress, including 1) an assessment of students’ perceptions of what was considered appropriate and inappropriate attire, 2) differences in perceptions based on gender, and 3) the most professional model. Results: Evaluation of the students’ reflection papers will determine students’ views of professional and unprofessional dress. Using this information, faculty will be able to provide feedback to students regarding appropriate and inappropriate dress on clinical rotations and in the workplace. Implications: Instilling professional values in pharmacy students during the pharmacy curriculum is a goal of pharmacy faculty. Exposure to specific characteristics of a professional through implementation of a pharmacy fashion show could be an effective method of promoting one aspect of professional socialization to pharmacy students.

Using P4 Assessment Day to Identify Areas for Improvement: the University of Iowa Experience. Karen B. Farris, The University of Iowa; Deanna L. McDanel, The University of Iowa; John M. Swegle, The University of Iowa; Elizabeth John, The University of Iowa; Jeffrey Haig, The University of Iowa. Objectives: P4 Assessment Day objectives were to: (1) quantify students’ abilities to provide pharmaceutical care, (2) obtain students’ self-assessments of their professional abilities and (3) identify recommendations for improving instruction and assessment. Methods: Students (n = 101) in advanced practice experiences (APE) completed six activities including identifying drug therapy problems (DTP), writing SOAP notes, counseling patients, identifying dispensing errors and performing.
calculations. Checklists were used to rate performance on these tasks, and over 40 volunteers were needed. **Results:** All students identified one correct DTP and 86% identified two DTPs. Only 44% correctly identified a DTP for the nonprescription medication. For SOAP writing, 60.8% provided correct subjective information, 72% provided correct objective information, 62.3% provided correct assessment information and 68% provided correct plan information. For counseling, students asked appropriate questions 81-97% of the time. Eighty-four percent of students identified both dispensing errors on filled prescriptions. For calculations, 34% had all three calculations correct, 37% had two correct and 30% had one correct. For student self-assessments (n = 98), students rated their own self-confidence the lowest. Feedback from students indicated that this day has some but not significant value to them. The P4 Assessment Day subcommittee of the Assessment Committee is developing recommendations for Curriculum and Professional Experience Program Committees to facilitate improvements in SOAP writing. The final recommendations will be presented. **Implications:** P4 Assessment Day is used to identify areas where improvements in instruction may be needed. Next steps include implementing recommendations and continuing to monitor SOAP writing skills.

**What Does the Public Think of Pharmacists? Development and Implementation of an Exercise for Second Year Students.** Karen Blumenschien, University of Kentucky; Patricia R. Freeman, University of Kentucky. **Objective:** According to polls, the lay-public holds pharmacists in high esteem. However, investigators have found the public’s attitudes, opinions, and beliefs (AOBs) regarding the pharmacist’s professional role as a health care provider often appear incongruent with poll results. Studies document that the lay-public sees the pharmacist’s duty as “following physician orders”. Other studies note vast misperceptions about pharmacist training. The purpose of this activity is to expose pharmacy students to an array of AOBs held by the lay-public about the profession. **Methods:** Students will access an online journal article (“Majority of US Pharmacists Support Denying Patient Access to Drugs”*) containing over 50 posted comments documenting the lay-public’s AOBs regarding pharmacists; some negative, some positive. Students must identify three AOBs in the comments and for each: a. Provide commentary on why the public holds that AOB b. For positive AOBs, describe how pharmacists can use this to advance their professional role c. For negative AOBs, describe potential ‘threats’ they pose for the profession’s future and discuss strategies to diffuse these AOBs. Before the activity, student perceptions of the lay-public’s AOBs regarding pharmacy will be surveyed. After completing the activity, a second survey will assess whether the activity modified their perceptions. **Implications:** As the profession continues to move toward patient-centered care as the model of practice, influencing public opinion and expectations regarding the role of the pharmacist will be of utmost importance. Educational activities such as this will assist students in understanding public opinion, which may be a first step in their ability to foster change.

**SCHOOL POSTERS**

“Self Service Rotations: Student Satisfaction”. Wanda R. Kearney, North Dakota State University; Charles A. Peterson, North Dakota State University; David Serhienko, North Dakota State University; What is RMS? RMS (Rotation Management System) is an on-line system where information about students and preceptors can be collected and distributed. This is an extremely flexible system used to manage student, preceptors, rotation assignments, evaluations, and general communication. Students may access assignment/preceptor and site information on-line through RMS. Preceptors may manage their site’s rotations and site information including a description page. This system also provides for multiple organizations to use it concurrently. Communication between all parties will also be supported. How are rotation assignments made? The key to RMS is the Auto Assignment Engine. This engine processes student choices for rotations and uses randomization and other processes to assigned students with a balanced satisfaction based on choice rankings which meet minimum and maximum requirements. Managers for an organization, may run the assignments multiple times with a variety of options without committing the assignments. Once a satisfactory assignment run is chosen, it may then be committed and even rolled back. After a final review, the assignments may be shown to the students on-line.

**A Capstone Course for Soon-to-Graduate Students Focused on Pharmacist-in-Charge Legal Duties and Ethical Responsibilities.** Rick A. Sylvies, Western University of Health Science; Robert W. McGory, Western University of Health Science. **Objective:** To enable fourth-year pharmacy students to be employed as Pharmacist-in-Charge (PIC) upon graduation. **Methods:** Many students are offered the opportunity to become a Pharmacist in Charge (PIC) soon after graduation. Those graduates often feel intimidated by PIC duties and legal responsibilities. A weeklong (20 lecture-hours) program was developed to address the specific requirements and misconceptions of being a PIC. The program was imbedded in a 12 week elective designed to expose students to advanced pharmacy practice in the anticipated focus of employment. Topics include: advanced and new law review, legal and ethical case studies, policies for compliance with current regulations and preparedness for state board inspections. A survey was completed on the final day of class to assess the student perception of PIC duties. **Results:** Twenty-nine soon-to-graduate students completed the survey. Prior to the course, 14 of 29 students (48.2%) said they would not accept a position as PIC. Nine (20.6%) said they would accept a position. Six students (20.6%) had no opinion. After completion of the PIC review course, 21 of 29 students (72.4%) said they would be willing to accept a position as PIC and only 2 of 29 (6.9%) said they would not. Six students (20.6%) had no opinion. **Implications:** Pharmacy students receive an abundance of clinical training during their pharmacy education, while legal and ethical issues may be lacking. Providing a review course focused on PIC duties and responsibilities improves their confidence level and potentially gives them the opportunity to become a Pharmacist-in-Charge after graduation.

**A Cultural Diversity and Medical Ethics Learning Activity: Identifying Biases and Barriers.** Brenda S. Bray, Washington State University; Catrina Schwartz, Washington State University; Shirley E. Lucas, Washington State University. Pharmacists are expected to provide pharmacy services and compassionate care to all patients regardless of the patient’s ethnicity, cultural background, socioeconomic status, religious beliefs, or level of education. Increasingly, pharmacists are challenged to balance personal beliefs when providing patient-centered care. Critical to the pharmacist’s provision of quality patient care is the development of self awareness regarding personal belief systems and biases that might influence interactions with patients or patients’ families. As part of their professional development, student pharmacists should be provided the opportunity to explore these issues within the PharmD curriculum. Utilizing Anne Fadiman’s account of a Hmong child with epilepsy in her book, “The Spirit Catches You and You Fall Down” and through participation in
the lab activities, student pharmacists identified their moral and ethical belief systems. Student pharmacists were then given the opportunity to reflect upon how those beliefs might impact their ability to provide non-judgmental patient care. Over-all student pharmacists found this activity helpful to their learning experience. Specific aspects of this learning activity will be reviewed including student feedback.

A Longitudinal Curriculum in Pharmacovigilance Bridges the Quality Gap in Patient Safety. Rahemat Naseem Amarshi, University of Tennessee; Catherine Crill, University of Tennessee; Shacresa Staley, University of Tennessee. Objectives: The pharmacist is the leading healthcare professional involved in reporting adverse drug reactions (ADRs). The objectives of this initiative were to provide a longitudinal ADR learning experience to improve student ADR reporting and accuracy. Methods: ADRs are introduced in a one-hour lecture in the first year Pharm.D curriculum followed in the second year by a two-hour lecture on ADR reporting incorporating cases using the Naranjo Algorithm. In 2002, third year students began reporting an ADR at an experiential training site on forms used by the individual institutions. In 2005, a standardized reporting form was introduced to reduce variability. Results: Four years (2002-2005) of student ADR reports (n = 434), have been collected and analyzed; 38 (8.8%) of reported ADRs were duplicates. Repeated use of the same patient ADR decreased as follows: 18.5% (2002), 16% (2003), and 5.5% (2004). There was no repetition in student ADR reports in 2005. Naranjo algorithm data on ADR reports increased successively as follows: 51% (2002), 78% (2003), 86% (2004), and 99% (2005). In 2002, only 17% of surveyed pharmacy students had reported an ADR. Through this initiative, all students have experience in ADR reporting. Implications: A longitudinal experience increases student awareness of medication safety and ADR reporting. Providing a standardized form improves completeness of the reporting process, thereby allowing preventability to be assessed and implemented proactively. Preventability data will be incorporated in the medication safety curriculum. Experience with the program has enabled faculty and experiential training sites to make ADR reporting a meaningful experience for students.

A Longitudinal Mentorship Program to Bridge Educational Gaps for Minority Students and Enhance Cultural Competence. Rahemat Naseem Amarshi, University of Tennessee, James C. Eoff, University of Tennessee. Objectives: To provide a longitudinal mentorship program to promote cultural awareness in Pharm.D students, involving clinical research projects, which include underrepresented minority (URM) populations, with 50% project assignments to (URM) students. Methods/Procedures: The three-year mentorship program involves two years of clinical practice research with URM patient contact. The final year requires a paper submission to a peer-reviewed journal and/or presentation of an abstract. Of twenty second year Pharm.D students (2004/2005) wishing to participate in the project, twelve (six URM and six others) were randomly selected and paired to faculty mentors based on areas of interest which include smoking cessation, patient safety and diseases prevalent in URM populations (diabetes, cardiovascular disease, asthma, kidney transplants etc). The two groups will be compared for career choices and achievements. The 12-student group will be compared to the rest of the class for career choices and achievements. Results/Outcomes: Research is on going for all students. 100% of the students expressed satisfaction with the program. Mentors surveyed favor the longitudinal aspect of this project. 90% of mentors favor continued future involvement. One abstract has already been presented and two submitted. Nine students are still with their original mentors. Number of submitted journal articles and abstracts and group comparisons will assess impact in 2007. Implications: This project will evaluate the effect of a mentorship program on student success and career choices. Pre and post surveys will assess the project’s value in promoting cultural competence, and the need to offer this program as a selective.

An Advanced Practice in a Free Clinic - Multidisciplinary Patient Care in an Ambulatory Setting. Margaret M. Charpentier, University of Rhode Island; Ryan Attwood, University of Rhode Island; Kristen Clayton, University of Rhode Island; Erica Estus, University of Rhode Island; Anne L. Hume, University of Rhode Island; Lisa Smolski, Rhode Island Free Clinic; Judy Koegler, Rhode Island Free Clinic. The Rhode Island Free Clinic (RIFC) provides free medical care to patients with no health insurance. The patients at the RIFC are often non-English speaking, working poor. Over 200 volunteers from seven health disciplines including nurses, nurse practitioners, physicians, interpreters, podiatrists, social workers, dieticians, and students from the respective disciplines staff the clinic, which runs Tuesday and Thursday evenings. Providers requested that pharmacists and pharmacy students be available during each clinic session to assist with medication selection from samples, and to assist with enrollment of patients into pharmaceutical assistance programs (PAP). An advanced practice experience for pharmacy students in the P4 year was established in 2004 to meet the needs of the clinic, and to encourage students to become actively involved in providing volunteer services to the underserved in our community. P4s are the point person during clinic hours in drug selection; and in enrolling patients into the PAP’s. Students interact with the physicians and patients, and refer patients to volunteers who complete the PAP forms. The P4 students are relied on to determine medications available at the clinic as samples, converting between therapeutic categories from available samples and through the PAP, and recommend cost effective drugs for patients who purchase medications. PharmD students have gained experience in providing assistance to physicians with subspecialties such as dermatology and oncology who volunteer as primary care physicians, by assisting in the management of chronic conditions such as diabetes and hypertension. This poster will describe the experiences of the PharmD candidates at RIFC.

An Evidence-based Approach to Controlling Arkansas Medicaid Drug Costs. R. Scott Pace, University of Arkansas for Medical Sciences; Mark E. Helm, University of Arkansas for Medical Sciences. Prescription Drug Costs are among the fastest growing components of Medicaid programs nationwide. In Arkansas’ Medicaid Program, prescription drug costs grew at a compound annual growth rate of greater than 16 percent over the past nine state fiscal years. In an effort to combat this growth, the University of Arkansas for Medical Sciences College of Pharmacy collaborated with the Arkansas Medicaid Program to create an Evidence-based Preferred Drug List (PDL) for Arkansas’ Medicaid program. This Project has several goals; specifically, the Evidence-based Preferred Drug List is designed to identify products with evidence of superiority over other similar agents in the same therapeutic class, and to ensure that these products are used preferentially for treating Medicaid patients. When no evidence exists to clinically differentiate one product from another then the cost of the medication becomes the determining factor. The process creates the opportunity for cost reductions through lower net cost rebate bids from pharmaceutical manufacturers who produce agents in the therapeutic classes that are reviewed. Design and implementation of the Arkansas Medicaid Evidence-based Preferred Drug List was the responsibility of the UAMS College of Pharmacy. At the end
of the first year, this project resulted in evidence-based reviews of 12 drug classes. Use of the medications selected through the PDL process has increased access of Medicaid recipients to the most effective medications in these therapeutic classes, and has reduced spending in the categories reviewed by 50 percent, for a total reduction in spending of over $12 million in calendar year 2005.

An Innovative Model Utilizing Pharmacy Students to Improve Diabetes Management Through Patient Education and Culturally Sensitive Care. Nathan A. Painter, Loma Linda University; Joycelyn A. Mallari, Loma Linda University. In the 3rd year of pharmacy school, an elective was initiated through a grant obtained by students, which integrates didactic learning, interdisciplinary training and direct patient care. Through the elective, students became an essential part of a diabetes education and management program at a local indigent clinic that serves a majority Hispanic population. The two hour weekly program, which lasted for one month, included education on medications, exercise, diet recommendations, and stress management. Each session was offered in English and Spanish. Additionally, this course furthered the Loma Linda University mission “to make man whole” by focusing on fundamentals to improve patients’ quality of life. Didactic learning incorporated topics such as collaborative practice, protocols, and comprehensive review of diabetes. Interdisciplinary training involved working with professionals and students from various disciplines including nurse practitioners, nutritionists, and physicians. Student pharmacists provided direct patient care through participant interviews, counseling, and measurement of laboratory values using point-of-care devices. Students also collected data regarding interventions and tracked improvement of patients. In subsequent years, the elective may be adapted based on the status of the grant. Next year, the didactic portion of the class is proposed to increase and the experiential portion reduced. Results in patients showed a decreased total cholesterol, A1c, and triglycerides; and increased HDL, LDL, and weight. Furthermore, an increase in patient knowledge of diabetes, better food choices, and the benefits of exercise were illustrated. Both patients and students reported positive experiences and enjoyed the collaboration between patients, providers, and students.

An Interdisciplinary Approach to Teaching Pharmacotherapeutics. James M. Culhane, Wilkes University; Edward F. Foote, Wilkes University. Pharmacotherapeutics (PT) is a 2-year course-sequence integrating pathophysiology, pharmacology, medicinal chemistry, and therapeutics. PT consists of 12 individual modules, organized primarily by disease state (32 credits) taught over 2 years. The course hallmark is an integrated interdisciplinary teaching approach between the pharmaceutical and clinical sciences. For each disease state, instructors develop individual handouts and present the information in a sequential fashion, in their area of expertise. Both a pharmaceutical science and pharmacy practice faculty member are present in the classroom for each lecture and often call upon the other to answer questions or clarify information for students. In many parts of PT, a “fully integrated” approach is used which eliminates separate lectures in the various disciplines. Common handouts, presentations and assessments are used. In addition, with full integration, the instructors are generally in front of the class at the same time fostering an even higher level of interaction. Surveys and informal feedback suggest integration is well accepted and appreciated by students. Full integration is considered a goal for most lectures. Although each module is a separate course, we consider PT one course from and administratively a separate module. All course philosophies and policies are agreed upon by the “PT Team” which meets twice annually and is comprised of all faculty in the SOP. Specific responsibilities for the pharmacy practice and pharmaceutical science faculty members are delineated. Planning and implementing these integrated modules is a labor intensive but rewarding endeavor that has strengthened ties between the two departments of the pharmacy school.

Apples for Teachers: Improving Quality by Recognizing Excellence. Betty-anne Hoener, University of California at San Francisco; Mary Anne Koda-Kimble, University of California at San Francisco; Susan M. Levings, University of California at San Francisco. Our teaching awards program was designed to annually recognize the best teacher as voted by students in each of their 4 years at UCSF. While these winners were very deserving, they tended to be limited to instructors teaching large required classes. Workshop leaders, teachers of smaller elective courses and clinical preceptors were never recognized, nor were teachers who consistently received a significant number of votes but never the very most. The Apple for Teachers program was designed to remedy these oversights by recognizing A + teachers each quarter. We use a standardized student evaluation of teaching form for all teachers who give at least 3 lectures or conferences during the quarter. All teachers who receive at least 4.5, on a 5-point Likert scale, on every criterion are awarded an apple for the quarter. The Dean sends a personal letter recognizing each person’s teaching excellence and copies this letter to the Department Chair. These outstanding teachers are also recognized publicly on a large “Apples for Teachers” display board outside the Dean’s office. Every quarter we recognize over 20 excellent teachers. Our winners have ranged from a second year pharmacy student teaching a thermodynamics review session to the most senior faculty member in the school. Combined with our efforts to provide personalized help to all teachers, this reward program is helping to increase the overall level of teaching quality in the school. It reminds both our students and faculty that teaching excellence is an expectation and sets clear criteria for recognizing it.

Assessing the self efficacy development in doctor of pharmacy students enrolled in a professional development seminar Series. Nicholas G. Popovich, University of Illinois at Chicago; Norman L. Katz, University of Illinois at Chicago; Cherdask Irmaneerat, University of Illinois at Chicago; Everett V. Smith, Jr, University of Illinois at Chicago. In December 2002, the UIC COP adopted abilities-based education, e.g., interpersonal skills, communication skills, for the professional curriculum to nurture and develop these attributes in each of its graduates. In response, a professional development seminar series was conceptualized and implemented in Spring 2003 and evaluated [AJPE 2004;68(3):Article 64] by a limited number of faculty. Subsequently, the objective of this study was to assess the development of self efficacy in professional skills and abilities of enrolled students in the development seminar series as they matriculated through the curriculum spanning semesters two through six of their on-campus degree program. In April 2005, enrolled students from the Classes of 2005, 2006, 2007, and 2008 were administered a retrospective 13-question self efficacy questionnaire along with six course outcomes questions. A Rasch Rating Scale Model was used to convert raw student scores to measures on an interval scale suitable for conducting a parametric statistical analysis. Forty four students (i.e., 90%) showed statistically significant improvement in self efficacy after participating in the series. Statistical analysis demonstrated that the series helped improve students’ self efficacy in their professional skills, regardless of how many semesters they were enrolled. Post-hoc pairwise comparison with the Scheffe Test demonstrated no significant differences in mean course outcome
measures between any pairs of the four classes. The average course outcome measure of the classes of 2005, 2006, and 2008 was significantly higher, however, than the course outcome measure of the class of 2007.

Assessment of Academic Advisors at Butler University College of Pharmacy and Health Sciences by P1 and P3 students. Jeanne H. Van Tyle, Butler University; Bonnie K. Brown, Butler University; Susan E. Bierman, Butler University; Melinda Stearns, Butler University. High quality academic advising is an important component in the success of students and of institutions. Previous studies completed by one of the authors in 2002 identified areas of advising that students in the College of Pharmacy and Health Sciences at Butler University view as important. The objective of this study is to evaluate how well academic advisors are meeting students’ previously identified academic advising needs. In addition, assessment of advising is one of the principles included in the CAS standards on academic advising and is a component of the Butler Assessment for Excellence plan.

Methods: Students in the P1 and P3 class were surveyed on their satisfaction with academic advising using a 20 question anonymous survey. Items for the survey were adapted from the NACADA standards for academic advising. Criteria evaluated include: availability of advisor, information provided by the advisor, and relationships established between advisors and advisees. The survey was completed electronically using a survey created in and posted on SurveyMonkey.

Results: The survey was sent to 251 students via email with 185 students completing the survey. (P1 students = 97, P3 students = 88) This gives an overall response rate of approximately 74%. Comparison of P1 expectations vs. P3 expectations are presented. Implications: The results will be used to identify areas of strengths and weaknesses in the current advising system. This study will also be used in the development of a future assessment tool which will be used to evaluate advisors individually just as course evaluations are used.

Assessment of the Quality of Experiential Education at Ohio Northern University. Abir A. Kahaleh, Ohio Northern University. Objectives: to describe continuous quality improvement initiatives of the experiential programs. Description of the experiential programs: The experiential team consists of the Director, Assistant Director, four Regional Directors, the shared-faculty, a Quality Assurance Supervisor, an Experiential Specialist, and the Experiential Liaison. The experiential team collaborates on designing and updating students, preceptors, and sites evaluation forms; longitudinal outcome measures; and developing on-line standardized student assessment examinations. The Regional Directors host several ONU dinners for seniors to obtain their inputs on the quality of rotations and to provide them with information on residencies, graduate schools, and career options. An on-line quality assurance survey for seniors was designed and implemented, a form was designed to assess students’ professionalism on campus, and electronic portfolios were implemented to document students’ experiential activities. Also, a phone survey was conducted to assess the quality of Advanced Practice Rotations (APRs). Furthermore, an electronic survey was developed and distributed to preceptors to identify the ideal preceptor-student(s) ratio. Also, grand rounds video conferences are scheduled on a monthly basis to facilitate discussions on case presentations among Regional Directors, shared faculty, residents, and students. Finally, to ensure the quality of experiential education, preceptors, faculty, and representatives from professional organizations were invited to participate in rotations “Boot Camp.” Topics included: professionalism, problem-solving skills, professional organizations, conflict management, rounding with health care professionals, experiential portfolios, and OSHA/HIPPA requirements. Conclusions: Faculty at the experiential program at Ohio Northern continue to implement new initiatives to improve the quality of experiential education.

Assuring Quality Improvement: A Continuing Commitment. Julianna E. Szilagyi, University of Houston; David J. Hayes, University of Houston; Thomas L. Lemke, University of Houston. In order to monitor the success of our curriculum, the University of Houston College of Pharmacy has established an assessment program that employs a number of approaches. The annual, comprehensive Mile Marker Assessments have been refined and now include incentives at all levels. As a result, student performance has greatly improved over previous attempts. In spite of the improvement it appears that there still exists considerable resistance on the part of the students regarding acceptance and benefits of the MileMarkers. In addition, data from imbedded assessments has provided information that links student perceptions of their knowledge, success in courses and performance on the MileMarkers. For example, students who failed the MileMarker I assessment also did poorly in two key courses and work is underway to determine a course of action at the level of the courses. To complement the assessment process, the Curriculum Committee has developed an interactive Curriculum Management Database that allows for tracking of all aspects of the courses. Everything from proficiency statements to teaching and assessment methods can be located in one database. This will facilitate the communication and interaction between the Curriculum and Assessment Committees so that curricular development and assessment can move forward easily, effectively and seamlessly. The University of Houston continues to strive for new, improved and effective methods to assure that the quality of the curriculum is not only maintained but continues to reach higher levels.

Bridging the Gap Between “Quality Improvement Education, Service, and Scholarship.” James Robertson, Jr., Texas A&M University-Kingsville; Lacy Daniels, Texas A&M University-Kingsville; Barry Bleidt, Texas A&M University-Kingsville; Rajat Sethi, Texas A&M University-Kingsville; Indra K. Reddy, Texas A&M University-Kingsville. The TAMU-K Rangel College of Pharmacy firmly believes that the most significant way to enhance the IOM concept of “quality improvement education, service, and scholarship” is to develop a dynamic interview process for professional college entrance. The College has developed an effective interview process, one that allows selecting best qualified applicants that have the potential to succeed (in the professional program). Although the GPA and PCAT averages of those interviewed are higher, the minimum consideration admission requirements are a 2.75 grade point average, a 50% composite PCAT score, and specified pre-requisite courses. The College created an interview panel, the composition of which is dynamic, innovative, and varied. In addition to the College’s faculty, an External Expert Panel (EEP) of pharmacy professionals from throughout the country and local community practitioners are utilized. This EEP consists of members from private industry, the Federal Food and Drug Administration, clinical pharmacy practitioners, associate deans and deans of other colleges of pharmacy nationwide. The practitioners represent pharmacists who work in community national pharmacies, correctional health services, independently-owned pharmacies, or institutional pharmacies. The College of Pharmacy relies on such a unique and original panel will significantly contribute to an advancement of the profession of pharmacy by bridging the gap between “Quality improvement education, service, and scholarship.”
In addition to an essay and other required admission and interview criteria, a detailed step-by-step description of the process will be presented, including data from the College’s two years of applicant interviews and excerpts of their comments and feedback.

**Collaborating for Quality: Auburn University Harrison School of Pharmacy’s Assessment System.** Wendy C. Duncan-Hewitt, Auburn University. An effective program assessment system: a) is mission driven; b) aligns with strategic planning initiatives; c) is precisely, comprehensively, parsimoniously, and contextually designed; d) respects the key quality criteria for assessment, and; e) results in continual improvement of performances and outcomes. The Auburn University Harrison School of Pharmacy has recently re-designed its assessment system to meet these criteria. Undertaken collaboratively, the design process gave rise to two critical, positive outcomes that exceeded expectations: 1) The faculty developed consensus about our most important values - the quality criteria; 2) A table of measures (Characteristics or aspects of criterion measured; Measurement tools being used; Benchmarks; Accountability) for each quality area was developed. Quality areas were often, but not always, aligned with an ACPE standard. For example we evaluate research, graduate and other programs in addition to the Pharm.D. program. The system is enabling us to rationalize, consolidate and cull our current measurement instruments. Continuous improvement is facilitated by distributed (as opposed to central) assignment of accountability to vested stakeholders.

**Collaborative Education with Veterinary Medicine: An Elective Pharmacy Clerkship.** Ronald E. Ragan, The University of Kansas; James W. Kleoppel, The University of Kansas; Shirley Arck, Kansas State University. Sixth-year (fourth professional year) pharmacy students are offered the opportunity to enroll in an advanced clerkship titled Veterinary Medicine. This clerkship is offered in collaboration with one of the premiere Schools of Veterinary Medicine, Kansas State University, located in Manhattan, Kansas. Pharmacy and veterinary students are exposed to small animal medicine and surgery, equine medicine and surgery, agricultural practices, exotic wildlife and zoo animal medicine, anesthesiology, ophthalmology, and oncology during their month-long clerkship experience. Students round daily with senior veterinary medicine students, interns, residents and attending staff. Pharmacy students provide pharmacotherapeutic recommendations on veterinary rounds (similar to medical rounds). The students also learn extemporaneous drug compounding techniques, especially with off-label drug use in animals. They also develop pharmacotherapeutic expertise with chemotherapeutic agents used in the treatment of veterinary neoplastic diseases in various species. Pharmacy students acquire not only pharmacotherapy expertise but also gain familiarity with the laws pertaining to animal care and livestock production. Pharmacy students garner an appreciation for the communication skills required to interact with not only other health care providers but equally important, with the animal owners. Veterinary students have also expressed an appreciation for their interdisciplinary exposure to pharmacy students. These interactions have highlighted the types of services pharmacists can provide for their future clients as well as the laws regulating drug distribution in the community setting.

**College-wide Collaboration in an Introductory Research Methods Course.** Eric G. Sahloff, The University of Toledo; Steven J. Martin, The University of Toledo. **Objectives/Intent:** Introduction to Research Methods (IRM) teaches Pharm.D. students (PHMDS) the knowledge, skills, and insight to successfully develop a research proposal (RP); a valuable experience in the scientific method. A final RP, either investigative study or patient care service, is prepared with faculty oversight. Recent transition to an entry-level curriculum has challenged our ability to continue to offer this experience. IRM was restructured and college-wide faculty participation was introduced. The objective of this summary is to describe the process of recruitment of faculty advisors (FA) and their responsibilities in the development of student RPs in IRM, and the outcomes of this process. **Methods/Process:** Participation of all faculty members in the College of Pharmacy was solicited. The proposal assignment and faculty advising and evaluation responsibilities were explained to interested faculty. **Process/Outcomes:** Seventeen of 41 faculty participated. FA advised 3 teams of 2 students. FA responsibilities included: topic selection and background; mentoring for RP development; evaluation of the first and final RP draft. Unexpectedly PHMDS became aware of the varied research performed by the faculty, which was reflected in topics for RPs. **Implications:** Expanded faculty involvement in IRM improved efficiency and expanded student experiences, and provided new opportunities for basic science faculty to demonstrate their ties with the profession. Research plays a vital role in the future of pharmacy and PHMDS must be proficient in the understanding of the conduct of research. We provide a template to teach the research method and improve faculty participation in the process.

**Continuing to Cross Bridges to Quality.** Kerry L. Casperson, Idaho State University. Continuing to Cross Bridges to Quality. The College of Pharmacy at Idaho State University has integrated within its curriculum a formalized process of statistical process control based upon the work of Dr. W. Edwards Deming. Students demonstrate the ability to apply the System of Profound Knowledge. These elements include: * Appreciation for a system - The need to understand the relationships between functions and activities * Knowledge of statistical theory - Knowledge and understanding of variation, process capability, control charts, interactions and loss function. * Theory of knowledge - theory must be understood before it can successfully be copied. * Knowledge of psychology - Understanding of human interactions, how people are motivated or disillusioned. Statistical variation known as “Common causes” and “Special causes” are presented. Special causes are often assignable while common causes are inherent in the process and remain once all special causes have been eliminated. Eighty percent of improvement lies in the common category. Students apply The Plan, Do, Check, Act (PDCA) cycle. These steps include: * Plan what to do - Design features or improvement in the process itself. Pareto analysis helps identify important aspects. * Do the experimentation. - Identify and investigate causes. * Check the solutions. - Determine if the assumptions and ideas were correct. * Act on the results. - Implement appropriate to the problem Quality is everyone’s responsibility. By combining with management statistical methods applied throughout all processes of the organization an improvement initiative in a mutually embracing and open culture of continuous improvement is realized.

**Continuous Quality Improvement through the Use of Process Maps.** Renae J. Chesnut, Drake University; Charles R. Phillips, Drake University. **Background:** During the College’s 2004 strategic planning retreat, several goals were developed; one of which addressed gaining national recognition for the College’s continuous process improvement program. As part of this goal, the College’s Assessment Committee was charged with developing a process by which assessment data is gathered, disseminated, archived, evaluated, and whereby recommendations for improvement are forwarded to the faculty for consideration. **Objective:** To describe continuous quality
Improvement efforts through the use of process maps and relate the benefits of the process. Method: The College Assessment Committee has begun the development of flowcharts to visually display the process of a number of policies and procedures. The flowcharts incorporate process flow, responsible individuals or groups, action steps, and deadlines for each major college process. Processes are linked to both curricular and non-curricular outcomes measured in the College’s Assessment Plan. Outcomes: Flowcharts have been refined following their use after one year. To date, ten processes have been mapped with flowcharts. These processes include: promotion and tenure, course/faculty evaluations, peer teaching reviews, and assessment measures such as NAPLEX/MPJE score reports, Senior/Alumni surveys, faculty and student development, admission measures, and scholarship outcomes. The flowcharts have provided opportunities for the College to assure quality improvement efforts by adhering to policies and deadlines, incorporating review of assessment data to improve processes, and clearly quantifying policies and procedures to all stakeholders.

Designing a Longitudinal Foundations Series that Introduces First Year PharmD Students to Basic Professional Skills. Craig Hitchman, Western University of Health Sciences. The PharmD program was developed using an innovative approach - the block system - based on delivering content one topic at a time, with the philosophy that students would learn material better when immersed in a single subject. However, short periods of focused material made integration and reinforcement of basic professional skills challenging, and providing students with multiple opportunities to practice skills and gain the mastery required for competency was limited. To grasp and appreciate the need for communication skills, ethical decision making, social awareness and responsibility, professionalism, and self-directed learning, students must regard the learning of these skills to be as important as the learning of science and therapeutic knowledge. Previously the “foundations” courses were taught as stand alone silos periodically interspersed throughout the curriculum, providing little or no interrelation to preceding or succeeding science or therapeutics blocks. Following the experiences of four years and reflection of our program strengths and weaknesses, a curricular redesign was instituted in the first year of the program establishing a longitudinal continuum of time focusing on professional skill development whilst balancing the acquisition of knowledge, skills and attitudes. The Foundations Series has evolved to include formal lectures and active learning exercises (case discussions and workshops) in nonprescription medications, health care systems (knowledge), drug information and communications (skills), and a contemporary pharmacy practice seminar series (attitudes) that integrate with an early experiential program to practice learned skills. Ability outcomes are continually assessed throughout the year using Observed Standardized Clinical Evaluations (OSCEs) of increasing complexity.

Development and Implementation of Standardized Grading Criteria for Pharmaceutical Care Plans. Department of Pharmacy Practice and Science, University of Maryland. Doctor of Pharmacy students at the University of Maryland School of Pharmacy are required to demonstrate proficiency in the development of patient specific therapeutic plans in both the didactic classroom and during experiential learning rotations. In order to facilitate standardization of the teaching and evaluation process, a “Care Plan” format was developed for use throughout the curriculum. Initial experience with the Care Plan revealed that grading of students’ work was implicit and subjective, thus explicit criteria were needed to improve consistency of student evaluation among faculty and preceptors and to provide guidance to the student on how to complete the Care Plan. During the 2002-2003 academic year, faculty from the Department of Pharmacy Practice and Science worked as a group to develop tiered grading criteria for the Care Plan. These consensus criteria incorporated the use of an Outstanding, Acceptable, and Not-Acceptable rating for each element of the Care Plan, and parameters were developed to explicitly define and differentiate each rating. Implementation of these criteria occurred during the fall 2003 semester in all required didactic and experiential courses that utilize the Care Plan as an educational tool. We report the successes and challenges of using these criteria over the past three years.

Development and Utilization of Pharmacy Students for Patient Assistance With Medicare Part D. Peter Tyczkowski, The University of Connecticut; Philip M. Hritcko, The University of Connecticut. Recognizing the significance of the new Medicare drug benefit and the priority established by of the University of Connecticut School of Pharmacy to prepare the pharmacists of the future, plans were made to develop the understanding and knowledge of Medicare Part D within the school. Resources from CMS, professional associations, advocacy agencies and the pharmacy industry were utilized. Having gained a solid base of knowledge, the School contemplated initiatives to apply information gained by students, faculty and staff towards assisting people with Medicare wisely choose a Medicare Part D Drug Plan (PDP). Goals were to assist Medicare enrollment by a combination of consumer education and identification of plans that match well with existing medication regimens utilizing available tools that could be potentially be difficult for people with Medicare to navigate. A project requiring the work of students in collaboration with people with Medicare must overcome a number of obstacles including; timing, logistics, computer resources and the need to monitor the quality of student recommendations. In addition, there was a strong desire to make a significant impact in a very short amount of time. In December, The School of Pharmacy was contacted by the State of Connecticut Department of Social Services (DSS) with the goal of utilizing students to help them identify three suitable PDPs for each CON-NPACENPACE (Connecticut’s SPAP) full subsidy member with between three and six active maintenance medications. This project was followed in February with a request to help an additional 16,000 patients in a similar fashion.

Diabetes Concentration - A Curricular Option to Teach Patient-Centered Care. Renae J. Chesnut, Drake University; June F. Johnson, Drake University. Background: Diabetes represents a disease of epidemic proportions. Because pharmacists see patients more than any other health care professional, they can have a positive impact on patient care for those suffering from this disease state. Objective: To describe a program that allows students to use their electives to complete a focus in diabetes care, providing them with the tools to provide patient-centered care. Methods: The Diabetes Concentration was developed and initially offered in 2000 with the following objectives: 1. An enhanced understanding of the pathophysiology of and endocrinologic basis for diabetes. 2. An understanding of the social milieu for diabetes. 3. An appreciation for the impact of diabetes on minority populations. 4. Psychosocial issues and the impact on diabetes management. 5. An enhanced understanding of the therapeutics of managing diabetes. The Diabetes Concentration is comprised of the following didactic and experiential requirements: - Electives that provide knowledge and insights into the elderly and minority populations - 6 cr. (changed to 3 credits beginning 2005) - Nutrition - 2 cr. - Developing Skills for Diabetes Management - 3 cr. - Integrated Diabetes Cases - 2 cr. - Experiential
Rotations - 10 credits (Diabetes camp attendance and a community practice with active diabetes education programs). Outcomes: Since 2002, approximately 25 Doctor of Pharmacy students have completed the diabetes concentration.

Diabetes Education: A Venue for Interdisciplinary Education. Anne Y. Lin, Midwestern University – Glendale; Michelle A. Chui, Midwestern – Glendale; Erin C. Raney, Midwestern University – Glendale; Michael T. Rupp, Midwestern – Glendale; Dana L. Singla, Midwestern University – Glendale; Lynn R. Patton, Midwestern – Glendale; Mary L. Chavez, Midwestern – Glendale; Dawn S. Knudsen, Midwestern – Glendale; Melinda J. Throm, Midwestern – Glendale. The development of critical thinking, interdisciplinary team work and research skills were the goals for the “Commitment to Diabetes Scholarship Program.” During 2004-2005, the program was piloted with eight pharmacy students who participated in a research scholarship competition funded by Novo Nordisk. In the first year, the program included only pharmacy students so logistics could be refined prior to including students from the other professional programs on campus. The five projects ranged from the development of an educational tool kit for teaching 4th and 5th graders about diabetes to a food tour conducted in Spanish at a supermarket with a large Latino consumer base. Students were enrolled in independent research courses for academic credit and each project was overseen by a practice faculty member. The winner was selected on the basis of a written manuscript and presentation to a panel of judges consisting of faculty from the College and local practicing endocrinologists. Based on feedback from faculty advisors and the judging panel, revisions were made for the 2005-2006 program which included the addition of second year medical students on the project teams and medical school faculty serving as project consultants. Students from both schools develop research skills and a mutual understanding of the role that each plays on the health care team. The inclusion of practicing endocrinologists further enhances the College’s goal of showcasing the role of the pharmacist. The inclusion of physician assistant and podiatry students to the project teams will be considered for future programs.

Drug Abuse/Addiction Education (PHPR/MCMP 316): An Interdisciplinary Course at Purdue University. Jane E. Krause, Purdue University; Val J. Watts, Purdue University. Drug Abuse/Addiction Education (PHPR/MCMP 316) is an eight-week, one credit, elective course offered at Purdue University. This course is an interdisciplinary course developed and team-taught by a professor in the Pharmacy Practice department and a professor in the Medicinal Chemistry and Molecular Pharmacology department within the School of Pharmacy. Drug Abuse/Addiction Education furthers the education of Doctor of Pharmacy students by increasing their communication abilities and drug abuse/addiction knowledge that can be offered as a community service. The course provides the Doctor of Pharmacy student with specific information on the pharmacology involved with common classes (i.e., depressant, stimulant, and mind-altering drugs) and specific substances of abuse. In addition, the Doctor of Pharmacy students are prepared to present a five hour drug abuse/addiction program to sixth grade students. The course syllabus, lecture schedule, and collaborative teaching efforts are described. Thirty Doctor of Pharmacy students (first and second professional year) were enrolled in PHPR/MCMP 316 during the 2006 Spring Semester. Feedback (i.e., regarding the course and the collaborative teaching effort) obtained from the enrolled Doctor of Pharmacy students is presented. In addition, feedback from the sixth grade teachers/students regarding the presentations from the Doctor of Pharmacy students is discussed.

PHPR/MCMP 316 is adapted from a course developed and taught at the University of Maryland School of Pharmacy under the leadership of Anthony C. Tommasello, PhD.

Educational Outreach to Bridge the Quality Gap in Health Information Retrieval for Better Health Outcomes. Rahemat Naseem Amarni, University of Tennessee; Brenda Faye Green, University of Tennessee; Dick R. Gourley, University of Tennessee; Monica Carnahan, University of Tennessee; Jasmine Bagay, University of Tennessee. Objectives/Intent: To provide educational support to clinicians, students and consumers for easy technological access to quality health information. Method: The Drug Information Center, library faculty, and Pharm.D students collaborated in training target audiences to access health information. American Heart Association (AHA) Women’s Conference attendees, a fifth grade teacher and her two consecutive fifth grade classes (n = 22 each year) were trained to access consumer health information websites such as MedlinePlus using laptops. Supplemental training was provided using Personal Digital Assistants (PDAs) purchased with National Library of Medicine grant funds. Surveys evaluated the sessions. A future clinician session will focus on accessing appropriate databases such as MEDLINE (MD on Tap). Results/Outcomes: Completed surveys from 75 AHA attendees showed that 74 (98%) found this initiative beneficial, 51(68%) desired more sessions concerning medications, 63(84%) were likely to access presented websites in the future, 8(11%) were unlikely to access the websites, and 3(1%) were unsure. Pre-session fifth grade student surveys indicated schoolteacher training increased knowledge about PDAs from 23%(2005) to 54%(2006). Students comfortable with using PDAs increased from 9%(2005) to 68%(2006). The 2005 class had never heard of MedlinePlus, while 32% in 2006 had. Results from the session for healthcare providers will also be included. Implications: Trained consumers are likely to access health-related information on the Internet to better understand diseases. A trained schoolteacher can train successive classes to maintain the learning continuum. The pre/post healthcare professional surveys will assess the perceived value of this training for accessing health information at point of care.

Enhancing Quality in Pharmacy Practice by e-Pharmacotherapy Networks in Asthma, HIV and Poison Prevention. Karl D. Fiebelkorn, University at Buffalo; Linda Catanzaro, University at Buffalo; Francesco Lliguicota, University at Buffalo; Gayle A. Brazeau, University at Buffalo; Angela M. Wisniewski, University at Buffalo; Gene D. Morse, University at Buffalo. A component critical to quality in pharmacy practice is the availability of translational pharmacoinformatics centers. These centers enable the development of novel informatics applications to enhance individualized drug therapy for patients through evidence-based prescribing and complement electronic health record systems by providing integrated pharmacoinformatics applications. In response, the School has developed e-Pharmacotherapy Networks for Asthma, HIV and Poison Prevention. The Asthma ePharmacotherapy Network aims to bring together caregivers, researchers, and educators working on asthma-related issues. The network Web site is a clearinghouse for asthma-related research information and a forum for practitioners to share information with their colleagues. Other resources include an “Ask the experts” section, patient-specific case submissions, a publications directory, and links to related Web-based resources. The HIV ePharmacotherapy Network is designed to offer a comprehensive suite of research, education, and clinical services. The core of our outreach effort is the network’s Web site offering in-depth information on HIV research initiatives and access to a community of scientific experts.
Entrepreneurial Leadership and Patient Care. Renae J. Chesnut, Drake University; Raylene M. Rospond, Drake University; Bradley P. Tice, Drake University. “An entrepreneurial leader works to advance the profession of pharmacy by proactively identifying and pursuing new opportunities to create value for patients and society. This means recognizing and fulfilling a professional obligation to promote change, to identify and pursue opportunities, and to improve patients’ lives.” (http://www.deltarx.duke.edu) 

Objective: To describe the framework of entrepreneurial leadership and how it can impact the educational process and implementation of patient care services. Method: The DELTA Rx Institute was established to provide tools and resources to advance a spirit of change and innovation in practitioners, faculty, and students, with the following activities being implemented: * Web site creation (http://deltarx.duke.edu) containing profiles of individuals and organizations who have implemented entrepreneurial pursuits, stories of the innovations told from the individuals themselves as well as the articles describing the processes to develop new patient care services, * Dissemination of INNOVATION, an entrepreneurial leadership booklet to alumni and college deans and department chairs, * Participation by several faculty members at entrepreneurial education conference, * Exhibition at the National Community Pharmacists Association and American Pharmacists Association, and * Faculty discussion of curricular needs. Constituencies who have been exposed to the concept of entrepreneurial leadership were surveyed to determine their thoughts on entrepreneurial leadership and its role in the advancement of the pharmacy profession and patient care services. Implications: The entrepreneurial leadership mindset, promoted by the DELTA Rx Institute, can be a valuable resource for those within the pharmacy profession considering and implementing change.

Evaluation of Evidence Based Medicine (EBM) Education at the University of Missouri Kansas City School of Pharmacy. Heather A. Pace, University of Missouri - Kansas City; Karen P. Norris, University of Missouri - Kansas City; Patrick J. Bryant, University of Missouri-Kansas City. Objectives: Evidence based medicine (EBM) is the conscientious, explicit and judicious use of current best evidence in making decisions about the care of individual patients, while integrating individual clinical expertise with the best available external clinical evidence from a systematic research. The University of Missouri-Kansas City (UMKC) School of Pharmacy has developed a novel course in the education of Evidence Based Medicine, which received honorable mention for the AACP Innovative Teaching Award. The objective is to evaluate the teaching methodology of the course and the impact on the students’ knowledge, ability to apply principles, and perceived value of Evidence Based Medicine. Methods: Students completed a survey before and after completion of the Evidence Based Medicine course (n = 80). Results: The survey tested knowledge of the students in the areas of study design, biostatistics, and various EBM principles such as Level of Evidence and development of a recommendation from multiple studies. The survey also tested the students’ ability to apply this knowledge to scenarios commonly found in pharmacy practice. Details of these results will be presented. Implications: Evidence Based Medicine is an important tool for the health care team to guide and support clinical decisions. The Evidence Based Medicine course at UMKC School of Pharmacy increases students’ knowledge, ability to apply principles of Evidence Based Medicine, and their perceived value of EBM. This confirmation supports using this course model as a standard for teaching EBM in SOPs.

Evidence Based Medicine Skills Taught at US Schools of Pharmacy. Isaac L. Butler, University of Missouri-Kansas City; Patrick J. Bryant, University of Missouri-Kansas City; Karen P. Norris, University of Missouri - Kansas City; Jacqueline S. Marinac, Pfizer, Inc. Objectives: Evidence based medicine (EBM) is considered the process of integrating most rigorously developed evidence available from clinical trials with clinical expertise to make best clinical decisions. Pharmacists must effectively apply EBM principles when making clinical decisions. This study is designed to determine EBM skills and applications taught at US Schools of Pharmacy (SOP). Methods: The primary drug information course instructor for each SOP was determined and interviewed via telephone. Course materials were obtained and evaluated to determine EBM content. To qualify as containing EBM course materials, the word group “EBM” was required to be present in course syllabus and/or outline. Results: Eighty-six SOP were identified and of these, interviews were conducted with 79/86 (92%) SOP. In these interviews, 69/79 (87%) reported actively teaching an EBM course. Course materials were obtained from 72/79 (91%) SOP, but upon review only 34/72 (47%) contained at least the word group “EBM”; thus qualifying as containing EBM course materials. Based on evaluation of these EBM course materials, the majority of these courses were required for graduation with an average of 3 semester credit hours per course (range 1-6 credit hours). Specific components of these courses identified from course materials will be presented. Implications: Major discrepancies exist between US SOP in understanding what defines an EBM course. Based on set criteria, less than one-half of courses evaluated can be classified as EBM. Course content varies greatly. There is need for EBM education inclusion in US SOP curricula, in addition to a standard EBM course model.

Evolution of a Patient Counseling, Communication and Monitoring Course. Alissa Lee, Rutgers University; Jaclyn E. Lee, Rutgers University; Brian D. Faley, Rutgers University; Joseph A. Barone, Rutgers University. Effective communication is essential in the field of pharmacy. Teaching communication skills is challenging given the varying ability of the students, large class size, testing difficulty, and perceived lack of importance compared to more “rigorous” courses. An earlier version of this course was structured as a series of didactic lectures with some small group exercises, which the students later indicated was lacking a sufficient practical component. Feedback was obtained utilizing standard course evaluation mechanisms and informal commentary from students. As a result, the course was completely restructured to broaden the scope of topics and incorporate practical exercises. The course remains a required two semester sequence of two credits per semester taught in the third professional year. The large class was divided into sections of 20-30 students facilitated by post-doctoral fellows. Topics covered in the first semester include: obtaining patient histories, patient counseling, barriers to communication and journal club. Counseling focused on various patient populations and the use of various drug delivery systems. Topics covered in the second semester include: preparation of drug monographs, development of a newsletter, case presentations,
Evolution of Three Models for Student Research Projects from a Multi-pathway Curriculum. Thomas E. Kearney, University of California at San Francisco; Peter J. Ambrose, University of California at San Francisco; Fran Aweeka, University of California at San Francisco; Lorie G. Rice, University of California at San Francisco; Michael E. Winter, University of California at San Francisco; Helene Leven Lipton, University of California at San Francisco; Barbara L. Sauer, University of California at San Francisco; R. William Soller, University of California at San Francisco, Richard H. Shafer, University of California at San Francisco. The UCSF School of Pharmacy pioneered a new curriculum composed of three pathways: Pharmaceutical Care (PC), Pharmaceutical Health Policy and Management (PHPM), Pharmaceutical Sciences (PS). The goal is to meet emerging societal needs for improved quality of care by the pharmacy profession, prepare students for more diverse career opportunities, and allow curricular choice to meet varied student interests. A common element of each pathway is the new requirement to complete a student research project. Each pathway developed a distinct model for implementation of the research project. A collaborative review of each of our pathways provides a comparative analysis of the rationale, goals, processes, challenges, creative solutions, and assessments of outcomes and impact on post-graduate career success. Each of the pathways established the student research project as the “capstone” and constructed a curriculum that emphasized special skill sets, mentoring, and opportunities to complete the project. The implementation of student research projects was a challenge for each pathway and an iterative process whereby each pathway needed to make substantial adjustments. Research projects can significantly influence pathway choices by students and their satisfaction with the curriculum and enhance their post-graduate opportunities. The faculty must define the nature, goals, processes, and expectations for the projects and forecast the necessary resources for successful implementation. The completion of research projects provides transferable skills that improve students’ delivery of quality care as future practitioners. Student research projects can be mutually beneficial to faculty and APPE sites, and address contemporary issues important to society and health care systems.

Expanding and restructuring the experiential education program to assure quality and better serve Greater Minnesota. Rodney A. Carter, University of Minnesota; Raquel Rodriguez, University of Minnesota College of Pharmacy; Debbie C. Sisson, University of Minnesota; Doneka R. Scott, University of Minnesota. With our College’s expansion to the University of Minnesota, Duluth campus, our experiential program needed to increase available APPEs by approximately 50% while maintaining high quality educational experiences. Site development targeted Greater Minnesota to encourage students to consider rural practice. To complement the metro areas around our two campuses, six regions were established throughout the state anchored by communities with significant health care resources and housing opportunities for our students. Our nine 5-week APPEs are broken into three blocks of three APPEs with students assigned to a region for an entire block; these assignments are made at the beginning of the third professional year. For 2006-07, approximately 1/3 of student APPEs will be in Greater Minnesota and 2/3 in the Twin Cities area. A half-time regional education coordinator (REC) was hired for each region to identify and develop regional APPE sites/preceptors, facilitate student scheduling and housing, and coordinate regional group educational activities. To facilitate communication with the RECs, students and preceptors, and to deliver educational programs for students and for preceptor development, each region was provided an ITV unit that networks with all other regions and the two campuses. To help assure quality and standardization of experiences across all sites, new educational outcomes for all APPE types were developed and are used to guide new site development and existing site evaluation, and serve as the basis for student assessment. A curricular-based preceptor development program was initiated with components offered quarterly utilizing the ITV network, on-line and/or live programming.

From Interdisciplinary Teaching to Practice. Pamela J. Sims, Samford University; Amy E. Broecker, Samford University; Gary W. Bumgarner, Samford University; Bruce D. White, Samford University. Samford University (SU) is a faith-based institution. Our professional curriculum incorporates formal didactic coursework with a Christian perspective. Ethics in Christianity and Healthcare, a course taught cooperatively by Pharmacy and Religion faculty, was developed to provide students Biblical and healthcare perspectives on the six character traits of ethical persons. These cooperative efforts coupled with the interest of a diverse group of SU faculty and extramural funding created the Healthcare Ethics and Law Institute, an interdisciplinary effort supporting the unique and complex relationships between patients and health-care providers, individuals who make patient care decisions and institutional ethics committees. The Institute offers an annual conference as a forum for a variety of interested constituencies to discuss pressing health-care ethics and legal issues. Since the inception of the SU Nurse Practitioner (CRNP) program, McWhorter School of Pharmacy (MSOP) faculty have provided the Pharmacology course to the CRNP students. One faculty, working with senior Pharmacy students on their capstone research, has developed a diabetes education program for underserved patients in rural Alabama. As a result of the relationships built between the faculty and CRNP students, CRNP students have joined the project providing increased monitoring of the patients’ health. Beginning in 1994, a MSOP faculty has provided the Pharmacology and Therapeutics Course for Dental Residents of the UAB School of Dentistry. With MSOP’s work in PBL, the faculty now participates in a NIH Oral Health Research Curriculum Innovation grant as an Internal Advisor to reform dental education toward active, interdisciplinary and evidence-based learning.

Growth in Patient-Centered Care at the University of Kentucky College of Pharmacy: PharmacistCARE. Amy Nicholas, University of Kentucky; Holly S. Divine, University of Kentucky; Carrie L. Johnson, University of Kentucky; Mikael D. Jones, University of Kentucky. PharmacistCARE, a 2005 APha Foundation Pinnacle Award winning initiative, originated in 2002 as a core component of the University of Kentucky Health Plan. By 2004, the program grew sufficiently large to warrant establishing separate entity. PharmacistCARE is a free-standing pharmacist clinic offering patient-centered care. Staffed by 2.3 clinical pharmacists faculty, PharmacistCARE services are offered at the UK Medical Center with a satellite location at the University’s Center for Rural Health in Hazard, Kentucky. Services include regular interdisciplinary collaboration with prescribers, registered dieticians and certified diabetes
educators. The mission is to help the public understand the medications they take and to control chronic health conditions through the most effective use of medications. PharmacistCARE serves as an innovative practice learning laboratory for fourth year students on Advanced Pharmacy Practice Experiences and will begin a residency program July 1, 2006. PharmacistCARE disease management programs are established as separate modules using current evidence for best practices as a guide. There are two separate disease management programs currently: DiabetesCARE and CardioCARE. These programs entail comprehensive data collection utilizing customized computerized informatics systems to track program outcomes, including clinical measures, satisfaction and quality of life for patients; satisfaction from collaborating providers; and economic factors for both patients and the Health Care Plan. PharmacistCARE is an example of an innovative College program offering a learning environment for students where evidence-based practice is employed in a “high-tech and high-touch” patient-centered service.

How Do You Measure SUCCESS? L. Douglas Ried, University of Florida – Gainesville; Randell E. Doty, University of Florida – Gainesville. Assessing the outcomes of students’ skills in advanced pharmacy practice experiences is essential to ensuring the whether students have the skills to enter pharmacy practice. The University of Florida College of Pharmacy and with three other Colleges in the State of Florida developed an Internet-based clerkship evaluation system. Advanced practice competencies and the criteria for successful completion of the competencies are placed on the SUCCESS (System of Universal Clinical Competency Evaluation in the Sunshine State) web site. The shared online assessment tool evaluates students during their advanced practice year. The foremost reasons are because it is (1) shared by preceptors of all of the Colleges and (2) sometimes difficult to be objective when assessing a student, especially when pressured by the student. Consequently, the SUCCESS program blunts preceptors to students’ grades. Preceptors only remark whether a student is “excellent”, “competent” or “deficient”. The program generates individual students’ grades and sends it to the appropriate college. Early rotation grades are adjusted to reflect the fact that students are new in the rotations, but decreases over time. Hence, preceptors evaluate students based on what they see at the time, knowing that some compensation has been made for students’ lack of experience. In the beta-testing phase, each faculty submits a grade for comparison. This allows us to compare if grades have been affected. It will also allow for a translation tool for comparisons of previous classes and the current class of students. The data from the beta-testing period will be presented.

Impact of a Distance Education Program on the Use of Technology Across a College of Pharmacy Curriculum Stuart J. Beatty, The Ohio State University; Maria C. Pruchnicki, The Ohio State University; Anand Khurma, The Ohio State University; Sylvan G. Frank, The Ohio State University; Milap C. Nahata, The Ohio State University; Robert W. Brueggemeier, The Ohio State University. The Ohio State University College of Pharmacy (COP) accepted the first students into its distance education Non-Traditional Doctor of Pharmacy (NTPD) program in 2001. Presently, 177 students have matriculated in the program and 52 have graduated. The importance of post-baccalaureate programs to advance knowledge and skills of practicing pharmacist-students and improve medication therapy management in the community has been recognized. Additionally, distance education initiatives may positively influence campus-based programs. At our institution, incorporation of educational technology into the pharmacy curricula has increased significantly since the NTPD program’s inception. Currently, most COP courses utilize a web-based course management system (CMS) to communicate with students, provide course materials to supplement or replace course packets, administer electronic quizzes or exams, and perform course/instructor evaluations. Classroom lectures are “captured” using software which allows content to be recorded and posted on the CMS for later use or review by students. Lecture capture has also been used to pre-record course content, allowing more interaction and discussion during classroom time and/or reducing scheduling difficulties. To accommodate real-time faculty-student and student-student interactions, NTPD courses utilize an online classroom to review problem-based learning exercises and case discussions. This virtual classroom now also supports continuing education, training programs, and outreach activities for the COP. Educational technology applications continue to expand; developing innovations include using the CMS to simulate electronic patient record-keeping, increase on-time access to drug information resources, and facilitate computer-mediated classroom discussions. Our experience demonstrates successful transfer of distance education methodologies into a variety of COP programs.

Implementation and Assessment of a Post-Course Evaluation Program. Wallace J. Murray, Western University of Health Sciences; Mark P. Okamoto, Western University of Health Sciences. Objective: The purpose of this project is to evaluate a new post-course evaluation process at our college. Methods: Each course facilitator completes a self-evaluation of their course. A report is prepared by the Associate Dean for Academic Affairs (ADAA) that summarizes time spent in the course and student grade outcomes. The ADAA also summarizes student evaluations of the course identifying areas for improvements (the Associate Dean for Assessment & Teaching Effectiveness will conduct these reviews in the future). A meeting between the facilitators and the two Associate Deans is scheduled to discuss the findings. A final report is submitted to the Curriculum Committee for approval. An anonymous survey was created to ask the faculty about the usefulness of this process and to obtain suggestions for improvement. Results: The response rate for the survey was 72% (18/25). Summary of grades and other scores was the area that faculty felt was the most helpful (61% agreed/strongly agreed). The least helpful area was the summary of the student evaluations that identified weaknesses with the course (39% agreed/strongly agreed). A few faculty expressed concern about how significantly student evaluations impacted the evaluation of the course. Overall, 56% agreed/strongly agreed that the evaluation process helped improve facilitation of their course. Implications: We believe the post-course evaluation process has helped provide an objective assessment of the quality of the didactic courses in our college. Improvements may be realized by also using faculty peer-evaluation data to balance the weight given to student evaluations of courses and faculty.

Improving the Quality of Health Screening Education. Heidi H. Bragg, University of Houston; David A. Wallace, University of Houston. At the University of Houston, health screening classes begin in the first few weeks of the professional program. Students receive training to take blood pressure, conduct osteoporosis screenings and perform diabetic foot exams. These services, as well as others, are used to provide wellness programs to the greater Houston community. Traditionally, the first-year class has been divided into four groups to facilitate instruction in a small group environment. The challenge has been how to provide a high quality and consistent didactic experience to each group. To meet this challenge, compact discs are provided to the students that cover the didactic portion of the skills class. Though covering different topics, each disc has the
same format: a narrated lecture, a video demonstrating the technique, and links to evidence-based clinical guidelines supporting the skill. By shifting the traditional lecture and skills demonstration from the classroom into an electronic format, students are expected to complete the material prior to class. Class time is now devoted to answering questions, practicing the screening procedures, and assessment of student performance. Furthermore, students can refer back to the electronic lessons to review and re-train themselves thus improving the quality and retention of learning activities. While the supporting evidence is anecdotal at this time, data is being collected to evaluate the success of this new method teaching these skills.

Incorporating Core Competencies through Active and Cooperative Learning: Developing a Successful Capstone Pharmaceutical Care Course. B. DeeAnn Dugan, Palm Beach Atlantic University; Katherine M. Heller, Palm Beach Atlantic University; Jeffrey A. Kyle, Palm Beach Atlantic University; Dana A. Brown, Palm Beach Atlantic University. Purpose: This course assists students in developing and applying clinical thinking skills through the use of evidence-based medicine (EBM) to develop a care plan with patient counseling on disease management and related medical devices. Methods: This installment of a capstone pharmaceutical care course addresses identified barriers of previous course designs and consists of four activities: interdisciplinary patient interviews, SOAP noting, patient/peer teaching, and Objective Structured Clinical Examinations (OSCE). Standardized questioning is emphasized in patient interviews for SOAP note development accomplished in small groups. SOAP noting required informatics skills in EBM focusing on treatment guidelines and primary literature. Quality improvement involved self, peer, and instructor evaluations. Structured pre-lab homework assisted with patient/peer teaching. Cooperative in-lab learning centered on patient-level education for chronic health conditions and related medical devices. Skill assessment was by OSCE. Results: Course instructors and preceptors recognize the clinical decision making, patient counseling, and SOAP noting skills of students who have successfully completed the course have advanced capability in these areas. Faculty in other courses, later in the curriculum identified improved student performance due to the evolution of this course design. Despite these positive results, students do not immediately recognize the benefits and criticize the course design based on workload and group work. In contrast, fourth year pharmacy students are now noting appreciation of the course design. Conclusion: Cooperative, active learning capstone pharmaceutical care courses can successfully improve pharmacy students’ clinical skills; however the students may not see the benefits until later in their professional development.

Innovation at Wingate University School of Pharmacy Bridges the Quality Chasm in Pharmaceutical Education. Carolyn Ford, Wingate University; Eric G. Boyce, Wingate University; Robert B. Supernaw, Wingate University; Lisa S. Smith, Wingate University; Joy B. Greene, Wingate University. Wingate University School of Pharmacy is very committed to educating its students to provide high quality pharmaceutical care. To accomplish this goal, the school provides an individualized, state-of-the-art learning environment that facilitates the development of students’ critical-thinking, problem-solving, communication, technology and patient-care skills. The innovative academic program further enhances the development of knowledge, skills, attitudes and behaviors needed by the pharmacy profession and society at-large. Some of these innovative features include a stand-alone course that teaches critical thinking and problem-solving skills, a pharmacy-focused basic science curriculum that is integrated with patient assessment, a problem-based learning case study sequence, a 360* outcome-oriented assessment plan, and structured experiential clerkships in each year of the program. The comprehensive, 360* curriculum assessment program is designed in a continuous quality improvement format to assess student mastery and proficiency and curricular performance.

Institutionalizing the Core Competencies of the Institute of Medicine: Developing (enabling) the Supportive Academic Infrastructure. Michael S. Monaghan, Creighton University; Teresa M. Cochran, Creighton University; Gail M. Jensen, Creighton University; Rhonda M. Jones, Creighton University; Kimberly A. Galt, Creighton University; Ann M. Ryan-Haddad, Creighton University; Tracy A. Chapman, Creighton University; Brenda Coppard, Creighton University. Introduction: Successful practice in dynamic health care systems requires exposure of health professions students to a variety of complex/systematic learning experiences. These should be consistent with the Institute of Medicine’s (IOM) core competencies promoting interdisciplinary teams, evidence-based patient-centered care and the use of informatics to ensure quality. Sustainable educational initiatives require planning for infrastructure, collaborative relationships and administrative resource development. Our two-fold purpose is to: 1) Describe a model that institutionalizes learning experiences across programs in pharmacy, occupational and physical therapy; 2) Identify key elements promoting sustainability. Description: Although curriculum-assessment committees develop learning activities and outcomes for IOM competencies at programmatic levels, as much learning occurs in “extracurricular” activities involving service and in the authentic patient care context as does in the explicit curriculum. To integrate extracurricular learning experiences, four formal structures have emerged: 1) Office of Interprofessional Scholarship, Service and Education develops culturally competent, evidence-based, patient-centered care in underserved communities; 2) Creighton Health Services Research Program focuses on patient safety, practice improvement and informatics 3) Office of Faculty Development and Assessment facilitates faculty consensus and teaching skills as substrates to student learning 4) Office of Information Technology and Learning Resources (OITLR) provides support for all initiatives and interprofessional team collaboration is modeled by all entities. Conclusions/Recommendations: IOM initiatives are successful when approached as a process of cultural transformation rather than discrete, terminal projects. To systematically integrate IOM competencies, programmatic resources alone are insufficient and must be augmented by dedicated administrative resources including infrastructure, human capital and scholarship promotion.

Integrated Steps Curriculum - Pharmacy and Medicine Interdisciplinary Education. David D. Allen, Northeastern Ohio Universities; Mark A. Penn, Northeastern Ohio Universities. Northeastern Ohio Universities College of Medicine, established in 1973, is in its first year of implementing a newly transformed M1-M4 Integrated Steps medical school curriculum. Beginning in August 2007, Northeastern Ohio Universities College of Pharmacy will admit its first class of students and begin the Integrated Steps pharmacy school curriculum. The institution has identified blueprints that are being used to develop true interdisciplinary education involving both colleges. Students will be taught together in large lecture classes as well as in small group settings to foster active learning and interaction regarding patient care challenges common to both disciplines. Teaching and learning will involve teams of students from both disciplines learning side by side, emphasizing the 5cs of Competence,
Communication, Caring, Character, and Community. It is the intent of this interdisciplinary education to emphasize evidence-based practice and to maximize pharmacy and medicine student interactions throughout. The new curriculum will enable students from each discipline to branch off into discipline specific teaching, and foster appropriate identification as a professional in their discipline. Students will model in the classroom what they will be expected to do in future practice. Learning to work together in teams will not only enhance collaboration among the disciplines but will also increase patient satisfaction enhancing patient care outcomes. Blueprints will be portrayed. The authors will address questions regarding the development of this unique interdisciplinary health care curriculum - including process, goals, projected outcomes, organizational structure and curriculum management, challenges, and successes.

Integrating IOM Core Competencies Learning Experiences: A Progress Report from the University of Washington. Nanci L. Murphy, University of Washington; Elena Meeker, University of Washington. The University of Washington School of Pharmacy endeavors to promote and inculcate the Institute of Medicine’s (IOM) Core Competencies throughout its educational continuum. By developing admissions criteria that aim to identify students who demonstrate an aptitude for these competencies, offering orientation activities that include a discussion of the Joint Commission of Pharmacy Practitioners (JCPP) 2015 Vision Statement, the Center for the Advancement of Pharmaceutical Education (CAPE) Outcomes, the American Society of Health-System Pharmacists (ASHP) 2015 Initiative and the IOM Core Competencies, and by providing opportunities for students to learn and practice these identified competencies via both curricular and extracurricular activities, significant progress has been achieved. The success of this endeavor is due to a number of factors, including a strong partnership with other health sciences schools through the Center for Health Sciences Interprofessional Education, a diverse and talented pharmacy student body who initiate projects that promote patient-centered care and professional development, and strong support by our School’s administration, faculty and practitioner community. Current examples of successful practices, including an interprofessional leadership conference designed to help reduce health disparities, core and elective course offerings, community outreach activities and student involvement in quality improvement and research will be provided. We also invite you to view the poster by Elena Meeker, Class of 2007 Pharm.D. student, for results of a preceptor survey evaluating students’ demonstration of the IOM Core Competencies during their final-year practicums.

Interdisciplinary Education in Rural West Virginia. Carla J. See, West Virginia University; Heather B. Congdon, West Virginia University; W. Clarke Ridgway, West Virginia University; Mary K. Stamatakis, West Virginia University; Iodic Jackson, West Virginia University. Background: Students at the West Virginia University School of Pharmacy complete three, 4-week rotations in a rural health setting and participate in interdisciplinary sessions (IDS) with students and preceptors from other disciplines to solve case-based clinical problems. The objectives of the sessions are to learn to work as a team to solve health care issues in various social, economic and cultural arenas; integrate information across the various health disciplines; improve communication, interpersonal, and team development skills; and acquire, retain and use clinical knowledge. Objectives: Student evaluations of IDS experiences, topics discussed, and numbers of hours of pharmacy student participation were evaluated. Process: Sessions are led by a facilitator from one of the participating health sciences disciplines. From September 2004 to February 2006, students completed 338 IDS sessions. Outcomes: Seventy-seven percent of pharmacy students participated in more than 2 hours of IDS per rotation and 79% of students rated the quality of the experience favorably. The most common disease states addressed were diabetes, infectious diseases, and cardiovascular diseases. The primary concerns raised by students were lack of preparation of some facilitators, a tendency for some facilitators to focus excessively on their own discipline, and to a lesser extent, the use of lecture versus discussion by some facilitators. Implications: Facilitator training will be enhanced through the development of a database of cases with teaching points, shadowing opportunities for facilitators to participate in other well-run sessions, and a reduction in the number of sessions to produce a smaller number of high quality experiences.

Interfacing Introductory Pharmacy Practice Experiences with Didactic Coursework. Renee E. Coffman, University of Southern Nevada; Darla A. Zarley, University of Southern Nevada; Paul Oesterman, University of Southern Nevada; Harry Rosenberg, University of Southern Nevada. The January 2006 revision to ACPE’s Standards and Guidelines states that introductory pharmacy practice experiences should “begin early” in the curriculum and “be interfaced” with didactic coursework. The University of Southern Nevada College of Pharmacy (USNCOP) has created Early Pharmacy Practice Experiences (EPPEs) that accomplish both these objectives. USNCOP employs a 3-year curriculum accomplishing delivery of the didactic coursework during the first two years of the program. The EPPEs are interwoven within the fabric of those first two years, during which each student is assigned to various community pharmacies. Approximately biweekly, students are required to be at their assigned site for an 8-hour EPPE. During the time on site, students are expected not only to work toward achieving pharmacy practice outcomes, but also to complete a written assignment that incorporates didactic classroom activities. For example, when learning about enzyme inhibition in the biochemistry didactic coursework, students are also asked to complete a written assignment in their assigned pharmacy asking them to identify enzyme inhibitors used as therapeutic agents, the category of enzyme inhibition the agent uses, and how enzyme inhibition is used to treat a disease state. Each EPPE assignment is followed by a seminar in which all students within a class cohort meet to discuss the assignment with faculty and to share experiences at the site. Thus, students are engaged in meaningful introductory pharmacy practice experiences from within two weeks of matriculation that successfully marries pharmacy practice to didactic content.

Interprofessional Education: Beginning to Cross the Bridge. Julie A. Hixon-Wallace, Mercer University; Robert B. Hash, Mercer University; Helen F. Hodges, Mercer University; Patricia J. Troyan, Mercer University; Gina J. Ryan, Mercer University; Sebastian R. Alston, Mercer University. Interprofessional education may be defined as the collaboration of two or more professions in learning processes to foster interactions enhancing the practice of each and improving patient health. Mercer University houses 10 colleges and schools including nursing, medicine, and pharmacy. The University’s Quality Enhancement Plan revolves around learning together to provide collaborative, interdisciplinary opportunities that nurture student moral development and enhance the climate of student engagement. Most students possess little knowledge of others’ pre-professional and professional curricula, post-graduate requirements, and ultimate professional roles. Most perceptions held by health professions students are formed prior to entrance into professional programs and are
Based on personal experiences. We have formed an Interprofessional Education Working Group (IEWG) composed of faculty from the Georgia Baptist College of Nursing, the School of Medicine, and the College of Pharmacy and Health Sciences. The following interprofessional projects are under development and will be shared:

- Standardized presentation on interprofessional education offered in each program’s introductory courses already present in the curriculum. This presentation will stimulate consideration of other health professions’ roles in interdisciplinary patient care.
- Interprofessional elective for health professions students. The elective will use a combination of distance education, independent study, and service-learning projects.
- Interprofessional discussions during advanced practice experiences of health professions students. This will enable faculty behavior to be modeled by students in the accomplishment of patient-centered care.

**Medicare Part D Education Outreach: A “Three Step” Approach.** James T. DeMicco, Long Island University; Evangelia Davanos, Long Island University; Helen Kourlas, Long Island University. Recent legislation has greatly changed Medicare, the health insurance for the elderly, disabled and needy. As of January 1, 2006 Medicare will be providing their patients with prescription drug coverage through a number of third parties. Medicare Part D is a multifaceted topic and it is essential that knowledgeable healthcare professionals, patients, and caregivers understand this new drug benefit and the various insurances, processes, and regulations associated with it. The Beta Kappa Chapter of Phi Lambda Sigma proposes a three step approach to educate healthcare professionals as well as patients and their caregivers throughout the community.

**Multidisciplinary Experiential Program Development: Interactive Health and Wellness Website for College Students.** Jennifer A. Santee, University of Missouri - Kansas City; Steven C. Stoner, University of Missouri - Kansas City. Issues affecting the health of college students (e.g. sexual health, substance abuse, depression) require a multidisciplinary approach. Limitations of time and geographic location often prevent students in different disciplines from being able to collaborate and share their expertise in providing care. With society’s ever changing needs, health professional students should become familiar with the provision of information over the web as more Americans are relying upon the internet to address their health care needs. At the University of Missouri-Kansas City (UMKC) we are developing an interactive website to overcome some of the barriers to interdisciplinary education and to enhance student use of technology to provide health information. UMKC health professional students from pharmacy, nursing, and counseling who have volunteered for this experience will work with licensed practitioners to develop answers to healthcare questions posted by students from the UMKC campus. The health professional students and practitioners will use an electronic bulletin board to discuss, prepare, and subsequently post responses to the healthcare questions on the web. Health professional students and providers will be asked to document their experience in utilizing the bulletin board and website. Providers and students will be critiquing the students’ ability to provide answers that meet established criteria. Health professional students will compose an essay comparing and contrasting how other health professionals approach questions. Students will be evaluated as to their ability to evaluate and/or resolve any conflicts or disagreements that arise amongst the multidisciplinary team.

**Novel Course Project: Pharmacy Students Become “Stakeholders” in Medicare Part D Implementation.** Helene Leven Lipton, University of California at San Francisco; Marilyn Stebbins, University of California at San Francisco; Tim Cutler, University of California at San Francisco. Medicare Part D implementation coincided with this year’s required UCSF School of Pharmacy Health Policy Course for second-year students. This implementation is a critical event for pharmacists and pharmacy education. We report development of an innovative, interdisciplinary project to study this historic endeavor as it unfolds. The complexity of Part D requires current and future pharmacists to understand not only the legislation, but also the negotiations and policy environment that created it, and the dynamic nature of the implementation process. Students were randomly divided into six stakeholder groups - Patients, Providers, Payers, Purchasers, Pharmaceutical Companies, Policy-Makers - and subdivided into six policy issue groups - Benefits, Costs, Internal Controversies, Improvements, Emerging Themes, Future - to create 36 stakeholder subgroups. Each week, stakeholder subgroups wrote 300-500 word policy documents (made available on-line) and made presentations addressing their stakeholder’s perspective on the issue assigned for that week. Following presentations, students spent 15-30 minutes responding to questions and debating issues among themselves, their classmates and professors. Written and oral presentations incorporated timely reference materials. A “Congressional hearing” was held with students submitting written and oral testimony, to simulate the actual policy-making process. Post-course assessments indicate that taking stakeholder positions and debating the legislation as “insiders” has increased students’ understanding of Part D and stakeholder compromises required to enact, implement and change the new law. This increased understanding enables students to provide needed information and higher quality pharmaceutical care as they assist patients and providers in making informed Medicare Part D enrollment choices.

**Pacific University (PU) School of Pharmacy (SOP) Admissions Process.** Vanessa Dillman, Pacific University; Susan M. Stein, Pacific University; Robert Rucker, Pacific University; Robert P. Rosenow, Pacific University; Arjun P. Dutta, Pacific University; Jon-Erik Larsen, Pacific University. PU has established a School of Pharmacy, with plans to matriculate the first class Fall 2006. It was important the recruitment, application, and evaluation reflect the mission’s emphases on a student-centered process, community involvement, and proven excellence. Our processes proved successful. PU admissions design provides a centralized admissions team with individual representatives with each program. The representative affiliated with SOP worked closely with administrators to review applications, including designing evaluation tools, admissions criteria, and assessment practices. Admitting students prepared for teamwork, community service and unique curriculum was essential for an accelerated program comprising two didactic and one clinical year. Application evaluation rewarded diverse, full-time course loads with competitive GPA’s (average 3.4), giving credit for students’ ability to prioritize. The application emphasized diverse health care experience, writing skills, academic and pharmacy recommendations, and community service. The rolling admissions process encouraged students to submit early, allowing a timely interview process. Interview Day included program overview by Dean Rosenow. Candidates were interviewed by two interviewers, a combination of university staff and community pharmacists, emphasizing community relationships and theory to practice application. Pairings emphasized clinical diversity. Interviewers evaluated ability to communicate, knowledge of profession, and ability to work in a team. Interviewers gathered afterward to discuss and make recommendations to Admissions Committee. Candidates were then ranked on a tiered system - those not
offered admission were given feedback on becoming a more competitive applicant in the future. The interview process was successful for showcasing the program, cultivating qualified candidates, networking, and developing rotation sites.

**Participating in an Interdisciplinary Emergency Preparedness Exercise: the Role of the College of Pharmacy.** Brenda S. Bray, Washington State University; Colleen M. Terriff, Washington State University; Catrina Schwartz, Washington State University. Pharmacists, along with other healthcare providers, are expected to play an essential role in promoting and protecting our communities’ health. Part of the mandate from the revised ACPE guidelines states that an expected outcome for PharmD graduates is they have the ability to . . . “Promote health improvement, wellness, and disease prevention in cooperation with patients, communities, at-risk populations, and other members of an inter-professional team of health care providers.” (ACPE Standard 12) Providing opportunities for students to actively experience these activities is a challenge facing pharmacy educators. Washington State University College of Pharmacy participated in a regional emergency vaccination exercise which relied on third year PharmD students to play an integral role in carrying out the public health campaign. As a test of Spokane’s emergency preparedness system, FluMist® was used to immunize 830 community members. This poster presentation will provide an inside view to the required elements of a successful emergency preparedness exercise in an urban/suburban community. The interdisciplinary planning process will be reviewed focusing on the development of a memorandum of understanding between Washington State University College of Pharmacy and the Spokane Regional Health District. Critical to the process was the effective education and training of the 30 PharmD students to insure they were prepared to competently fulfill their assigned roles during the exercise. Results of the formal evaluation from the exercise will be provided along with a summary of student evaluations of the learning experience.

**Patient Counseling Skill Development Across the Curriculum.** Jennifer A. James, University of Maryland; Robert S. Beardsley, University of Maryland. Effective communication is at the very heart of patient-centered pharmacy practice. The perception of pharmacy as a highly trusted profession hinges, among other things, on the ability of practitioners to counsel patients effectively about their medications. Yet historically, faculties typically provide vague or general feedback to students about their counseling abilities during their formative years in pharmacy school. Based on this revelation, we developed a set of expectations for best practices in patient counseling using consensus building involving faculty teaching the content, practitioners, and members of the Pharmacy Practice Lab Steering Committee. One example is the patient counseling competency based assessment instrument which includes five key areas, each anchored on a three point scale of outstanding, acceptable, or not acceptable. The competency areas include 1) style/patient rapport, 2) medication management, 3) medication use, 4) counseling process, and 5) speaking ability. How this instrument is used varies depending upon the level within the four year Doctor of Pharmacy curriculum since expectations of student performance grow during their tenure. In the early years focus is on process and formative feedback to establish student comfort and confidence while providing patient counseling. Subsequently, assessments in the final years of training are more summative and critical with emphasis on content as well as process. Thus, faculties can nurture and promote patient-centered communication skill development throughout the curriculum using this standardized patient counseling assessment instrument.

**Patient-Centered Care within Pharmaceutical Education.** Caroline S. Zeind, Massachusetts College of Pharmacy and Health Sciences – Boston; Michael Montagne, Massachusetts College of Pharmacy and Health Sciences – Boston; Joseph M. Calomo, Massachusetts College of Pharmacy and Health Sciences – Boston; Douglas J. Pisano, Massachusetts College of Pharmacy - Boston. The School of Pharmacy-Boston has pursued innovative models for patient-centered care within the Pharm.D. curriculum. Introductory Pharmacy Experiential Programs expose students to patient-centered care with an emphasis on interdisciplinary teams. This model was implemented in the pharmacy practice laboratory by utilizing teams of first professional year and third professional year Pharm.D. students as, respectively, pharmacist technicians and pharmacist role-players. Similar role-playing with physicians and patients was also integrated within the laboratory and was closely tied to the pharmacist’s role in health care delivery. Elective courses have also been developed to provide students with the opportunity to learn about interdisciplinary teams within the health care system. For example, an elective course has been designed in patient safety and informatics that will be offered to Pharm.D., nursing, and physician assistant students and will be presented in team models with shared responsibility for patient care among providers. Many pharmacy practice faculty are redesigning Advanced Pharmacy Experiential Program (APEP) rotations for fourth year professional Pharm.D. students to emphasize interdisciplinary teams that deliver high quality pharmaceutical care and to implement evidence-based practices. New innovative practices have been designed that reflect teams with shared responsibility for patient care among health care providers. For example, a site at the Visiting Nurses Association has paired a Pharmacy Practice faculty member and APEP students with nurses, nursing students, and physical therapists. Pharmacy practice faculty members are also collaborating with clinicians at practice sites to design and implement innovative ways to reduce medication errors and enhance patient safety.

**PBL Technologies for Health Education at a Distance.** Kathleen M. MacDonald, Massachusetts College of Pharmacy and Health Sciences - Worcester ; Irena Bond, Massachusetts College of Pharmacy and Health Sciences – Worcester; Alice J. Gardner, Massachusetts College of Pharmacy and Health Sciences – Worcester. Objective: * To identify PBL technologies suitable for long-distance health sciences education * To discuss their features: advantages, disadvantages, and optimal applications * To compare cost to functionality of various technologies * To provide health professionals with a quick guide to best PBL technologies for distance learning Methods: PBL is used increasingly in distance learning environments. Student centered learning is part of the College’s mission. New ways of delivering content are needed. The poster focuses on literature search, product reviews, and user feedback to design and diagram the advantages/disadvantages of PBL tools, compare desired features with product functionality, and show alignment of technological options with pedagogical needs. Appropriateness of synchronous vs. asynchronous delivery in relation to objectives, outcomes, and logistical issues will be included.

**Perception of Education and Preparedness of Community Pharmacists in a Diabetes Self Management Project.** Hildegard J. Berdine, Duquesne University; Monica Skomo, Duquesne University. Objective: A University-based education and support program in conjunction with a national pharmacy organization certificate program will prepare community pharmacists to be competent clinicians in an employer-initiated diabetes self-management program.
Methods: Clinical faculty will evaluate the community pharmacist “students” after their completion of a seminar-workshop program as they prepare to begin offering clinical consultative services to diabetes patients through a patient centered diabetes self management care model. An assessment survey will be mailed to the study participants at intervals throughout the first year of the program. Four patient cases written by each pharmacist will be submitted to the clinical faculty for critique and feedback. Results: Data will be recorded into SPSS 13.0 for analysis. Descriptive statistics and one-way repeated measures ANOVA will be used to analyze data from the surveys. A standardized rubric will be used to evaluate each submitted patient case. Conclusion: The investigators hope to demonstrate that pharmacists equipped with baseline skills and specialized knowledge are able to coach patients in a self management diabetes program. In addition, it is anticipated that it will be demonstrated that the participating pharmacists will utilize network tools and a support structure using the internet based instructional software Blackboard®, to assist them in transitioning from dispensing roles to consultative roles in community practice.

Pharmacy Practice and Industrial and Physical Pharmacy Departments Collaboration: An Interdisciplinary Laboratory Module at Purdue. Jane E. Krause, Purdue University; Stanley L. Hem, Purdue University. Integrated Laboratory I (PHRM 301) is a one-credit, required interdisciplinary laboratory course taught during the fall semester of the Doctor of Pharmacy student’s first professional year. The important concepts presented in the core courses during this semester are integrated in this laboratory course. One laboratory included in PHRM 301 requires the students to apply concepts (i.e., pharmaceutical calculations, extemporaneous compounding, prescription processing, and the interactive counseling technique) taught in PHPR 312 (Introduction to Pharmacy and Pharmaceutical Care) with concepts (i.e., dosage formulations, stability of dosage formulations, and chemical properties of individual ingredients) taught in IPPH 362 (Basic Pharmaceutics I). This particular laboratory requires the Doctor of Pharmacy students to prepare two formulations (i.e., an emulsion and a suspension) and integrates information taught in these two core courses. This laboratory was collaboratively developed and is team-taught by a professor in the Pharmacy Practice department and a professor in the Industrial and Physical Pharmacy department within the School of Pharmacy. The laboratory objectives, exercises, and the interdisciplinary teaching approach/instruction are described. Feedback (i.e., regarding the laboratory and the collaborative teaching effort) from the 161 Doctor of Pharmacy students enrolled in the course during the 2005 Fall Semester is presented and discussed.

Pharmacy Students Providing Care for Solid Organ Transplant Recipients. Marie A. Chisholm, The University of Georgia. Objective: To provide a description of an advanced pharmacy practice experience (APPE) that enhances quality education and patient care by utilizing: * transplant patient-centered care models; * interdisciplinary education; * evidence-based practice and research; and * informatics (specifically utilizing OTTR® and Drug Assistant®). Methods: Pharmacy students spend 5 weeks performing pharmaceutical care activities for transplant patients (TPs) with an interdisciplinary team of medical residents/fellows, pharmacists, pharmacy technicians, nurses, physician assistants, social workers, and physicians. During the APPE, students learn how to increase medication access and improve TPs’ health outcomes. Each student obtains over 200 direct patient care hours, performs pharmaceutical activities for over 400 TPs, learns the importance of using informatics to facilitate patient care activities, and participates in one research project. Over the last 6 years of the APPE, 17 students were given a pre- and post-APPE test concerning their knowledge of transplant medicine. To improve the quality of the APPE, standardized evaluations were used. Reports from the Medication Access Program (MAP) were used to document medications obtained for TPs. Results: Post scores were statistically higher than pre-test scores (88.24 versus. 55.88; p < 0.001). Students found this APPE enjoyable and believed it increased their knowledge concerning transplant medicine and patient care. MAP, along with pharmacy students, has provided over 550 TPs with over $12 million of medications. Implications: APPEs should be designed to give pharmacy students experience with patient-centered care models, interdisciplinary education, activities related to evidence-based practice and research, and informatics.

Physician education by pharmacy students during medical rounds: physician’s perceptions. Anastasia M. Rivkin, Long Island University. Study design: During the sixth professional year, pharmacy students complete internal medicine clerkships. As a part of their clerkship requirement, they are expected to present a 15-20 minute physician in-service to the medical team they are assigned to. The topic of the presentation has to relate to the patient admitted to the medical service and his/her pharmacotherapeutic problem(s). The physicians are provided with the handouts and are asked to fill out oral in-service audience evaluation sheet. These sheets are then collected by the preceptor and comprise a part of students’ grade for the in-service. The study objective is to assess physician perceptions of the value of pharmacy student presentations during medical rounds. Results: Data were collected over the period of 3 years (2003-2005). 92 physician evaluations were available for inclusion into the study. The questionnaire contained 8 questions with 1 to 5 scale used for student evaluation, 1 being poor and 5 being excellent. The median score obtained by pharmacy students was 5/5, and the mean was 4.78/5. The item analysis demonstrated good performance on all endpoints, and also pinpointed the area where pharmacy students needed improvement. Physicians scored pharmacy student presentations above 95% in 7 out of 8 questions asked. The one category that needed improvement was the use of appropriate visual aids. Pharmacist preceptor grades were generally below physician grades, but correlated significantly with physician grades (r = 0.48, p < 0.05). Overall, physicians were satisfied with the quality of the presentations and the relevance of these presentations to patient care.

Prevention, Preparedness, and Presbyatrics: Interdisciplinary Education in Montana. Jean T. Carter, The University of Montana; Donna G. Beall, The University of Montana; Gayle A. Hudgins, The University of Montana. Background: Quality care requires all providers to communicate well with their patients and each other. Interdisciplinary education of healthcare providers can provide future practitioners with experience working with other disciplines as well as allow them to develop a common, shared language. Methods: This poster describes three programs: 1) Improving Health Care Among Rural Montanans (IPHARM) has had students from pharmacy, physical therapy, and nurse practitioner programs participate in outreach screening and prevention activities in small rural communities around the state. All students complete the same training modules and can become certified in wellness testing. 2) The Montana Geriatric Education Center (MTGEC) developed a curriculum of core aging modules, disease state modules and case studies to train providers in many disciplines to provide age-sensitive care. Students and faculty are using these modules in a variety of settings including interdisciplinary geriatric clinical training. 3) Through the HRSA BTCDP
Successful Adoption of an Interprofessional “Foundations in Patient Safety Course” Across Health Professions Schools and Related Programs. Kimberly A. Galt, Creighton University; Richard L. O’Brien, Creighton University; Karen Paschal, Creighton University; Barholomew E. Clark, Creighton University; James D. Bramble, Creighton University; John M. Gleason, Creighton University Robert McQuillan, Creighton University; Janet Graves, Creighton University Barb Harris, Creighton University; Pat Hoidal, Creighton University; Catherine Mahern, Creighton University; Keli Mu, Creighton University; Ann Rule, Creighton University; Linda Scheirton, Creighton University, Debra Gerard, Creighton University; Roberta Sommino, Creighton University; J. Chris Braddyberry, Creighton University. Problem: Our future healthcare workforce must be prepared to apply the science of patient safety to practice. Progress in safety science, translation, and stake holder education; however there exists little evidence of student education advancement. Solution: We describe the development, implementation, and outcomes of a university-wide patient safety course. An interprofessional approach addressed the interprofessional nature of patient care delivery. 17 faculty representing 12 disciplines, 7 schools, and the medical center participated in a 3-year plan to develop and offer the course. In two years 31 students in 4 disciplines and 78 students in 7 disciplines participated. Key barriers, solutions and success elements are identified and presented. Analysis: To assess student performance on case studies, we used quantitative and qualitative methods, including theme analysis, descriptive analysis, and criterion-based assessment. Student comments, final course evaluation, and student performance evaluations were triangulated. Key findings: 77% learned at an application level (cognitive domain) and valuing level (affective domain) or above. 96% can define and apply basic principles of patient safety and identify tools to improve safety. 100% view patient safety as a professional practice framework. The interprofessional teaching and learning was integral to the course experience. The course prepared students to solve problems for a future that is inevitable. 87% believe the material taught in the course is essential and 74% believe this course should be required. This case study offers important lessons nationally in health care education for the implementation and sustainability of interprofessional patient safety education.

Teaching Core Competencies to Pharmacy Students through Case-Based, Active Learning in a Nonprescription Therapeutics Course. Katherine M. Heller, Palm Beach Atlantic University; B. DeeAnn Dugan, Palm Beach Atlantic University. Purpose: The course objective is to systematically introduce and reinforce the Core Competencies for Health Care Professionals through student directed self-learning, ensuring evidence-based, patient-centered care. Methods: This primarily self-taught course consists of three activities: Role Play, OTC Presentations, and Service Learning. The Key Criteria of the Core Competencies underlie each activity. Role play involves varying complex cases, demanding impromptu evidence-based clinical decision making through student-led questions. Case scenarios emphasize a standardized approach to patient-centered self-care. Students utilize reputable informatics. Quality improvement is performed via case-specific disclosure and subsequent self- and peer-evaluation by video. Student OTC Presentations consist of skits highlighting self-care issues and a brief presentation. Students submit referenced examination questions. In Service Learning, students learn the curriculum with the assistance of asthma educators and perform a train-the-trainer session. They then report to nurses at local elementary schools and present to 3rd through 5th graders. Results: This course is recognized for curricular excellence and has received national attention. Course evaluations and student-led focus groups reveal students had significantly increased knowledge of OTC products and experienced increased confidence in

American Journal of Pharmaceutical Education 2006; 70 (3) Article 65.

initiative, faculty from eight disciplines and four institutions created a series of bioterrorism/emergency preparedness training modules to enhance the curricula of a variety of healthcare training programs. One goal of the project was to ensure that all students learned a common disaster response language to promote communication among professionals and responders. The modules have been used to train nursing, pharmacy, physical therapy, medical assisting, pharmacy tech, and practical nursing. Results: Shared experiences and training materials promote understanding and communication among the disciplines. Conclusions: Interdisciplinary training and practice communicating across disciplines may be conducted in a variety of ways.

Significant milestones: South University School of Pharmacy’s founding and development. James E. Wynn, South University; David W. Hawkins, South University; Eric H. Hobson, South University. Since its founding in 2002, the South University School of Pharmacy has moved from an idea to a need for a school of pharmacy in coastal, southeast Georgia, to the reality of more than 200 students pursuing pharmacy studies. In four years (2002-2006), the school has designed and implemented a Doctor of Pharmacy curriculum, recruited faculty and administrators, developed practice sites, matriculated three classes of students, built and moved into a state-of-the-art pharmacy building, and completed all candidate accreditation activities. Each of these tasks has been completed on schedule. On June 17, 2006, we reached a significant milestone with the graduation of the inaugural class. Other major events in 2006 include standing for full ACPE accreditation, founding of an alumni association, and the matriculation of a fourth class.

Strategic Planning and Evaluation: Striving for Continuous Improvement at The University of Mississippi. Alicia S. Bouldin, The University of Mississippi; Barbara G. Wells, The University of Mississippi; Marvin C. Wilson, The University of Mississippi. The University of Mississippi School of Pharmacy has for ten years been involved in the formal assessment of specific curricular outcomes, examining student performance with regard to defined “abilities” in essence, the products of our curriculum. With an experienced faculty-governed assessment committee in place to guide the identification of quality indicators for that curriculum, the School sought in 2001 to formalize a reflective self-examination of the process by which those educational products are achieved. A broad base of stakeholders was involved: faculty, students, administrators, and alumni. The resulting strategic planning and monitoring schedule considered goals and performance related to all aspects of the School’s comprehensive mission: education, scholarship, service, and patient care. Strengths, weaknesses, opportunities, and threats were identified; and responses were planned to meet the needs of stakeholders in the current changing environment. Goals and objectives were established that cohere with the University’s vision and goals. Continuous quality improvement is fostered, as monitoring and review of performance occurs annually. Parties responsible for performance related to each objective are consulted each year, and a formal report is presented to the Executive Council. That body considers the goals and the progress made, and is charged with confirming the sustained relevance of goals and assessing the appropriateness of the School’s response. Given the School’s participation as an institution preparing pharmacists for future practice in the wider community, this same spirit of candid self-examination for the purpose of improvement was applied to the preparation of our recent self-study for ACPE re-accreditation (February 2006).

Successful Adoption of an Interprofessional “Foundations in Patient Safety Course” Across Health Professions Schools and
Clinical decision making. Overall, students indicated the course will significantly impact their current and future practice. Exit-interviews of graduates identified this course as one of the most effective in the curriculum. The impact of student participation in service learning was published by the American Lung Association and the American Pharmacists Association. Conclusion: Case-based, active learning can effectively teach pharmacy students how to implement the Core Competencies in their current and future practices.

The Development and Implementation of Summative Examinations to Assess Student Competency and Curricular Outcomes. Carl A. Anderson, Duquesne University; Riccardo Boni, Duquesne University; J. Douglas Bricker, Duquesne University Shane P. Desselle, Duquesne University; Patrick Flaherty, Duquesne University; Marc W. Harrold, Duquesne University; Robert V. Laux, Duquesne University; Bruce H. Livengood, Duquesne University; Wilson S. Meng, Duquesne University; Christine K. O’Neil, Duquesne University; Paula A. Witt-Enderby; Duquesne University. Objective: To develop and administer a series of examinations to assess student attainment of competencies established by the School. Methods: In May of 2004, the School adopted a revised set of educational standards organized into four domains, 14 major competency areas, and 54 subcompetencies. Subsequently, a Competency Examination Committee was formed and charged with the task of developing yearly summative examinations for the first (PIII), second (PIV), and third (PV) professional years of the 0-6 program. During the 2004-05 academic year, this committee, in conjunction with the faculty teaching courses in the PIII curriculum, developed a 60-point Competency Examination. Efforts were made to link questions to the adopted subcompetencies. The examination was administered at the beginning of the fall 2005 academic year. Results: Of the 154 students who took the examination, 125 successfully met the required scaled score. Despite an effort to match student performance to subcompetency statements, the examination gave a better evaluation of student performance across discipline/subject areas. Therefore, students who did not successfully complete the examination were required to complete remediation exercises in discipline/subject areas that they were particularly deficient. Implications: The results of this experience have provided a framework to develop future examinations. Improvements in subsequent iterations of the PIII and PIV examinations hopefully will provide a better evaluation of the School’s competencies. The exams provide all students with feedback on areas of strength and areas in which they require improvement, in spite of successfully completing their coursework.

The Texas A&M Model for Integration of Research into the Training of Pharmacists. Lacy Daniels, Texas A&M University – Kingsville; Barry Bleidt, Texas A&M University - Kingsville; Rajat Sethi, Texas A&M University – Kingsville; James Robertson, Jr., Texas A&M University – Kingsville; Indra K. Reddy, Texas A&M University – Kingsville. The training of pharmacy graduates (candidates) traditionally incorporates little or no research training. However, critical thinking, problem solving, writing, life-long learning and professional growth skills would benefit from research experience. Furthermore, research exposure should make it more likely that students will embrace evidence-based practices, appreciate quality improvement work, and participate in research as practicing pharmacists. Despite this benefit, most PharmD programs do not incorporate research training because of time limitations, lack of adequate research infrastructure, perceptions of disinterest, and financial resources. The College believes it is possible to provide some form of significant research opportunity to each student, and have incorporated this philosophy into our curriculum. All students will be required to take Biostatistics and Research Design in the second semester, and propose that they conduct a research project over several semesters, culminating in a research report as a graduation requirement. Emphasis will be on flexibility and diversity, varying from relatively short and survey-based projects to those that involve substantial hours of laboratory work spread over an extended period. Projects may focus on developing and testing an independent hypothesis, on gathering preliminary data to formulate hypotheses, or on laboratory work to learn a technique and support research by others. The College emphasizes the creation of new knowledge, either through experiments or literature analysis. Collaboration with faculty research programs in all areas of health sciences is the key. This presentation will include relevant course descriptions and proficiencies, graduation requirements, a list of several possible projects, and preliminary description of the process.

Use of a Service-Learning Experience to Bridge Knowledge between Professional Courses. Shane P. Desselle, Duquesne University; Mark H. Conklin, Duquesne University; Christopher K. Surratt, Duquesne University; Janet Astle, Duquesne University; Monica Skomo, Duquesne University; Hildegard J. Berdine, Duquesne University; Christine K. O’Neil, Duquesne University; Mary G. Mihalyo, Duquesne University. Objective. To describe the evolution of a service-learning experience that reinforces students’ competencies from other professional courses. Methods. Early iterations of the service-learning experience required that students register with Duquesne University Volunteers and match with a community partner. Unfortunately, many sites failed to provide a meaningful experience for the student. Since then, course faculty have created several projects that allow students to apply knowledge and skills they are acquiring in the professional program. Examples include a substances of abuse presentation to area middle and high school students to reinforce concepts in neuropharmacology, an interactive program assisting seniors with selecting a Medicare plan to advance their knowledge in public health, and participation in the University’s Center for Pharmacy Care wellness initiative to enhance clinical skills and interdisciplinary collaboration by providing screenings and health education services to the community. Students are given the opportunity to improve their writing skills through a number of assignments, including a reflective journal. They also make use of the Blackboard course management system to post reflections and other technologies in their community presentations. Assignments are graded using sophisticated rubrics created by teaching assistants from the English department hired to oversee the writing process. Results. The quality of service projects, along with students’ palatability for the service-learning experience, has risen considerably. Feedback from community partners is overwhelmingly positive. Implications. The service-learning experience provides students an opportunity to interact with and positively impact a broad array of persons while employing active-learning to apply concepts taught in other courses.

Using a Program Logic Model to Guide Continuous Quality Improvement in Pharmacy Undergraduate Education. David W. Fielding, University of British Columbia; Kristin Hanks Wright, University of British Columbia. A logic model articulates, usually in the form a diagram, the “theory” underlying an activity (such as an educational program). Logic models generally depict the assumed linkages between program inputs, activities, and outputs; i.e., “If we invest these resources, to accomplish these activities, then we should obtain these outcomes.” Such representations are useful in planning and implementation and especially in the evaluation of
programs. The Faculty of Pharmaceutical Sciences at the University of British Columbia is currently exploring use of logic models to focus the continuous quality improvement activities related to our B.Sc.(Pharm.) program. Our program logic model is being used to enunciate a set of evaluation questions (e.g., “Are high school and college counselors aware of pharmacy as a career option and of our program?”) related to our program resources, activities, outputs, outcomes, and impact. These questions then form the basis of a comprehensive plan for the formative and summative measurement of our undergraduate educational program achievements. For each evaluation question, indicators of success and a comprehensive data collection strategy are identified. The results of the program evaluation will be used to inform key stakeholders and to guide program management, foster program improvements, and meet accountability expectations. The Program Evaluation Standards (Utility, Feasibility, Propriety, Accuracy) articulated by The Joint Committee on Standards for Educational Evaluation, will guide our evaluations. We will present a summary of our progress to date and look forward to an exchange of ideas with our AACP colleagues.

Utility of the Foreign Graduate Equivalency Examination to Assess Pharmacy Curricula Mark A. Munger, University of Utah; Frederick S. Albright, University of Utah; Joseph E. Biskupiak, University of Utah; Donald K. Blumenthal, University of Utah; Thomas E. Cheatham, University of Utah; Freddy M. Creekmore, University of Utah. The ACPE Draft Standards state that Colleges of Pharmacy must develop student-learning outcomes through a valid and reliable measure. The University of Utah in collaboration with NABP conducted a Curriculum Outcome Examination utilizing the Foreign Pharmacy Graduate Equivalency Examination (FPGE) to determine the applicability of the FPGE to assess the pharmacy professional curriculum. Methods: P1-P4 students were invited to participate (n = 180). The examination was conducted, without identifiers, over two separate 2-hour blocks and was given in September 2005, after the students had been in class for 3 weeks. The test scores were evaluated by scaled passing rate across four major curricula content areas. Standard psychometric methodology was used for statistical analysis. Results: Ninety-eight percent of the students took the examination. Student acceptance of the examination was highly rated. The passing rate for the test was 37% of P1, 81% of P2, and 100% of P3 and P4 students. P4 students passed the general sciences at 95%, pharmaceutical sciences at 95%, and clinical and social sciences at 100%. There was a step-wise increase passing score with each curricula area across all 4 years. Conclusions: This pilot study demonstrates the utility of the FPGE as a valid and reliable external assessment tool for student-learning outcomes across the entire professional pharmacy curriculum. NABP is currently updating the FPGE to reflect current curricula in schools and colleges of Pharmacy in the United States. The utility of the updated FPGE for curricula assessment at other schools and colleges will need to be individually determined.

Utilization of a Modified PRECEDE-PROCEED Model to Develop Christian Pharmacist Servant-Leaders. David A. Gettman, Palm Beach Atlantic University; B. DeeAnn Dugan, Palm Beach Atlantic University; Heather Williams, Palm Beach Atlantic University. Objectives: The mission of the Lloyd L. Gregory School of Pharmacy is to develop servant-leaders who are fully committed to raising the standards of practice within the profession of pharmacy by following Christ’s example of serving, teaching, and healing those in need. To fulfill this calling, the school has been using a modified PRECEDE-PROCEED Model to provide a continuous series of phases in the planning, implementation, and evaluation process for curricular continuous quality improvement. Methods: PRECEDE-PROCEED are acronyms for the determinants of student behavior change. PRECEDE stands for Predisposing, Reinforcing, and Enabling Constructs in Educational Diagnosis and Evaluation. PROCEED considers additional institutional factors that influence student behavior change including Policy, Regulatory, and Organizational Constructs in Educational and Environmental Development. The model has nine phases, the first five phases of which are diagnostic. The four remaining phases in the model are implementation and evaluation (process, impact, and outcome), with emphasis on using the latter to improve the former. Results: The model was most helpful during Phase 4 which involved educational and organizational diagnosis. This phase focused on examining factors that shape students behaviors, and environmental factors. Servant-leader behaviors were not only found to be shaped by predisposing, reinforcing, and enabling factors, but also amenable to focused change. Environmental factors were found to be influenced by certain enabling factors. Implications: The systematic planning process seeks to empower our students with understanding, motivation, and skills and active engagement in the community to provide pharmaceutical care that promotes wellness and improves health outcomes.

“To grade or not to grade?” Arjun P. Dutta, Pacific University; Robert P. Rosenow, Pacific University; Susan Stein, Pacific University; Vanessa Dillman, Pacific University; Ajay Koomer, Pacific University; Willard Kniep, Pacific University. “To grade or not to grade?” has beleaguered healthcare educators since the seventies. Medical, dental, and law literature have espoused a “pass/fail” (P/F) system in lieu of grades. Students preferred P/F while faculty argued both ways. Both medical and dental literature bore positive correlation between P/F -academic performance, boards, and residencies. Although, there is a dearth of evidence regarding the merits of P/F in pharmacy education, more schools are using it for experiential and other electives. The PU, SOP has made a conscious decision to eschew traditional grading in favor of P/F for all didactic and experiential courses in their three-year curriculum. The following describes their evaluation process: Progression of students towards achievement of programmatic outcomes will be measured via formative and summative assessments. Additionally, a cumulative year-end assessment for the two didactic years and the third clinical year will be conducted. PU will use “P/F” for recording student achievement. The standard for individual student achievement is 90%. Assessments will also include a group assessment which will contribute 5% points towards an individual’s overall score. If a student does not achieve 90%, then he/she will attend a mandatory review session on a scheduled extended-learning day followed by a written reassessment to achieve 90% competency. Students failing to achieve 90% on the extended-learning day will attend summer extended-learning where they will be required to achieve 90% in order to continue in the program. The faculty will reassess the P/F system at the end of the first year and report significant correlations.

“Triple Jump” Summative Evaluation: A Strategy for Longitudinal Assessment of Student Academic Progress. Karna McDavid, Touro University – California; Paul Perry, Touro University - California; Katherine Knapp, Touro University – California; David J. Evans, Touro University – California. Background: Our didactic coursework is organized into four longitudinal Tracks; Biological Sciences, Pharmaceutical Sciences, Social, Behavioral & Administrative Sciences, and Clinical Sciences. Student progress is assessed through formative evaluation, but assessment of integration across Tracks, and academic and clinical development through P1 and P2,
required a novel form of assessment. We devised a “Triple-Jump” Summative Evaluation (TJSE) to assess students’ knowledge, critical thinking and clinical competence. **Methods:** The TJSE was adapted from a similar assessment strategy used at Harvard Medical School, and integrates subject matter into a case-based examination. On Day 1, we administer case-based closed- and open-book examinations focused on fundamental principles, critical thinking and information retrieval. On Day 2, an Objective Structured Clinical Examination (OSCE) evaluates clinical competence. Day 1 performance strands include knowledge & comprehension, analysis & synthesis, and organization & clarity. The OSCE evaluates communication skills, professionalism, knowledge and overall presentation. Students receive report cards providing scores (4 = outstanding to 1 = insufficient) for each strand in each Track and the OSCE. **Results:** Analysis revealed significant differences between strands. The mean score for knowledge across all Tracks was 2.9 ± 0.8. This was significantly greater than scores for analysis (2.56 ± 0.86; p < 0.0001, t-Test) or organization (2.73 ± 0.76; p < 0.001, t-Test). Within some Tracks, there were significant differences between closed and open-book assessment for analysis, but not for organization (p > 0.05). Conclusion: Baseline data from Fall 2005 showed differences across performance domains and between Tracks.

**“You’re Fired!” Student Peer Evaluations, Bridging Competence and Professionalism.** Thomas O. Munyer, University of Florida - Gainesville; Kelly L. Scolaro, University of Florida – St. Petersburg. We used a performance-based, student-centered model of education in this two semester senior pharmacotherapy course. We were disappointed in our student peer assessments’ ability to differentiate students and we wanted to increase the students’ awareness of professional behaviors. A literature review brought us to implementing new aspects to our two types of peer assessments in our pharmacotherapy courses. For the interview performance evaluation we added the statement, “I would refer my own family members to this future (eventual) pharmacy clinician.” The students were required to answer Yes or No and provide explanatory comments. For their group activities peer evaluation we added the question, “Would you want this student in your next group?” Again they were required to answer Yes or No and provide explanatory comments. We maintained the old graded system with associated comments. The students received from their assessments numerical performance grades, constructive comments and a report of the percentage of Trust and Rehie responses. The explanatory comments were kept from the student reports. The response comparisons of these new items with our previous graded and comments items shows the contrast between these two forms of student peer evaluations. Additionally the poster reports the personal impacts upon several student’s self perceptions and behavioral changes.

**INNOVATIONS IN TEACHING Winners**

**Instructional Model to Teach Clinically Relevant Medicinal Chemistry.** Naser Z. Alsharif, Creighton University Medical Center; Kimberly A. Galt, Creighton University Medical Center. **Objectives:** To document the effectiveness of an instructional model to teach clinically relevant medicinal chemistry. **Methods:** An instructional model that utilized Bloom’s cognitive and Krathwohl’s affective taxonomy, published and tested concepts in teaching medicinal chemistry, and active learning strategies, was introduced in the medicinal chemistry course for second professional year doctor of pharmacy students (campus and web). Subjective and objective evaluation tools were developed to assess student learning and overall effectiveness of the instructional model. A temporal comparison of the student performance after introducing the instructional model was compared to previous student performance academic years. Quantitative and qualitative analyses were conducted to determine the results. **Results:** Student performance improved when compared to previous years. Students’ overall enthusiasm about the course, the course content and activities is evident. The students’ perceived value of medicinal chemistry to clinical practice is demonstrated. **Implications:** The explicit integration of the cognitive and affective learning objectives resulted in enhanced student ability to envision how they will apply the science of medical chemistry in practice. Testing this instructional model provides validation that the theoretical framework for this instructional model is effective for our campus and web-based students. Our instructional model also has a broad-based application to other science courses.

**An Internet-based Medical Chart for Documentation and Evaluation of Students’ Simulated Patient Care Activities: Initial Development and Integration into the Curriculum.** Michael C. Brown, University of Minnesota; Michael Kottkay, University of Minnesota; Jeannine M. Conway, University of Minnesota; Randall D. Seifert, University of Minnesota; John V. St. Peter, University of Minnesota. One large obstacle in the development of longitudinal patient care learning activities was the lack of an education-focused documentation system and an integrated evaluation system. A custom-developed Internet-based medical chart (IMC) for simulated patient care activities was designed to provide an integrated documentation and evaluation tool, accommodating multiple learning activities and promoting efficient feedback to students. The paperless system fosters the development of written documentation skills and expedites evaluation and feedback processes. The IMC system is innovative in that it 1) integrates a simulated medical chart and evaluation system, 2) provides an archive of student performance data for instructional improvement, and 3) readily extended beyond its initial application to a second campus and an additional course in the curriculum. Students’ performance on documentation activities improved over time: 87% of the students avoided repeating previous mistakes by their last documentation activity. The vast majority of the students and evaluators found the system easy to use and the activities helpful. The development, implementation, and initial expansion of the IMC system have been a success. Continued integration into clinical coursework is planned and will further expand opportunities for applied learning experiences to prepare students for their experiential program and beyond.

**“My First Patient” Program.** Patricia A. Chase, Butler University; Bonnie Brown, Butler University; Kevin M. Tuohy, Butler University; Iftekhar Kalsekar, Butler University. The “My First Patient” Program is an innovative program developed at Butler University College of Pharmacy and Health Sciences (COPHS), to instruct 1st professional year pharmacy students in the areas of health promotion, disease prevention, and behavior modification. This initiative was developed in response to Healthy People 2010 and the Healthy People Curriculum Task Force recommendations for education of all health professionals. The objective of this Program is to teach students the importance of personal responsibility and demonstrate the impact and significance of individual health-related behaviors and choices. It also can serve as a model for the nation’s schools of pharmacy and other health professions in the instruction of the core competencies of health promotion and disease prevention. Baseline surveys were conducted on professional phase pharmacy students at
COPHS in the fall 2003. Results from these surveys were used to develop the “My First Patient” Program for incoming 1st year professional pharmacy students in the fall 2004. Students attended lectures about health beliefs, behavior modification, stress management, substance abuse, and diet and nutrition. Objective measures of each student’s health were obtained. The ultimate goal was for each student to become aware of his/her current health status and act as his/her own “first patient”. We believe students who understand their own health beliefs and practices will become better pharmacy practitioners who can effectively provide care for their patients.

Honorable Mention

Use of Electronic Products and Product-Based Online Quizzes in Pharmaceutics. Laura Moore Fox, South Carolina College of Pharmacy - USC Campus; Khang H. Pham, South Carolina College of Pharmacy - USC Campus; Michael S. Dollar, South Carolina College of Pharmacy - USC Campus. Electronic products and product-based online quizzes were developed to augment material presented in pharmaceutics lecture with concrete examples, to teach students where to look on product labels for information and how to evaluate ingredients of various dosage forms, and to reinforce pharmaceutical calculations with practical problems. Digital photographs of nonprescription and prescription drug products were developed using Macromedia Flash technology. Telephoto capabilities in the Flash files allow users to zoom in on the ingredients and other specific information in the product labeling. The electronic products were incorporated in pharmaceutics lectures as examples of dosage forms studied. A large pool of questions based on the electronic products was developed, randomized into online quizzes, and implemented in the first-semester pharmaceutics course at the University of South Carolina campus of the South Carolina College of Pharmacy in the fall semesters of 2004 and 2005. When surveyed, student comments about the electronic products incorporated in online quizzes and in lecture were overwhelmingly positive. Students appreciated the opportunity to interact with products and the reinforcement of pharmaceutics concepts provided by the product-based online quizzes. Many suggestions for improvement to increase student and instructor ease of use have been addressed by current and planned modifications. Plans for expansion include adaptations for use in subsequent pharmaceutics courses and at multiple South Carolina College of Pharmacy campuses.

Development of an Innovative Online Debate Series (dEbates) for First-Year Pharmacy Students, Swu-Jane Lin, University of Illinois at Chicago; Stephanie Y. Crawford, University of Illinois at Chicago. In fall 2005, an online debate series (dEbates) was developed as a new component to the introductory core course, Roles, Environment, and Communications for first-year PharmD students at UIC. The objectives were to cultivate critical thinking, improve writing skills, establish a platform for students to interact and challenge each other intellectually, and provide opportunity to apply information learned from course lectures. The 162 students were assigned into 40 teams (half assigned to argue as “Pros,” and half as “Cons”) and paired into 20 debating groups. Each group was assigned one of three topics to debate online:

“Is the pharmaceutical industry responsible for the high cost of drugs?”

“Are too many children receiving Ritalin?” and, “Should healthcare to the elderly be rationed?”

The Pro and Con sides posted three arguments, alternatively, online at the UIC Blackboard system over a 12-week period. Feedback from the judges were posted online and summarized in an in-class discussion. Student evaluation and feedback on the dEbates was largely positive, especially regarding the aspects of working as a group, learning alternative sides of a complex issue, and having the opportunity to write short essays. This innovation represents the first known extensive design and evaluation of an ongoing online debate series for pharmacy students.

Integrating “Virtual Patients” into a Self Care Course. Katherine Kelly Orr, University of Rhode Island. Purpose: The purpose of this activity is to enhance students’ current self care knowledge, as well as communication and assessment skills, through active learning outside the classroom. Methods: The Self Care-2 course is offered to 3rd professional year Pharm.D. students as an elective to expand upon non-prescription and complementary therapies discussed in Self Care-1, a required course. Enrollment has ranged from 30-50 students for the past three years. A “virtual patient” is a fictional person who corresponds via e-mail with pharmacy students regarding a variety of health concerns. Eleven virtual patients were developed to accommodate groups of 4-5 students. Practicing community pharmacists, faculty, and pharmacy residents with alias emails portrayed the virtual patients; therefore students can not identify them. Ten in-depth questions primarily focusing on self-care topics are e-mailed on a weekly basis with correspondence over the week and responses due by each Friday. All responses are forwarded to the course coordinator for evaluation and discussion in class. A survey assessing the value of virtual patients as a learning activity has been administered at the end of the semester. Implications: This teaching tool is designed to enhance student’s knowledge base, assessment, and counseling skills when interacting with patients in difficult situations. Student feedback from anonymous surveys and self evaluation has shown the activity improved overall knowledge and communication skills.

Building a Community of Learners: Laying the Foundations with a Weeklong New Student Orientation Program. Therese I. Poirier, Southern Illinois University-Edwardsville; Catherine R. Santanello, Southern Illinois University-Edwardsville; Gireesh V. Gupchup, Southern Illinois University-Edwardsville. Objectives: Describe and evaluate a new student orientation program designed to lay the foundations for a community of learners. Methods: A weeklong orientation program is structured as the first week of an 18 week fall semester for the first professional year class. Each of the activities support objectives for the program and also develops elements of a community of learners. Results: Student reflective portfolios and daily program evaluations provide evidence of development of a community of learners and successful outcomes. The following attributes are identified as innovative for a new student orientation program: 1) a curricular approach with highly specific objectives that supports the development of responsible partners in the learning process by nurturing communication, cooperation, and collaboration among the students and faculty; 2) modeling the use of a reflective portfolio by engaging students in the process for the orientation program; 3) a variety of programming supporting the elements of a community of learners; 4) involvement of all of the school faculty and a diversity of other people from the university community to support the program; 5) engaging students in the use of technology to support the activities of the program; and 6) monitored programming by soliciting feedback from students and faculty. Implications: A model for a new student orientation program that builds the foundations for the development of a community of learners could empower students with a learning environment critical in preparation for providing
Use of Patient Simulation Mannequins to Teach Performance-Based Pharmacotherapeutics. Amy Lynn Seybert, University of Pittsburgh. The University of Pittsburgh School of Pharmacy curriculum integrates science and practice throughout the course of study. As the demand for practitioners continues to increase, so must our innovations in education. The technology of simulation education has been well established in military and aeronautic training. This approach has been adopted throughout the United States in many medical and nursing schools. The University of Pittsburgh School of Pharmacy has the unique opportunity to collaborate with the Peter M. Winter Institute for Simulation, Education, and Research (WISER) to introduce simulation education into our pharmacy curriculum. Simulation education offers the student the ability to visualize pharmacology and pharmacodynamics of medications, realistic physiologic parameters of diseases, bedside interactions with healthcare professionals, and bioterrorism situations. This type of education also offers many benefits to assessment of curricular outcomes. The facilitator can provide immediate feedback to students, document all decision-making processes, vary each simulation based on individual student need, and to complete all assessments without interfering with actual patient care. Some patients are not willing to allow students to obtain vital signs, discuss medication therapy, or to permit bedside education when they are acutely ill. Also, it can be difficult to find patients with specific disease states in order to educate our students with visualization of certain physiologic situations. Patient simulation education offers an opportunity to address all of these concerns.

Using Community as Textbook with Service Learning: Discovery and Application of New Knowledge. Karen Kennedy Schultz, Shenandoah University. The 2005 National Summit on School Design touted one of the best practices in education as, “Utilizing Community as Textbook.” The 3 hour credit Service Learning course at Bernard J. Dunn School of Pharmacy, Shenandoah University immerses the first year pharmacy student within the community among populations with whom they may have never interacted or encountered. What is truly innovative in pharmacy education with this intervention is the manner in which students:

1) utilize community as textbook
2) explore deeply with reflection, documenting experiences employing different learning strategies;
3) create new knowledge for themselves and apply it;
4) correlate Service Learning experiences with concurrent coursework; and
5) disseminate the information as transferable models through producing documentaries, submission of articles to journals, participating as conference presenters at local and state events.

NEW INVESTIGATORS PROGRAM FOR PHARMACY FACULTY

Examining a Model of Student Involvement with Learning and Intrinsic Motivation to Learn in Pharmacy Education. Alicia S. Bouldin, The University of Mississippi. Objectives: The concept of involvement, or “perceived personal relevance,” has been studied extensively in the contexts of marketing and information search, but remains virtually unexplored in the educational context. This study examined involvement with learning, with respect to its utility in education and its possible influence on intrinsic motivation to learn. That relationship and the influence of several modifiable educational process variables under the control of educators were investigated in a proposed model. Methods: Students in their first three professional years at two schools of pharmacy were asked to reflect on the previous semester in school, via surveys that included the Revised Personal Involvement Inventory (RPPII), the Modified Archer’s Health Professions Motivation Survey, and attitudinal items related to the educational process. Respondents were divided (by school) into development (n = 225) and cross-validation (n = 216) samples. Internal consistency was measured on scales used; and a combination of exploratory factor analysis and structural equation modeling was used to develop and test the hypothesized model. Results: The RPPII performed reliably in this educational context, in both samples (Chronbach’s alpha > 0.9 in both). PY2 students were the group most involved with learning. Involvement and intrinsic motivation were found to be correlated. However, the model describing hypothesized relationships among all examined constructs did not fit well in this sample. Implications: Further investigation of the construct of involvement may show promise in pharmacy education. Model modifications should be explored to identify process variables that may be influenced by educators to increase student involvement and intrinsic motivation to learn.

Health Consequences of Self-restriction of Medications. Suw-Jane Lin, University of Illinois at Chicago. Objectives: To evaluate the health consequences of self-restricting medications due to financial reasons in an elderly population. Methods: The four waves of a national panel survey in the United States (the Asset and Health Dynamics among the Oldest Old Survey) that followed an elderly population (aged 70 or over at baseline) from 1993 to 2000 were analyzed. The impacts of self-restriction of medications on physical function (ADL, IADL), mental health (measured by CES-D), self-rated health, hospitalization and nursing home admission were evaluated. Multilevel models were employed for statistical analysis. Results: 6265 subjects were included at the baseline; among them, 38% were male, 64% had at least partial drug coverage. 19% were identified as having depression (CESD score ≥ 4), 39% had at least one difficulty in ADL or IADL, 41% reported fair to poor health, and 7.5% reported having self-restricted medications. Statistical analyses showed that self-restriction of medications were associated with deterioration in physical function, self-rated health, and mental health (P < 0.05). Baseline drug coverage had some beneficial effect on mental health but not physical function or self-rated health. No significant association was found between restriction of medication and subsequent hospitalization or nursing home admission. Implications: Self-restriction of prescription drugs due to financial reasons is associated with worse health outcomes of elderly population. Future studies are needed to examine whether the newly implemented Medicare drug benefit reduces the self-restriction of medications.