

BIBLIOGRAPHY
AACP-APPI Summit to Advance Experiential Education
June 17-18, 2005
Chicago, IL

TABLE OF CONTENTS

Introduction	<u>1</u>
Future of Pharmacy Practice.....	<u>1</u>
Need for Significant Reform/General Recommendations for Experiential Education.....	<u>1</u>
Related AACP Policies and Strategic Plans	<u>2</u>
Impact of Preceptor on Practice/Pharmacist Role in Non-Pharmacy Setting.....	<u>2</u>
Value of Students to Practice Site	<u>3</u>
Site Development/Establishing Partnerships	<u>4</u>
Preceptor/Pharmacist Recruitment	<u>5</u>
Preceptor/Pharmacist Skill Development	
General	<u>6</u>
Clinical	<u>7</u>
Leadership	<u>7</u>
Teaching	<u>7</u>
Logistical Information about Experiential Education Programs.....	<u>8</u>
Other AACP PEP-SIG Information	<u>9</u>
School-based Strategies to Improve Experiential Education	
General.....	<u>10</u>
Administration/Structure/Delivery of Exp Ed.....	<u>10</u>
Common guidelines/standards amongst programs	<u>12</u>
Evaluation of Students	<u>12</u>
HIPAA-related issues.....	<u>20</u>
Identifying Learning Opportunities	<u>20</u>
Improving Students' Knowledge/Skills BEFORE Clerkship	<u>20</u>
Improving Students' Knowledge/Skills DURING Clerkship	<u>24</u>
Legal Issues with Comprehensive Assessment.....	<u>26</u>
Marketing Exp Ed to Faculty and Administration	<u>27</u>
Matching Preceptors to Students.....	<u>27</u>
Preceptor relations/assessment.....	<u>27</u>
Quality Assurance in Exp Ed/Practitioner Input	<u>27</u>
Rotation-specific Innovations/Descriptions.....	<u>28</u>
Student Learning Support during Clerkship.....	<u>46</u>
Use of PDAs during Clerkship	<u>47</u>
Utilization of Upperclass Students	<u>49</u>

Introduction

Ideas generated from the Summit should build upon the collective efforts and wisdom that already exist as opposed to completely reinventing wheels. Much of this information was presented in the AACP-APPI Summit Background Paper. That document, however, provided a snapshot of the available literature about experiential education. This bibliography, in addition to the references used in the Background Paper, is meant to provide an extensive, categorized list, that includes some brief descriptions, of efforts that have been reported and shared about experiential education and related topics. This bibliography is not completely inclusive, however; the search strategy was limited to keywords of clerkship, preceptors, experiential education, and rotations entered into PubMed and IPA. A hand search was also done in 2005 journals of JAPhA, AJHP, Pharmacy Today, AJPE, Pharmacy Education, the AACP website, and AACP PEP-SIG listserv. Some entries are categorized more than once if they applied to more than one category. Within each category and subcategory entries are listed chronologically with most current first. This document is a work in progress. Please share feedback with Dana Hammer: dphammer@u.washington.edu.

Future of Pharmacy Practice

Joint Commission of Pharmacy Practitioners. Future Vision of Pharmacy Practice. Alexandria, VA: AACP. <http://www.aacp.org/site/page.asp?VID=1&CID=1177&DID=6724&TrackID>

The Lewin Group, Medication Therapy Management Services: A Critical Review. Executive Summary Report prepared for APhA. Washington, DC: APhA. 2005. <http://www.aphanet.org/AM/Template.cfm?Template=/CM/ContentDisplay.cfm&ContentID=3317>

APhA/NACDS Foundation. Core Elements of Medication Therapy Management Services. Washington, DC: APhA and NACDS; 2005. <http://www.aphanet.org/AM/Template.cfm?Template=/CM/ContentDisplay.cfm&ContentID=3303>

The Council on Credentialing in Pharmacy Resource Document: Continuing Professional Development in Pharmacy; 2004; Washington, DC: Council on Credentialing in Pharmacy. <http://www.pharmacycredentialing.org/ccp/cpdprimer.pdf>

Zellmer, WA. Unresolved issues in pharmacy. *AJHP* 2005; 62: 259-65. <http://www.ajhp.org/cgi/reprint/62/3/259.pdf>

Pharmacy Manpower Project readings
<http://www.aacp.org/site/page.asp?VID=1&CID=1056&DID=6195&TrackID=>

Need for Significant Reform/General Recommendations for Experiential Education

Reynolds JR, Briceland, LL, Carter, JT, et al. Experiential education delivery: ensuring success through support and development of the faculty and administrative team: Report of the 2004-2005 Professional Affairs Committee, AACP, Alexandria, VA. Available at . Accessed on Aug. 29, 2005

Traynor, K. Experiential education requirements squeeze schools, rotation sites. *Am J Health Syst Pharm*. 2004; 61(15):1537-1538. Some of the challenges associated with an increase in the need for experiential rotations for pharmacy students now that pharmacy schools in the United States have phased out the baccalaureate degree program in pharmacy in favor of the Doctor of Pharmacy curriculum are discussed.

Littlefield LC, Haines ST, Harralson AF, Schwartz AH, Sheaffer SL, Zeolla MM, Flynn AA. Academic pharmacy's role in advancing practice and assuring quality in experiential education: Report of the 2003–2004 professional affairs committee. *Am J Pharm Educ*. 2004; 68:S8. <http://www.ajpe.org/view.asp?art=aj6803S8&pdf=yes>

Cohen JL, Nahata MC, Roche VF, Smith RE, Wells BG, Helling D, Maine LL. Pharmaceutical care in the 21st century: From pockets of excellence to standard of care: report of the 2003–04 Argus Commission. *Am J Pharm Educ.* 2004; 68:S9. <http://www.ajpe.org/view.asp?art=aj6803S9&pdf=yes>

Lin AY, Altieri RJ, Harris WT, et al. Leadership: The nexus between challenge and opportunity: reports of the 2002–03 Academic Affairs, Professional Affairs, and Research and Graduate Affairs Committees. *Am J Pharm Educ.* 2003; 67(3): Article SO5. <http://www.ajpe.org/view.asp?art=aj6703S05&pdf=yes>

Cerulli J. Reaching Beyond the Pharmacy Bench: Impression of Academic Community Pharmacy Practice. *J Am Pharm Assoc.* 2003; 43(5, Supp 1) S10-S14.

Lee MLW, Andritz MH, Curry CE, Kishi DT, Murray MD, Scott BE, Smith WE, Vogt E, Flynn AA. Academic Pharmacy's Role in Practitioner Preparation and Continuing Development to Enhance Healthcare and Ensure Optimal Medication Use. Report of the 2001-2002 Professional Affairs Committee, *Am J Pharm Educ.* 2002; 66(4WS) <http://www.ajpe.org/legacy/pdfs/aj6604S06.pdf>

Beck DE. Outcomes and experiential education. *Pharmacotherapy.* 2000; 20(10 Pt 2):297S-306S.

Related AACP Policies and Strategic Plans

AACP Policies related to Experiential Education:

<http://www.aacp.org/site/tertiary.asp?TRACKID=&VID=2&CID=53&DID=4963#Policies%20on%20Experiential%20Education%20&%20Training>

AACP Strategic Plan– approved by HOD July 2004: http://www.aacp.org/Docs/AboutUs/2004_strategicplan.pdf see page 3, Goal IV

AACP Section of Pharmacy Practice 2004:

<http://www.aacp.org/site/tertiary.asp?TRACKID=&VID=2&CID=187&DID=4296> See Strategic goal #3

Impact of Preceptor on Practice/Pharmacist Role in Non-Pharmacy Setting

Mangum, SA, Kraenow, KR, Narducci, WA. Identifying at-risk patients through community pharmacy-based hypertension and stroke prevention screening projects.

J Am Pharm Assoc. 2003; 43(1): p 50-55.

351 patients were screened for hypertension; 216 (62%) had readings greater than 140/90 mm Hg. Of the 121 patients referred to their physician, 43 (36%) had a regimen change. A total of 50 patients were screened for stroke risk. Results of the risk assessments for patients screened were normal, 4%; mild, 26%; moderate, 32%; high, 38%. Results demonstrate that, through ongoing screening programs, community pharmacists are in an ideal position to screen patients at risk for cardiovascular and cerebrovascular disease and refer patients to their physicians for further evaluation.

Anderson, D. Clinical pharmacy services at state forensic hospital. *ASHP Midyear Clinical Meeting.* 2003; 38(DEC): P-174(D).

Kramer, AD, Mitchell, J, Epplen, K. Urgent care pharmacotherapy clinic: A bridge between the emergency department and the primary care physician? *ASHP Midyear Clinical Meeting.* 2003; 38(DEC): P-68(E).

Balch, N, Mitrano, EA, Hallisey, RK, Clapp, MD. Clinical pharmacy services in the emergency department. *ASHP Midyear Clinical Meeting.* 2003; 38(DEC): P-228(D).

Shara, M, Garis, RI, Moore, FC. The impact of a clinical pharmacy educator in a part-time role as a member of a multi-disciplinary heart failure care team. [abstract] *AACP Annual Meeting.* 2003.

An assessment of all patients' records a year after the implementation of the pharmaceutical care services indicated that medication compliance increased from 65% to 97%. Additionally, significant decreases in patient hospitalizations and length of hospital stays were observed. The positive impact of the pharmaceutical care services resulted in the successful establishment of a unique pharmacy clerkship teaching site utilizing a multi-disciplinary care approach.

Luedtke, SA. Condren, M. Haase, M. Gaylor, A. Blanchard, N. Pediatric resident documentation of clinical pharmacy interventions. *ASHP Midyear Clinical Meeting*. 2002; 37(DEC): P-392E.

Dent, LA. Stratton, TP. Cochran, GA. Establishing an on-site pharmacy in a community health center to help indigent patients access medications and to improve care. *J Am Pharm Assoc*. 2002; 42(3):497-507.

Value of Students to Practice Site

Mangino, P. Adams, T. Patterson, B. Claypool, T. Enhancing pharmacy practice clerkships by use of block scheduling, patient case conferences and self taught modules. *ASHP Midyear Clinical Meeting*. 2004; 39(DEC):P49D.

Six rotations were offered as a block, geared towards students interested in residency or institutional practice. Second, was the development of Self Taught Advanced Rotation Topics (START)? These were modules consisting of example patient cases with questions so the student could assess his or her prior knowledge of the topic, followed by an outline of the topic and primary literature pertaining to the subject. Third, was the development of a weekly patient case conference, facilitated by a staff member, with students preparing and discussing cases. Results: During the six months of block rotations, clinical interventions performed by students increased each month from 18.5 interventions per student the first month to 80.6 per student the sixth month. Interventions for all pharmacists also increased during this time by an average of 18.6% per month over the previous year. This indicated that student interventions were in addition to the staff pharmacists' workload and that the addition of students to the rotations on a consistent basis enabled pharmacists to spend more time in clinical activities. Students' assessment of block scheduling was that less time was spent each month orienting, making them independent earlier in the rotation. Only one of six students was interested in residency training at the start of the program. This increased to three by the end. The START modules and weekly case conferences received a very positive evaluation by all the students. Conclusion: Enhancing the advanced practice rotations had a positive effect on pharmacy services with consecutive rotations having the greatest impact on increasing pharmacist clinical interventions. Self-study modules and weekly case conferences had the most effect on increasing student satisfaction with the experiential rotation.

Boyatzis, M. Batty, KT. Domiciliary medication reviews by fourth year pharmacy students in Western Australia. *Intl J Pharm Pract*. 2004; 12(2):73-81.

189 patients, 80% of whom were over 60 years of age. Mean number of medications recalled by patients (5.8 2.9) was significantly lower than the number of medications that patients were actually taking (8.5 3.5; $P < 0.001$). 39% of patients gave incorrect/unknown indications for at least one medication and 17% had expired medicines. Students identified an average of 2.1 1.7 actual or potential medication problems per patient. Mean number of problems endorsed by the pharmacist and GP were 1. 1 and 0.9, and an additional 0.4 and 0.2 problems were identified, respectively. 19 patients (10%) required changes in therapy.

Miller, S. Assessment of the value of doctor of pharmacy clerkship rotations to global medical information at Eli Lilly and company. *Drug Inf J*. 2004;38(2):181-185.

93% of current Lilly employees who completed a pharmacy student rotation at Lilly believe their experience positively influenced their career decision. 54% of employees in Global Medical Information and 88% of those serving as preceptors reported an increased overall personal satisfaction in their job as a result of the student program. Although the cost estimation we conducted was very simplistic, we found a positive cost-benefit to the department based on the student program.

MacKinnon, GE. Analysis of pharmacy student interventions collected via an Internet based system.[abstract] *Am J Pharm Educ*. 2003;67(3): Article 90 <http://www.ajpe.org/view.asp?art=aj670390&pdf=yes>

93 students completed a total of 3,320 intervention forms. Most common reasons for the 5,031 interventions were as follows: dosage related, 20.4%; adverse drug reaction/toxicity/side effects, 19.2%; and drug product selection,

13.5%. Of 4,157 actions taken, the most common were direct contacts to health care providers (2,182) and patient consultations (867). The majority of interventions were initiated by students (66.4%), accepted by the patient and/or provider (87.1%), and required 15 minutes or less to complete (83.0%). Overall 41.9% of interventions were classified by students as "moderate problem risks" with the expected outcomes of "improved safety" (41.3%) and "improved efficacy" (27.8%).

Gonyeau, MJ. DiVall, MV. Evolution of doctor of pharmacy students' clinical interventions during APPE.[abstract] *AACP Annual Meeting 2003*.

Components of cost-savings assessed were drug acquisition and lab-monitoring costs (available from the hospital), as well as cost savings associated with the prevention of potential adverse drug reactions and medication errors (published average costs were multiplied by the probability of the event occurring). Clinical impact was categorized as minor, moderate, or major. Interventions collected during this period will be analyzed for patterns of increased clinical impact of students' participation in-patient care activities, as demonstrated by increase in number and complexity of interventions throughout the year. Percent of preceptor contribution to individual interventions throughout the year will also be assessed.

Orr, KK. Boadih, Y. Karbowski, J. Education of PharmD students through community-based blood pressure clinics.[abstract] *AACP Annual Meeting 2003*

The settings include a rural independent store and two regional chain stores in suburban areas. Each site has participated in the blood pressure clinic for 4 years or more. Students conducted community blood pressure clinics in three-hour blocks weekly from August 2002 to May 2003. At the first visit, brief patient interviews were initially conducted regarding risk factors for cardiovascular disease and current medications. Information was updated as needed at subsequent visits. Subject's blood pressure and pulse were recorded each time they presented to clinic; students counseled on modification of lifestyle habits, medications, and interpretation of blood pressure readings. All interventions, demographics, and blood pressure measurements were recorded into a database after obtaining patient consent.

Schellhase, EM. Hardin, AK. Development and implementation of a tablet splitting education program in a veterans affairs medical center. *Hosp Pharm*. 2003;38(5):453-457.

12 pharmacy clerkship students from two universities carried out the program over seven nonconsecutive weeks. One hundred and three patient encounters were documented. The total cost savings from the interventions was \$7986.32. A more comprehensive program has the potential to save \$413,000 annually. The essential role of pharmacy students in this program demonstrated their importance in the provision of health care and patient education.

Fujisaki, BS. Farthing, K. Marcus, KB. Identifying and resolving potential medication errors in hospital admission orders. *ASHP Midyear Clinical Meeting*. 2002;37(DEC):FGF-4.

Rubio, T. Orynychak, I. Lemanowicz, J. Evaluation of community acquired pneumonia treatment: utilization of pharmacy students and hand held technology. *ASHP Midyear Clinical Meeting*. 2002;37(DEC):P-411E.

Luedtke, SA. Condren, M. Haase, M. Gaylor, A. Blanchard, N. Pediatric resident documentation of clinical pharmacy interventions. *ASHP Midyear Clinical Meeting*. 2002;37(DEC):P-392E

Dent, LA. Stratton, TP. Cochran, GA. Establishing an on-site pharmacy in a community health center to help indigent patients access medications and to improve care. *J Am Pharm Assoc*. 2002;42(3):497-507.

Lind, PR. Brown, MC. Sorensen, TD. Early pharmacy education with community teachers (EPHECT): A longitudinal service learning experience.[abstract] *AACP Annual Meeting 2002*.
Students' service-learning patients report more likely to utilize pharmacists after participating in program.

Sauer BL, Heeren DL, Walker RG, King JH, Musallam NA. Computerized documentation of activities of Pharm.D. clerkship students. *Am J Health Pharm*. 1997;54(15):1727-32. <http://www.ajhp.org/cgi/reprint/54/15/1727.pdf>

Site Development/Establishing Partnerships

AACP PEP-SIG Committee on New Rotation Opportunities – report forthcoming in Summer of 2006
<http://www.aacp.org/site/tertiary.asp?TRACKID=DKHHZ89FKBCARTH84XY8D5PGTEMLPU7&VID=2&CID=1069&DID=6257>

Willink, DP, Isetts, BJ. Becoming 'Indispensable': Developing innovative community pharmacy practices. *J Am Pharm Assoc.* 2005; 45(3):376-389.

AACP Successful Practices in Experiential Education Delivery and Academia-Practice Partnerships: Administration of the Experiential Education Program, and Quality Assurance for Education, Scholarship and Patient Care in Community-based Partnerships. Alexandria, VA: Spring 2005
http://www.aacp.org/Docs/MainNavigation/Resources/6720_05SuccessfulPracticesAcademia-Practice.pdf
Compilation of voluntary information from 8 schools

Sweeney, MA, Mauro, VF, et al. Community pharmacists and colleges of pharmacy: the Ohio partnership. *J Am Pharm Assoc.* 2005; 45(1):82-87.

Partnering with Health Systems, Set of presentations from ASHP Midyear Clinical Meeting. Alexandria, VA: Dec 2004. <http://www.aacp.org/site/page.asp?TRACKID=&VID=1&CID=1111&DID=6450>

AACP Council of Deans Strategy Session on Coalition Building. Alexandria, VA: July 2004
<http://www.aacp.org/site/tertiary.asp?TRACKID=DKHHZ89FKBCARTH84XY8D5PGTEMLPU7&VID=2&CID=872&DID=6365>

Sheaffer, SL. Boyce, EG. Sorrentino, AP. Bernhard, TC. Finley, RS. Successes and challenges: Meeting the diverse, expanding needs in advanced pharmacy practice experiences.[abstract] *AACP Annual Meeting. 2003.*
Description of successful expansion from 900 to 1672 rotations, as well as challenges yet to be conquered in the experiential program.

AACP Successful Practices in Academia-Practice Interface. Alexandria, VA: Spring 2002
http://www.aacp.org/Docs/MainNavigation/Resources/4950_Academia-Practice.pdf
Compilation of voluntary info from 5 schools

Byrne, ML. Goldman-Levine, JD. Brennan, WP. Amato, M. Clark, LE. DiTusa, L. Eugenio, KR. Mukherjee, M. Establishment of an ambulatory care practice group (ACPG): model to support and foster innovative pharmacy practice faculty and site development. [abstract] *AACP Annual Meeting. 2001.*

AACP PEP-SIG Leadership Meeting Minutes from meeting with CVS executives to discuss experiential education. Alexandria, VA: Sept 2003.
<http://www.aacp.org/site/tertiary.asp?TRACKID=DKHHZ89FKBCARTH84XY8D5PGTEMLPU7&VID=2&CID=1048&DID=6160>

Preceptor/Pharmacist Recruitment

2005 Preceptor Opinion Survey, Merck and Co., unpublished report.
Responses from preceptors and nonpreceptors about benefits of, training, reasons for precepting or not

Not yet summarized report of inquiry to AACP PEP-SIG listserv from Dennis McAllister's (PEP director at MWU-Glendale) Spring 2005: "I am considering developing a preceptor needs assessment survey. I am interested in what others have done, what kinds of results were obtained and what kinds of programs/services were developed as a result. Any advice would be appreciated."

Rochon, J. Mentoring is a great way to learn something. *Washington Pharmacy*, Spring 2005: 7.

Trovato, JA, Edwards, JM. Education and training of pharmacy students. *Am J Health Pharm.* 2004; 61: 1956-1957
<http://www.ajhp.org/cgi/reprint/61/18/1956.pdf>

2004-2005 AACP PEP SIG Committee on Preceptor Recruitment and Development. Published 4 articles (below) and would like to create brochures for ntl organizations to use.

Allen, RE, Skrabal, M. Effective precepting takes time, skills, and support. *Pharm Today.* 2005;11(3): 30.

Kahaleh AA. We Owe it to the Profession! *Pharm Today.* 2004; 10(12):15

Kahaleh AA, Turner C. What does it Take to be the Preceptor of the Year? *Pharm Today.* 2004; 10(10):?.

Kahaleh AA, Skrabal M. Do you Have the Right Stuff? *Pharm Today.* 2004; 10(6): 35,38.

To meet the increased demand for experiential sites, colleges and schools of pharmacy are eager to establish long-term relationships with experienced pharmacists who are willing to impart professional knowledge and guide pharmacy students through on-site experiential education.

Patton, LR, Fjortoft, N. Leadership and teaching skills for successful pharmacists.[abstract] *AACP Annual Meeting.* 2003.

Description of a CE program was developed to recruit and develop preceptors.

Andalo, D. A foot in two camps - cross-sector working. *Hosp Pharm.* 2002; 9(5): 125-126.

A scheme that introduces newly registered pharmacists to a role in a community pharmacy practice is described. The integrated trust and community rotation initiative was developed by pharmacists at three Essex' hospitals in an attempt to attract more pharmacists to community practices.

Preceptor/Pharmacist Skill Development

General

Weitzel, K (ed) *The Preceptor's Community Newsletter.* Gainesville, FL:2005.

http://www.aacp.org/Docs/AACPFunctions/Governance/6686_PreceptorscommunityV1I2.pdf?TrackID=DKHHZ89FKBCARTHX84XY8D5PGTEMLPU7 Created for Advanced Community Practice Experience preceptors and pharmacy faculty members who have responsibilities for community preceptor development as part of the Achieving Preceptor Excellence (APEX) Program.

Billay DB, Yonge O. Contributing to the theory development of preceptorship. *Nurse Educ Today.* 2004 Oct;24(7):566-74.

Schultz KW, Kirby J, Delva D, Godwin M, Verma S, Birtwhistle R, Knapper C, Seguin R. Medical Students' and Residents' preferred site characteristics and preceptor behaviours for learning in the ambulatory setting: a cross-sectional survey. *BMC Med Educ.* 2004 Aug 6;4(1):12.

<http://www.pubmedcentral.nih.gov/picrender.fcgi?artid=514563&blobtype=pdf>

Having an adequate number and variety of patients while being supervised by enthusiastic preceptors who give feedback and are willing to discuss their reasoning processes and delegate responsibility are site characteristics and preceptor behaviours valued by almost all learners.

Boyle, CJ, Carr-Lopez, S, Kawahara NE, Kieser MA, See CJ and Smith GB. Report of the Preceptor Development Task Force Subcommittee Two. *Am J Pharm Educ.* 2002WS; 66(4):42S-3S.

<http://www.ajpe.org/legacy/pdfs/aj6604S12.pdf>

Talluto, B, Loiacono, D, Lullo, A. The relationship between time spent with the preceptor, student satisfaction and rotation grade.[abstract] *AACP Annual Meeting.* 2002.

Time versus grade, time versus satisfaction, and satisfaction versus grade data will be reviewed to observe for potential trends and to identify any similarities or differences between community, clinical and hospital rotations. Extrapolate trend data to enhance preceptor-training methods. Extrapolate trend data to restructure rotations.

Hayes EF. Factors that facilitate or hinder mentoring in the nurse practitioner preceptor/student relationship. *Clin Excell Nurse Pract.* 2001 Mar;5(2):111-8.
http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=11329560&tool=iconabstr&query_hl=6

Results show that time in the practicum, preceptor experience, and choice of preceptor rather than acceptance of faculty assignment are significant to mentoring. However, NP preceptor/student age differences, student nursing experience, and the tone of the clinical setting can either facilitate or hinder the development of mentoring. Although gender and discipline of the preceptor may be important to many students, a humanistic precepting style may be equally or more important.

AACP Training Pharmacy Preceptors. 1990

Clinical Skills

Pai, AK. Integration of a clinical community pharmacist position: Emphasis on workflow design. *J Am Pharm Assoc.* 2005; 45(3): 400-403.

Poullard, J. Implementation of a clinical pharmacist training program.[abstract] *ASHP Midyear Clinical Meeting.* 2004;39(DEC):72D.

Description of program to develop clinical and management skills of rural hospital pharmacists, from a population of urban hospital pharmacists. Successful for recruitment and retention of pharmacists in rural setting.

Leadership skills

ASHP annual conferences for leaders of health-systems pharmacy: Focus on practice management: www.ashp.org

Patton, LR. Fjortoft, N. Leadership and teaching skills for successful pharmacists.[abstract] *AACP Annual Meeting.* 2003.

Description of a CE program developed to recruit and develop preceptors.

Young, D. Alabama hospital pharmacists climb meritorious ladder to meet career goals. *Am J Health Syst Pharm.* 2002;59(7):598,601.

Teaching Skills

Hobson, E. Contributing to "Significant Learning" as Pharmacy Practitioner-Educators (Preceptors). *APhA Annual Meeting 2005.* <http://www.aphameeting.org/index.cfm?fuseaction=Custom.Content&MenuID=204>

Real-time opportunity to work alongside practicing pharmacists (early, service learning or clerkship-experience) is essential for pharmacy students to engage in "significant learning." Significant learning results from careful planning, instruction, and assessment - ingredients many preceptors do not identify as areas of expertise. This session offers practitioners an evidence-based model for structuring the site-based experiences they oversee to build a robust, site-specific curriculum for students that aligns with the collaborating pharmacy program's educational outcomes to develop "significant" professional abilities. This session provides teaching strategies to help pharmacy practitioners excel as practitioner-educators.

Morrison, EH. Shapiro, JF. Harthill M. Resident doctors' understanding of their roles as clinical teachers. *Med Educ.* 2005;39:137. <http://www.blackwell-synergy.com/servlet/useragent?func=synergy&synergyAction=showAbstract&doi=10.1111/j.1365-2929.2004.02063.x>

Crouch, MA. How to survive as a new preceptor/teacher. *ASHP Midyear Clinical Meeting.* 2003;38(DEC):PI-147. Program objectives: 1. State common challenges encountered by novice preceptors/teachers. 2. Illustrate ways to become a more effective classroom teacher. 3. Discriminate methods that preceptors can facilitate learning opportunities on clerkships.

Langlois, JP, Thach, SB. Bringing faculty development to community-based preceptors. *Acad, Med.,* 2003; 78(2):150-155. <http://www.academicmedicine.org/cgi/content/abstract/78/2/150>

Saracino, MJ, Low, JK. Developing preceptors for a new residency program.[abstract] *ASHP Midyear Clinical Meeting* 2003; 38(DEC): PI-54.

Description of program to develop teaching and assessment skills, with focus on buy-in to the program.

Patton, LR, Fjortoft, N. Leadership and teaching skills for successful pharmacists.[abstract] *ACCP Annual Meeting*. 2003.

Description of a CE program was developed to recruit and develop preceptors.

Cerulli, J, Briceland, LL. A streamlined preceptor training program for community pharmacy advanced practice preceptors to enable optimal experiential learning opportunities.[abstract] *ACCP Annual Meeting*. 2003.

Mazor KM, Stone SL, Carlin M, Alper E. What do medicine clerkship preceptors do best? *Acad Med*. 2002; 77(8): 837-40. <http://www.academicmedicine.org/cgi/content/abstract/77/8/837>

Areas where ratings suggested relative strengths included showing an interest in teaching, respecting students' opinions, and being available to students.

Hobson, E. Giving new pharmacy faculty a jump start.[abstract] *ACCP Annual Meeting* 2002.

Schultz, KK, Wachsmann, HO. Qualitative grounded theory study on master teaching of clinical pharmacy preceptors on patient care rotations. [abstract] *ACCP Annual Meeting*. 2002.

An emerging model of interactions between clinical preceptor, students, and the teachable moment highlights an approach for making the critical time on clinical practice as effective as possible.

ASHP National Residency Preceptors Conference: Mentoring for excellence. *Am J Health Syst Pharm*. 1999; 56(23): 2454-7. <http://www.ajhp.org/cgi/reprint/56/23/2454.pdf>

Erstad, BL. How to be an effective clerkship or internship preceptor. *Am J Health Syst Pharm*. 1993; 50(Mar):434,439.

Logistical Information about Experiential Education Programs

Schreffler R, Hammer DP, O'Sullivan T. Logistical aspects of advanced pharmacy practice experiences in schools and colleges of pharmacy. *Submitted for publication in Am J Pharm Educ*, Sept 2005

Plaza CM, Draugalis JR. Implications of advanced pharmacy practice experience placements: A 5-year update. *Am J Pharm Educ*. 2005;69(3):Article 45. Available at: <http://www.ajpe.org/view.asp?art=aj690345&pdf=yes>.

Not yet summarized AACP PEP-SIG listserv inquiry from PEP Director Brian Shepler from Purdue: What do schools use as criteria for pharmacists to become preceptors? May 2005

Zarembski DG, Boyer JG, Vlases PH. A Survey of Advanced Community Pharmacy Practice Experiences in the Final Year of the PharmD Curriculum at US Colleges and Schools of Pharmacy. *Am J Pharm Educ*. 2005; 69 (1) Article 2. <http://www.ajpe.org/aj6901/aj690102/aj690102.pdf>

AACP PEP-SIG Summary of listserv query on background checks of students. Alexandria, VA: Feb 2005
<http://www.aacp.org/site/tertiary.asp?TRACKID=DKHHZ89FKBCARTH84XY8D5PGTEMLPU7&VID=2&CID=1049&DID=6635>

AACP PEP-SIG Summary of listserv query about a didactic component in clerkship year. Alexandria, VA: Feb 2005
<http://www.aacp.org/site/tertiary.asp?TRACKID=DKHHZ89FKBCARTH84XY8D5PGTEMLPU7&VID=2&CID=1049&DID=6636>

AACP PEP-SIG Summary of listserv query about logistical questions regarding management of rotations. Alexandria, VA: July 2004

<http://www.aacp.org/site/tertiary.asp?TRACKID=DKHHZ89FKBCARTH84XY8D5PGTEMLPU7&VID=2&CID=1049&DID=6219>

AACP PEP-SIG Survey Report of PEP-SIG Directors' Title and Nature of Appointments. Alexandria, VA: July 2004

<http://www.aacp.org/site/tertiary.asp?TRACKID=DKHHZ89FKBCARTH84XY8D5PGTEMLPU7&VID=2&CID=1049&DID=6259>

Smith, G. AACP PEP-SIG Survey Report of Community Faculty at US Colleges. Alexandria, VA: July 2004

http://www.aacp.org/Docs/AACPFfunctions/Governance/6281_CommFacutynationwide.xls?DocTypeID=11&TrackID=DKHHZ89FKBCARTH84XY8D5PGTEMLPU7

AACP PEP-SIG Summary of listserv query about logistical questions regarding management of rotations. Alexandria, VA: July 2004

<http://www.aacp.org/site/tertiary.asp?TRACKID=DKHHZ89FKBCARTH84XY8D5PGTEMLPU7&VID=2&CID=1049&DID=6219>

AACP PEP-SIG Summary of listserv query about varicella immunizations for students prior to clerkship. Alexandria, VA: June 2004

<http://www.aacp.org/site/tertiary.asp?TRACKID=DKHHZ89FKBCARTH84XY8D5PGTEMLPU7&VID=2&CID=1049&DID=6158>

Harralson AF. Financial, Personnel, and Curricular Characteristics of Advanced Practice Experience Programs. *Am J Pharm Educ.* 2003; 67(1) Article 17. <http://www.ajpe.org/view.asp?art=aj670117&pdf=yes>

Glover, ML. Deziel-Evans, L. Comparison of the responsibilities of tenure versus non-tenure track pharmacy practice faculty. *Am J Pharm Educ.* 2002;66(4):388-391.

Tenure track faculty are expected to serve on more college committees and publish more articles, while non-tenure track faculty are expected to have more student clerkship responsibilities. Although not significantly different, tenure track faculty also teach more didactic hours. Of the activities assessed, the number of annual publications represented the greatest disparity between the two groups. If increased scholarly activity is desired from non-tenure track pharmacy practice faculty, as seems to be the trend, the amount of time allocated for clinical activities may need to be reduced.

Campagna KD, Boh LE, Beck DE, et al. Standards and guidelines for professional experience programs. *Am J Pharm Educ.* 1994;58:35S-45S.

Other AACP PEP-SIG Information

AACP PEP-SIG Business Meeting Minutes. *AACP Annual Meeting 2004.*

<http://www.aacp.org/site/tertiary.asp?TRACKID=DKHHZ89FKBCARTH84XY8D5PGTEMLPU7&VID=2&CID=1048&DID=6262>

AACP PEP-SIG Business Meeting Minutes. *AACP Annual Meeting 2003.*

<http://www.aacp.org/site/tertiary.asp?TRACKID=DKHHZ89FKBCARTH84XY8D5PGTEMLPU7&VID=2&CID=1048&DID=6147>

AACP PEP-SIG Listserv Summary of Queries 2003-2004.

<http://www.aacp.org/site/tertiary.asp?TRACKID=DKHHZ89FKBCARTH84XY8D5PGTEMLPU7&VID=2&CID=1049&DID=6214>

School-based Strategies to Improve Experiential Education

General

AACP Successful Practices in Experiential Education Delivery and Academia-Practice Partnerships: Administration of the Experiential Education Program, and Quality Assurance for Education, Scholarship and Patient Care in Community-based Partnerships. Alexandria, VA: Spring 2005

http://www.aacp.org/Docs/MainNavigation/Resources/6720_05SuccessfulPracticesAcademia-Practice.pdf

Compilation of voluntary information from 8 schools

McKenzie, M. AACP Council of Deans Strategy Session: Discussion on Clerkships. *AACP Annual Meeting 2004*

<http://www.aacp.org/site/tertiary.asp?TRACKID=DKHHZ89FKBCARTH84XY8D5PGTEMLPU7&VID=2&CID=872&DID=6364>

AACP Successful Practices in Experiential Education: Administration of Experiential Education, Curriculum Development and Quality Assessment. Alexandria, VA: 2003.

http://www.aacp.org/Docs/MainNavigation/Resources/6027_ExperientialEducation.pdf

Compilation of voluntary information from 4 schools

AACP Successful Practices in Administration of Experiential Education. Alexandria, VA: 2002.

http://www.aacp.org/Docs/MainNavigation/Resources/4951_Administration.pdf

Compilation of voluntary information from 6 schools

Dennis, VC. Identifying issues of importance and sharing best practices in experiential education.[abstract] *AACP Annual Meeting 2003*.

Experiential faculty and preceptors from practice settings including community pharmacy, hospital pharmacy, federal/state pharmacy practice, and education were asked to discuss and select questions of most importance while in small group sessions attending an annual preceptor conference. A review of group records revealed the most commonly discussed questions were related to activities/tasks that enhance student learning, the importance of student self-assessment, knowledge/skills students struggle to apply/methods to overcome difficulties, and setting expectations for students. Questions felt most important included setting expectations for students, guiding principles of conduct and practice that must be imparted to students prior to entering the profession, and knowledge/skills students struggle to apply/methods to overcome difficulties.

Administration/Structure/Delivery of Exp Ed

AACP PEP-SIG Committee on Workload Issues. Alexandria, VA: AACP. July 2004 (report forthcoming)

<http://www.aacp.org/site/tertiary.asp?TRACKID=DKHHZ89FKBCARTH84XY8D5PGTEMLPU7&VID=2&CID=1069&DID=6297>

Ragan RE, Dahm SN. Development of an Internet-based Management Tool for Advanced Practice Experience Distance Education Students. *Am J Pharm Educ*. 2005; 69(3): article 47.

<http://www.ajpe.org/view.asp?art=aj690347&pdf=yes>

The *Clinical Portfolio* is a powerful tool that has allowed faculty members to successfully administer and precept clinical APPEs while remaining geographically distant from the student and the APPE site.

Mangino, P. Adams, T. Patterson, B. Claypool, T. Enhancing pharmacy practice clerkships by use of block scheduling, patient case conferences and self taught modules. *ASHP Midyear Clinical Meeting*. 2004;39(DEC):P49D.

Six rotations were offered as a block, geared towards students interested in residency or institutional practice. Second, was the development of Self Taught Advanced Rotation Topics (START). These were modules consisting of example patient cases with questions so the student could assess his or her prior knowledge of the topic, followed by an outline of the topic and primary literature pertaining to the subject. Third, was the development of a weekly patient case conference, facilitated by a staff member, with students preparing and discussing cases. Results: During the six months of block rotations, clinical interventions performed by students increased each month from 18.5 interventions per student the first month to 80.6 per student the sixth month. Interventions for all pharmacists also increased during this time by an average of 18.6% per month over the previous year. This indicated that student

interventions were in addition to the staff pharmacists' workload and that the addition of students to the rotations on a consistent basis enabled pharmacists to spend more time in clinical activities. Students' assessment of block scheduling was that less time was spent each month orienting, making them independent earlier in the rotation. Only one of six students was interested in residency training at the start of the program. This increased to three by the end. The START modules and weekly case conferences received a very positive evaluation by all the students. Conclusion: Enhancing the advanced practice rotations had a positive effect on pharmacy services with consecutive rotations having the greatest impact on increasing pharmacist clinical interventions. Self-study modules and weekly case conferences had the most effect on increasing student satisfaction with the experiential rotation.

Tice, B. PIDSware: A PDA/Web-based pharmacy intervention documentation system to collect, quantify, and evaluate student drug therapy interventions, preceptors, and practice sites.[abstract] *AACP Annual Meeting 2003*. PIDSware is a PDA/Web-based application that enables pharmacy students and pharmacists to capture drug therapy problem interventions and collect the data into a central database. Once the data is entered into a PDA and the PDA is synced, the data can be forwarded to the school of pharmacy. Data can be forwarded from an unlimited number of locations. Reporting on student, preceptor, and/or practice sites is included, enabling evaluation of the types of drug therapy problems, disease states, and student patient care. The system will also establish a DOI Score(R), Depth of Intervention Score, to evaluate the cognitive complexity of the intervention. Implementation of the system will enable the school to evaluate rotation sites by depth and number of intervention opportunities, type of disease states on which students focus and type of disease state opportunities encountered by rotation site, while assisting in the quantification of value delivered by students and clinical faculty to the practice sites. As a teaching tool the system establishes a "process" for patient care and facilitates quality documentation through "required" fields that must be entered before the intervention is considered complete. The system will also integrate drug information and treatment guidelines, reinforcing didactic teaching at the point of care and further establishing a patient care "process." Visit the established website at www.pidsware.com, or www.rxinterventionsystems.com.

Weber, SS. Succeeding in dynamic times: An experiential database tool.[abstract] *AACP Annual Meeting 2003*. Database created to manage site contact information, descriptions and evaluations by students; to facilitate preceptor affiliation information and student rotation scheduling; and to track student contact information, clerkship prerequisite status, site assignment requests and assignments, and performance evaluations. We estimate that this program introduces efficiencies that would otherwise require a half-time FTE. Hardware costs are around \$2,500 and software about \$1,000. Designing and programming of the database is less demanding than most industrial strength databases, but is not trivial.

Cheigh, NH. Kaufman, JH. Spunt, AL. Cannon, BC. Schoen, MD. et al. A web-based advanced professional experience program management system.[abstract] *AACP Annual Meeting 2003*. The web-based system was developed to be cross platform, user-friendly, and available for use by students, clerkship coordinators, and preceptors. All clerkship related activities and communications are accomplished via this system. This system replaces many phone, fax, and personal interactions with email and web-based forms. Development of this system facilitates reduced administrative time for faculty, as well as increasing student and preceptor satisfaction with real-time data.

AACP Successful Practices in Administration of Experiential Education. Alexandria, VA: Spring 2002
http://www.aacp.org/Docs/MainNavigation/Resources/4951_Administration.pdf Compilation of voluntary information from 6 schools

Dunn, AB. Sickels, JM. Robinson, DC. Conversion to a semester calendar: Opportunities and challenges.[abstract] *AACP Annual Meeting 2002*.

Weber, SS. Experiential management database.[abstract] *AACP Annual Meeting 2001*.

Common guidelines/standards amongst programs

Kahaleh, A. Murphy, C. Ohio guidelines for advanced-practice hospital rotations for pharmacy students. *Am. J. Health Syst. Pharm.* 2005; 62: 246.

Recently, a focus group composed of hospital pharmacists from Ohio, representatives from the four Ohio colleges of pharmacy (The University of Cincinnati, Ohio Northern University, Ohio State University, and The University of

Toledo), and the Ohio Pharmacists Association Board of Trustees developed key standards for advanced-practice hospital rotations (APHRs) for Ohio pharmacy students. The main documents produced were (1) professional and patient care guidelines and expectations for preceptors and (2) objectives for student experiences during APHRs.

Evaluation of Students

Baseline

Umland, EM. Peterson, AM. Horodysky, MM. Finley, RS. Evaluating preceptor perceptions of student readiness for clerkship. *J. Pharm. Teach.* 2002; 9(2): 47-60.

Overall comparisons showed that PCP students were comparable to students from other programs. Relative to knowledge base, skills, and professionalism, PCP students were above average or better. Full-time faculty ranked students significantly lower than non-full-time faculty. Other factors that may have affected the results observed include preceptor gender, age, type of practice site, when the students are precepted (early versus late in the clerkship component of the curriculum), and alumni status.

Nesbit, TW. Davies, KL. Walker, CL. Implementation of a baseline assessment program for pharmacy practice residents at The Johns Hopkins Hospital. *Midyear Clinical Meeting.* 2003; 38(DEC): P-482(D).

Clinical competence

Besinque, K. Khonputsu, P. Gong, W. Mak, M. Fisher, D. Pharmacy Script Concordance Test: Tool to assess clinical pharmacy competence.[abstract] *AACP Annual Meeting 2001.*

Communication skills

Zweber, A. Dowling, B. Healey, D. Assessing English language skills in the admissions interview.[abstract] *AACP Annual Meeting 2003.*

Competency Exams

University of Wyoming School of Pharmacy Fourth Year Competency Examination

<http://www.aacp.org/site/tertiary.asp?TRACKID=DKHHZ89FKBCARTH84XY8D5PGTEMLPU7&VID=2&CID=1050&DID=6221>

PREPAREDNESS FOR PHARMACY PRACTICE University of Wyoming School of Pharmacy (student self assessment)

<http://www.aacp.org/site/tertiary.asp?TRACKID=DKHHZ89FKBCARTH84XY8D5PGTEMLPU7&VID=2&CID=1050&DID=6222>

Cultural Diversity (attitudes)

Silva, MA. Nolan, NM. Tataronis, GR. Pharmacy students' baseline perceptions of cultural diversity prior to advanced pharmacy practice experience.[abstract] *ASHP Midyear Clinical Meeting 2004.*

Purpose: Measure the effect of experiential education on pharmacy students' attitudes toward serving underserved multicultural populations receiving pharmaceutical care in a major Health System. We sought to sample student self perceptions in the following domains: 1. Pharmacist-patient relationship, 2. Health and social policy, 3. Knowledge of the community, 4. Involvement in the community. Methods: A survey instrument was identified that measures the effects of multicultural experiences in the medical curricula and clinical rotations in the four domains previously stated. This survey instrument was modified to capture pharmacy student opinions before and after experiential rotations. Students use a five-point Likert scale to indicate responses to each question. The Likert responses correspond to: 1 = strongly disagree, 2 = moderately disagree, 3 = neutral, 4 = moderately agree, 5 = strongly agree. Students were sampled on the following schedule: Baseline: September 2003, Follow-up: June 2004. Results: The survey instrument was reviewed and approved for use by our institutional IRB. Surveys were issued to 112 students beginning experiential rotations. Participation was voluntary. Twenty five students completed the baseline evaluation and seventeen completed both baseline and follow-up surveys. The completed rate of return was 15%. Respondents were predominantly female (59%), single (71%), between the ages of 20-29 (76%) of Caucasian or Eastern European descent (65%). Most respondents were born in the US (59%) and those who were not born natively lived in the US for 12.2 ± 7.4 years (n=6). Experiential rotations within a Health System significantly affect components in the domains of Pharmacist-patient relationship, Knowledge of the community and Involvement

in the community. A significant proportion of students reported improvement in their ability to incorporate culturally sensitive information into a treatment plan (p=0.003), greater familiarity with cultural beliefs (p=0.001), greater familiarity with health beliefs (p=0.001), greater understanding of barriers to care (p=0.003), increased familiarity with the languages spoken among patients seeking care at this Health System (p=0.038) and improved knowledge of health needs within local ethnic populations (p=0.006) Conclusion: Experiential rotations that provide enhanced exposure can improve knowledge of cultural issues in the domains of Pharmacist-patient relationship, Knowledge of community and Involvement in community. Pharmacy students training within a Health System can gain important insight into socio-cultural issues that will further their ability to serve cross-culturally and globally enhance cultural competency.

Drug information

Cerulli, J. Schreck, J. Weck, M. Zeolla, M. Evaluation of drug information requests in community pharmacy.[abstract] *AACP Annual Meeting 2002*.

Saseen, JJ. May, S. Hammer, D. Implementation of a longitudinal drug information (DI) portfolio in lieu of a DI clerkship.[abstract] *AACP Annual Meeting 2001*.

General

AACP PEP-SIG survey about grading systems for APPE June 2004

<http://www.aacp.org/site/tertiary.asp?TRACKID=DKHHZ89FKBCARTHX84XY8D5PGTEMLPU7&VID=2&CID=1049&DID=6154>

Cerulli J and Malone M. Using CAPE outcomes-based on goals and objectives to evaluate community pharmacy advanced practice experiences. *Am J Pharm Educ*. 2003;67(2):1-4

<http://www.ajpe.org/aj6702/aj670234/aj670234.pdf>

University of Maryland School of Pharmacy Abilities Assessment Pharmaceutical Care Database, Assessment, and Plan

<http://www.aacp.org/site/tertiary.asp?TRACKID=DKHHZ89FKBCARTHX84XY8D5PGTEMLPU7&VID=2&CID=1050&DID=6278>

****PROCESS-related****Ohta, Y. Naruhashi, K. Nishio, C. Ohta, H. Nakada, M. et al. Designing pharmacy practice curriculum for mid-sized hospitals to accept undergraduate pharmacy school students. *Jpn J Pharm Hlth Care Sci* 2003;29(2):129-139.

A curriculum was designed for a pharmacy school student completing a practicum at the pharmacy of the Neagari Municipal Hospital, a mid-sized hospital, and the practicum was carried out according to the curriculum. The curriculum was based on the criteria described in a medical educational manual and incorporated three factors, namely "Objectives, Learning Strategies, and Educational Evaluation," which together covered the educational processes. The time schedule was designed to be similar to that of typical work duties, thus enabling the student to experience real pharmacy practice. During the practicum, no exercises were omitted and we were able to implement, as requested by a doctor, modifications to the program. Accordingly, the quality of the practice was maintained, since each factor was based on a specific behavioral objective. The student's accomplishments were evaluated by the medical staff, including pharmacists and doctors, in order to reduce the individual instructors' burden as well as to maintain objectivity. By this manner of evaluation, not only were the achievements graded more objectively, but we could also evaluate the curriculum by comparing the evaluations of the instructors with those of the student. In conclusion, this curriculum is practical for small-and mid-sized hospitals accepting undergraduate pharmacy students and does not negatively influence the daily duties, while still maintaining the quality of the educational experience. This curriculum is simple to initiate and easy to modify. As a result, such a program is considered to be useful for other similar mid-sized facilities since it can help such institutions to promote efficiency in designing their own curriculum.

****PROCESS-related**** Wood, GC. Gourley, G. Phelps, S. Helms, R. Analysis of educational outcomes using online grading of student competencies with groups of preceptors.[abstract] *AACP Annual Meeting 2003*.

Objectives: 1. Determine feasibility of grading rotations online using educational outcomes (Tennessee 21

Competencies). 2. Determine significant geographical, employment status or required/elective course differences in

preceptor grading. Methods: An online survey containing demographic information and 24 educational outcomes was constructed so that preceptors could weigh and grade rotation performance. To evaluate the system for feasibility, the descriptive statistics for weights, grades, and percent each ability was selected was calculated for 488 fourth year rotation grade sets. An univariate ANOVA with Tukey and Dunnett C tests was run to determine groups that showed statistically significant grade differences. Results and Discussion: The online rotation grading instrument proved to be feasible and had good internal reliability ($\alpha = 0.98$). 22/24 abilities and 19/21 educational outcomes were chosen frequently by the preceptors suggesting that preceptors evaluated many competencies while grading. Overall mean grade was 3.55/4, SD: 0.44. There was a statistically significant difference between Middle (n=53) and West Tennessee grades (n = 353, sig. <.05). However, there is probably no practical implication to a quarter point grade difference. There were no significant grade differences between full time vs. part time preceptors or required vs. elective course status. Implications: Evaluation of educational outcomes online from rotations proved to be feasible as a grading tool. Preceptors distributed their grade weights widely among the educational outcomes suggesting they believe that 22/24 grading categories and 19/21 competencies were important. Beliefs that faculty in various rotations grade differently were unfounded.

Cameron, AJ. Lavack, LA. An application of educational theory and principles to effective methods of documenting direct observation of pharmacy students during experiential rotations.[abstract] *AACP Annual Meeting 2003*. Objectives: To review educational principles, theory and research that support direct observation, feedback and documentation in experiential practice. To articulate techniques to improve preceptor (P) effectiveness, efficiency and commitment. Background: Assessment includes daily P observation and feedback, using an Observation Record (OBS), bi-weekly assessment by P and student (S), and end of rotation evaluation by P. In 5 years of use the OBS has captured regular feedback and grade-related evidence. To enhance P commitment, efficiency and effectiveness in using the OBS, we explored research and ideas related to learning that occur through direct observation and feedback. Analysis: Documented observations, rather than memory, provide accurate information; a structured form increases accuracy. No citations about observation forms in pharmacy teaching were found. Beck provides an overview of the rationale for records, from non-pharmacy literature. The OBS tool supports characteristics of constructive feedback. A 'framework for clinical assessment' suggests experiential rotations need assessment methods that can infer whether the S 'does' and can 'show how'. Observation-based ratings are used to capture what the S 'does'; these can infer how the S will perform in the practice setting. To improve accuracy, the Cognitive Processing Model was applied. A preceptor education program was provided in Fall 2002 and included methods to increase efficiency. Implications: P education sessions/feed back and review of similar forms lead to modifications for the current year. Future plans include: adaptation of the OBS to PDA, continued education of P and S about tool, continued evaluation to increase effectiveness and efficiency.

Gonyeau, MJ. Use of pre/post tests to aide in evaluation of pharmacy students during APPE.[abstract] *AACP Annual Meeting 2003*.

Objectives: Evaluate the utility of pre/post testing of doctor of pharmacy students during APPE. Specific objectives included: comparisons of knowledge at rotation onset versus completion in content areas commonly encountered on an internal medicine APPE rotation, and student perception of knowledge and confidence in content areas. Methods: All 6th year doctor of pharmacy students completing an internal medicine APPE at St. Elizabeth's Medical Center were assessed. A short answer, case based examination was administered on the first and last days of the rotation covering the following topics: hypertension, hyperlipidemia, heart failure, diabetes, asthma, anticoagulation, pneumonia, infectious disease and renal disease. Pre vs. post-tests were not identical, but each asked similar questions on the aforementioned topics. The post-test placed more emphasis on identification of landmark trials pertinent to students' rationale for recommendations made. A comparison of overall scores, as well as scores in each specific content area is being conducted to give students specific feedback about strengths and areas to focus on in successive rotations. A survey will be conducted to analyze student perceptions on the impact of the pre/post test to address issues of confidence and relevance to pharmacy practice. A longitudinal assessment of students will also be conducted to observe changes in pre-test scores as students complete consecutive APPE rotations. Implications: This method of assessment of pharmacy students' content mastery, critical thinking and problem-solving skills will allow the school of pharmacy to demonstrate the achievement of a core set of content based competencies during APPE.

****PROCESS-related****Carter, JT. Allington, DR. Rivey, MP. Use of concept maps to assess clerkship students' knowledge of stroke.[abstract] *AACP Annual Meeting 2003*.

Objectives: The purpose of this study was to explore the use of concept maps as assessment tools in the clerkship setting. Scoring issues were specifically targeted. Methods: Eight clerkship students in an inpatient / rehabilitation

rotation completed pre and post concept maps for stroke. During week one, students received instructions on map construction and drew a stroke pre-map. During the rotation, each student was assigned to follow at least one stroke patient and then present their case in the daily clerkship/preceptor conference. During week eight, students completed a stroke post-map. Two instructors scored each map based on the number of concepts, levels, examples, and cross-links. The instructors then scored each map together. Results: The pre and post scores for the two instructors were in high agreement for number of cross-links ($r=0.84$); concepts ($r=0.72$); and examples ($r=0.73$). The two raters had low agreement on the number of levels in the maps ($r=0.08$). There was general agreement between instructors on individual map ranking order even though total scores differed. The greatest change in mean scores from pre to post maps was for number of examples, which went from 10.3 to 18.6 ($p=0.0592$). Some concepts, such as "atrial fibrillation as a risk factor for embolic stroke," appeared only in post maps. Implications: Concepts maps may be useful for assessing how a clerkship experience is influencing student knowledge of a disease. Because scoring may differ with instructors, efforts to standardize the scoring process are important.

Hall, PD. Francisco, GE. Clerkship grades: Do they inflate students' GPAs?[abstract] *AACP Annual Meeting 2003*. There has been significant debate among pharmacy educators whether clerkship grades inflate students' grade point averages (GPA). The purpose of this study was to examine this question. Methods: Fourth year clerkship grades at the University of Georgia (UGA) and the Medical University of South Carolina (MUSC) were analyzed over a two-year period from 2001-2003. Clerkships were divided into acute care, community, ambulatory care, hospital, and other. GPAs were calculated at the end of the 3rd year and at graduation. Results: For UGA and MUSC, the mean (coefficient of variation%) cumulative GPAs at the end of the third year were 3.39 (10.2%) and 3.14 (14.3%) which significantly increased to 3.53 (7.6%) and 3.25 (11.5%), respectively, at the end of the 4th year ($P < 0.001$ for both schools). 96.6% and 90.6% of students' GPAs at UGA and MUSC, respectively, rose during the fourth year. The mean (CV%) 4th year GPAs at UGA and MUSC were 3.9 (5.6%) and 3.6 (6.7%), respectively. For either college, there was no correlation between cumulative GPA at the end of the 3rd year with 4th year GPA. At MUSC, the mean rotation grades for drug information, community, hospital, acute care, ambulatory care, and other were 3.4 (14.3%), 3.8 (8%), 3.8 (11.6%), 3.4 (13%), 3.4 (18.3%), and 3.8 (7.3%), respectively. Conclusion: Although data from the 2002-2003 academic year are still being collected and analyzed, current trends indicate that grades earned during pharmacy clerkships significantly increase students' grade point averages.

Jones, RM. Haddad, AM. Monaghan, MS. Talluto, B. Preceptor assessment of student preparation for clerkships.[abstract] *AACP Annual Meeting 2003*.

Objectives: Clerkship preceptors routinely train and evaluate pharmacy students during the experiential component of the curriculum. For this reason, we included a preceptor survey in our programmatic assessment plan. The purpose of this project was to: (i) develop and validate a preceptor survey, (ii) use the data generated through the survey to determine curricular effectiveness in preparing students for clerkships based on the school's twelve ability-based outcomes (ABO) for graduates, and (iii) evaluate experiential office effectiveness and efficiency in scheduling clerkship students. Methods: A cross-sectional survey design was used to assess curricular effectiveness in preparing students for clerkships by both external and faculty preceptors. The questionnaire was constructed to explore the following issues: student knowledge, skills, and attitudes pertaining to the twelve ABO for graduates; recommended curricular changes; and experiential office efficiency. The survey consisted of both Likert-scale questions and qualifying statements. Results: The mean and median responses to quantitative survey questions will be presented. Qualifying statements will be categorized according to themes. The data will be utilized to formatively assess the curriculum and the experiential office. Implications: The data presented will be used to (i) evaluate how well the curriculum prepares students for the performance of the ABO during clerkships; (ii) assist in continuous quality improvement of the experiential office; and (iii) assist other schools in using a preceptor survey as a component of programmatic assessment.

Wood, G. Gourley, D. Gourley, GK. Geminn, K. Tennessee's approach to PharmD educational assessment.[abstract] *AACP Annual Meeting 2003*.

The University of Tennessee College of Pharmacy's educational assessment plan includes direct and indirect measures of students' performance. Indirect measures - In educational settings, course grades are related to attainment of the course objectives. The grades for 102 courses in the 2001-2002 academic year averaged 3.4 on a scale of 4. On this scale the value interpolated to 86%. In the UT curriculum, the course and session objectives are closely linked to the educational outcomes (Tennessee 21 Competencies). As part of the course evaluation process, students self assess how well they have achieved the course objectives. These data showed that the students believe that they were accomplishing the course objectives 87% of the time. Direct measures - A validated online grading

form was used by preceptors to grade students in their twelve, month long, rotations. Preceptors selected and graded the students on up to 24 abilities. The first twenty one (21) abilities were the Tennessee 21 Competencies. Therefore, instructors directly assessed the educational outcomes when they assigned rotation grades. The NABPLEX exam tests 48 competencies (mapped to the Tennessee 21). Over the last ten years, 99% of Tennessee graduates passed the NABPLEX on the first attempt, and average scores were consistently higher (10%) than the national average of all graduates. Additionally, graduate exit surveys and an online survey 5 and 10 years post graduation supported the belief that the curriculum properly prepared graduates for practice.

Talluto, B. Loiacono, D. Lullo, A. The relationship between time spent with the preceptor, student satisfaction and rotation grade.[abstract] *AACP Annual Meeting 2002*.

Objectives: Determine if there is a correlation between: 1. The amount of time students report preceptors spend with them and the students' degree of satisfaction with the rotation. 2. The amount of time students report preceptors spend with them and the final rotation grade. 3. The students' degree of satisfaction with the rotation and the final rotation grade. Observe similarities and differences between community, clinical and hospital rotations in the relationships of time and satisfaction, time and grade, and satisfaction and grade. Methods: Students report their degree of satisfaction with the preceptor and the rotation through formal evaluation forms and written comments. Students report the amount of time spent with their preceptor daily and weekly. Students receive a formal grade at the end of each rotation. Time and satisfaction data and the students' final grade will be compiled and graphed. The time versus grade, time versus satisfaction, and satisfaction versus grade data will be reviewed to observe for potential trends and to identify any similarities or differences between community, clinical and hospital rotations. Implications: Highlight the relationship trends between time spent with the preceptor, student satisfaction and rotation grade. Extrapolate trend data to enhance preceptor-training methods. Extrapolate trend data to restructure rotations. Expand the study to examine amount of time spent versus quality of time

****PROCESS-related****Rospond, RM. Dirks, S. McAllister, D. Student directed experiential learning in a program of continuous competency assessment. [abstract] *AACP Annual Meeting 2002*.

Objectives: The purpose of the project was to design, implement, and evaluate a continuous student assessment process in a competency-based experiential education program. Methods: Experiential education competencies were approved and adopted by, faculty for evaluation of student proficiency across all experiential rotations. Students receive a "credit" or "no credit" for the entire experiential education program based on achievement and maintenance of a minimum proficiency level of 4 for each of 64 activities under 4 competency areas. Preceptor and student orientation to the new process first occurred prior to the 1997/98 experiential year. Student portfolios, initially print and now electronic include documentation of activities, samples of project work, sample patient interventions, preceptor and self-assessment forms. Proficiency scores for each competency are tracked by the college and used to focus rotation activities. Results: Individual student learning is demonstrated through procedural based review of performance. Individualized interventions are instituted during the experiential year to provide formative and summative assessment. Individualized remediation programs are developed and implemented for students not achieving proficiency requirements. Student evaluations of entire experiential program and skills improved demonstrate positive results. NAPLEX scores have improved and post-graduate opportunities have been maintained. Implications: Continuous Competency Assessment Process addresses numerous limitations of standard approaches to experiential education. Innovative approach combined with current technology allows individualized student development programs and enhanced programmatic assessment with acceptable resource allocation.

****PROCESS-related****Jones, RM. Monaghan, MS. Faulkner, M. Ryan-Haddad, A. Are students achieving the desired outcomes? - A performance assessment of the school's ability-based outcomes.[abstract] *AACP Annual Meeting 2002*.

Objectives: Our school recently developed 12 ability-based outcomes (ABO) for graduates. The purpose of this project was to determine the effectiveness of the curriculum in preparing students to meet these ABO and evaluate the effectiveness of an experiential ABO assessment instrument developed for clerkships. Methods: Forty-eight randomly selected senior students were randomized into two groups of 25 each (intervention and control). Prior to beginning clerkships, all students completed a 12-station pharmacy objective structured clinical examination (P-OSCE) using standardized patients (SPs). After this initial assessment, all students completed their clerkships. During the clerkship year, the intervention group had their performance monitored using a formative ABO assessment instrument. The control group did not. At the end of the clerkship year, all students repeated the P-OSCE. Stations were videotaped and scored by a faculty-grading panel according to performance criteria. Results: Student performance data will be presented as an overall and a per-case percent score. Group means will be

compared before and after the fourth year to determine the effectiveness of the formative ABO assessment instrument. Implications: The data presented will be used to (i) evaluate how well the curriculum prepares students for the performance of the ABO; and (ii) validate the effectiveness of the experiential ABO assessment instrument as a formative evaluation process.

Stowe, CD. Gardner, SF. Christensen, KJ. Standardized patient examination scores are useful in identifying students most in need of remediation.[abstract] *AACP Annual Meeting 2002*.

Objective: The purpose of this study was to utilize standardized patient examinations to identify students who would most benefit from remediation. Methods: A standardized patient examination was conducted in the Spring Therapeutics I (2nd professional year) and in the Fall Therapeutics II (3rd professional year) at the end of each semester. The grades from Therapeutics I and II were analyzed to determine relationships between the two semesters. Descriptive statistics were used. Results: There was no correlation found between Therapeutics I and II standardized patient examinations nor was there a correlation between each of the standardized patient examinations and the overall grade in each of the Therapeutics courses. However, when the grades from each semester were collapsed, a moderate correlation between the overall average grade and the average standardized patient examination score was found ($P < 0.0001$). The cumulative average scores on the standardized patient examination consistently identified the students who had an overall C average and failed the standardized patient examination. No student who had an overall A average had a failing average on the standardized patient examination. Implications: The use of the standardized patient examination scores from the first two semesters of Therapeutics will allow the development of a remediation pathway for at risk students that will run concurrently with Therapeutics III and prior to entering clerkship rotations.

Hill, LH. Kirkwood, CK. Brophy, GM. Gray, BS. Crouch, MA. Student self-assessment of drug knowledge and skills before and after clerkship experiences.[abstract] *AACP Annual Meeting 2002*.

Objectives: The primary objective of this study is to compare student self-assessment of confidence in drug knowledge and professional skills before clerkship and during the last month of clerkship training. A secondary objective is to compare clerkship student self-assessment of knowledge and skills with preceptor evaluations. Methods: A survey consisting of 28 items of drug knowledge and 17 skills was developed and approved by the coordinators of the four-semester sequence of disease state management courses. VCU's Institutional Review Board approved the study. A preliminary survey was administered to the class of 2000 (N=84) before graduation. The second administration was the class of 2001 (N=72) before their clerkship year. The survey will be repeated with the same class in April 2001. A copy of the survey has also administered to clerkship preceptors. The MannWhitney rank sum test is being used to compare student assessment of drug knowledge and clinical skills before and after clerkships and compare student and preceptor evaluations. Results: The results of the preliminary survey reflect some disparity in the types of knowledge achievement and greater confidence in professional skills. Results of both the student and preceptor studies will be presented. Implications: Results of the surveys will be used by instructors of the pharmacotherapy sequence to determine how effective instruction has been and what curricular changes will be needed.

Learning Disabilities

Boyd JA, McKenzie CA, Holmes TJ. Assessment of learning disabilities among a pharmacy student population. *Am J Pharm Educ*. 1999;63(1):68-72. http://www.ajpe.org/legacy/ajpe_metaview.asp?ID=386

OSCEs

Ragucci KR, Fermo JD, Mazur JN. Objective structured clinical examinations for an ambulatory care pharmacy rotation. *Am. J. Health Syst. Pharm*. 2005;62:927 - 929. <http://www.ajhp.org/cgi/reprint/62/9/927.pdf>.

Jones, RM. Monaghan, MS. Faulkner, M. Ryan-Haddad, A. Are students achieving the desired outcomes? - A performance assessment of the school's ability-based outcomes.[abstract] *AACP Annual Meeting 2002*.
OSCE's used to evaluate performance before and during clerkship

Martin, BA. Kanous, NL. Pitterle, ME. Kieser, MA. Objective, structured, clinical examination (OSCE) for assessing professional abilities.[abstract] *AACP Annual Meeting 2001*.

Professionalism

de Rivera, GM. Gutierrez, LM. Mena, R. Behavioral professionalism of pharmacy students during a practice experience and their perspective of the professional socialization process.[abstract] *AACP Annual Meeting 2003*. Objective: The purpose of the study is to describe the professional behavioral level of the students of the School of Pharmacy of the University of Puerto Rico, and their perspective on the professional socialization process. Methods: The study was divided in three stages: the first one dealt with the translation, adaptation, and validation of the instrument, the Behavioral Professionalism Assessment Form. The second stage consisted of studying the professional behavior of 67 pharmacy students through a self-evaluation and the evaluation of the preceptor. The third stage consisted of two focal groups with participating students from stage two. Results: The results of the study indicate that there are significant differences between the student self-evaluation and the preceptor's evaluation of professional conduct, although both were found to be at a very good level, according to the evaluation scale used. Significant differences were found in the preceptor's evaluation in the variables of gender of student and preceptor, professional average of the student, and academic preparation of the preceptor. The professional socialization process was described by the students as continuous, consisting of various stages in which home, school, church, university, and work are institutions which play a significant role. The significant factors in the process were: values, beliefs, student personality, faculty professionalism, professional modeling, curriculum, peer interaction, and professional organizations. Implication: The results will serve as an element to orient the processes of change that must take place in the pharmacy professional program in order to strengthen socialization towards the profession.

Schwartz, AH. Talluto, B. Development of a systematic approach to evaluate campus- and Web-based student professional socialization.[abstract] *AACP Annual Meeting 2003*.

Professional socialization is a self-determined, life-long process which combines knowledge, skills and abilities with attitudes, values and beliefs. Environmental influences such as interpersonal interactions (campus or web) and extracurricular activities augment this process. A self-assessment focusing on the professional attitudes, values and beliefs of students is being developed from questions obtained through literature review (pharmacy and other health care disciplines). The Behavior Professionalism Assessment Evaluation (BPAE), developed by Dana Hammer, helps faculty and preceptors qualify and quantify student development. Items from the BPAE will be reworded to ascertain student perceptions of these behaviors. The BPAE will also be administered during experiential activities. Faculty and preceptors will be asked to complete the assessment as a means of comparison and to identify key descriptors reflective of professional development. Faculty and preceptor input are necessary because consistent socialization requires open and regular communication between the triad. A panel of internal and external reviewers will assist with validation. The self-assessment will be administered to campus-based students enrolled in the first three didactic years during spring semester 2003. Administration to the first and second year web-based students (program initiated fall 2001) will occur in August 2003. Comparisons between self-assessment and BPAE findings will provide insight regarding the relationship between student perceptions and behaviors. Longitudinal administration will provide insight regarding the socialization process. Since professionalism is emphasized throughout the PharmD program, mapping findings (self-assessment and BPAE) to the curriculum may assist reform, with the goal of guiding future students more effectively through the socialization process.

Granberry, MC. Garza, RF. McIntyre, WJ. Assessment of student professionalism during acute care clerkships at colleges of pharmacy.[abstract] *AACP Annual Meeting 2001*.

Objective: The American Association of Colleges of Pharmacy has determined that student professionalism is an issue confronting pharmaceutical education. Our objective was to determine the methods used by Colleges of Pharmacy to assess student professionalism during their experiential clerkships. Methods: We solicited the competency and assessment forms used to assess students during acute care clerkships by Colleges of Pharmacy in the United States. From these forms we determined the percent of responding colleges that have a separate section dedicated to the evaluation of professionalism and the percent of the student's grade derived from the assessment of their professionalism. Finally, we categorized each college's competencies into similar domains and determined the percent of colleges that evaluate each domain of professionalism. Results: Of 50 colleges solicited, 26 (52%) provided competency and assessment forms. Fifty-eight percent (15/26) of respondents use a separate section to evaluate professionalism. On average, 16% of students' clerkship grades were derived from the assessment of professionalism (range 5 to 40%). The most frequently assessed competency domains were respectful interactions with others (69%), punctuality and attendance (62%), concern for patient welfare (50%), self motivation (50%), acceptance of criticism (42%), desire for lifelong learning (42%), accountability and responsibility (38%), honesty and integrity (38%) and patient confidentiality (38%). Twenty-three percent (6/26) of the colleges evaluated three or fewer domains. Implications: Assessment of student professionalism varies widely among Colleges of Pharmacy.

On average, a significant portion of student overall performance were derived from the assessment of professionalism.

Purkerson Hammer, D., Mason, H.L., Chalmers, R.K., Popovich, N.G., and Rupp, M.T. "Development and Testing of an Instrument to Assess Behavioral Professionalism of Pharmacy Students," *Am. J. Pharm. Educ.*, **64**, 141-151 (2000) Available at <http://www.ajpe.org/legacy/pdfs/aj640206.pdf>

The purpose of this project was to develop and test an instrument to assess pharmacy students' behavioral aspects of professionalism. An instrument was constructed to represent seven dimensions of behavioral professionalism. The instrument was reviewed by 90 experiential coordinators and preceptors from 49 pharmacy schools. The instrument was then revised to 37 items. It was piloted with Purdue pharmacy students and preceptors during Spring 1998. Exploratory factor analysis resulted in reduction to 25 items representing four factors: responsibility, interpersonal/social skills, communication skills, and appearance. A revised instrument was administered to 994 student/preceptor pairs from 17 pharmacy schools in Summer 1998. Factor analysis confirmed the original factors. The resulting reliability estimates were 0.95, 0.95, 0.88, and 0.83, respectively. The instrument appears to have content validity as assessed by experts, reliability and a factor structure as indicated by two analyses. Further refinement and testing could lead to a comprehensive measure of professionalism with potential use throughout pharmacy curricula, and within other disciplines and professions.

Readiness to enter practice/predictors of success

Kerr RA. Comprehensive Assessment of Readiness to Enter Practice. Presentation to AACP Annual Meeting PEP and Curriculum SIGs, July 2004.

http://www.aacp.org/Docs/AACPFFunctions/Governance/6279_ComprehensiveAssessmentofReadinesstoEnterPractice.ppt?TrackID=DKHHZ89FKBCARTHX84XY8D5PGTEMLPU7

Morris RN, Davis LE. Striking the Balance Between Comprehensive Assessment of Student Readiness to Practice And School Exposure to Liability by Student Negligence and Misconduct. Presentation to AACP Annual Meeting PEP and Curriculum SIGs, July 2004.

<http://www.aacp.org/site/tertiary.asp?TrackID=DKHHZ89FKBCARTHX84XY8D5PGTEMLPU7DKHHZ89FKBCARTHX84XY8D5PGTEMLPU7&VID=2&CID=1050&DID=6277>

Kidd, RS. Latif, DA. Traditional and novel predictors of classroom and clerkship success of pharmacy students. *Am J Pharm Educ.* 2003;67(4):Article 109. <http://www.ajpe.org/view.asp?art=aj6704109&pdf=yes>

Objective. This study was designed to assess the extent to which 7 traditional and novel predictors contribute to overall pharmacy grade point average (pharmacy GPA), first through third year pharmacy GPA (1-3 year GPA), and clerkship GPA of pharmacy students. Methods. This investigation used a convenience sample and a blinded retrospective record review of the first 3 class years of Doctor of Pharmacy students at Shenandoah University's Bernard J. Dunn School of Pharmacy (Classes of 2000, 2001, and 2002). Results. Pharmacy College Admissions Test (PCAT) score, essay score, California Critical Thinking Dispositions Inventory (CCTDI) and Skills Test (CCTST) were all significant predictors of pharmacy GPA. PCAT and CCTDI contributed significantly to 1-3 GPA. Finally, only the CCTST proved to be a significant predictor of the clerkship GPA. Conclusion. This study corroborated previous studies by concluding that several traditional predictors of students' performance appear to significantly predict academic outcomes. However, it advances the study of predictors of pharmacy students' performance by examining the role of critical thinking in students' performance. (23 refs.)

Stroke

Carter, JT. Allington, DR. Rivey, MP. Use of concept maps to assess clerkship students' knowledge of stroke.[abstract] *AACP Annual Meeting 2003*.

Objectives: The purpose of this study was to explore the use of concept maps as assessment tools in the clerkship setting. Scoring issues were specifically targeted. Methods: Eight clerkship students in an inpatient / rehabilitation rotation completed pre and post concept maps for stroke. During week one, students received instructions on map construction and drew a stroke pre-map. During the rotation, each student was assigned to follow at least one stroke patient and then present their case in the daily clerkship/preceptor conference. During week eight, students completed a stroke post-map. Two instructors scored each map based on the number of concepts, levels, examples, and cross-links. The instructors then scored each map together. Results: The pre and post scores for the two instructors were in high agreement for number of cross-links ($r=0.84$); concepts ($r=0.72$); and examples ($r=0.73$).

The two raters had low agreement on the number of levels in the maps ($r=0.08$). There was general agreement between instructors on individual map ranking order even though total scores differed. The greatest change in mean scores from pre to post maps was for number of examples, which went from 10.3 to 18.6 ($p=0.0592$). Some concepts, such as "atrial fibrillation as a risk factor for embolic stroke," appeared only in post maps. Implications: Concepts maps may be useful for assessing how a clerkship experience is influencing student knowledge of a disease. Because scoring may differ with instructors, efforts to standardize the scoring process are important.

For residencies

Khorana, KS. Paloucek, F. Survey of selection criteria for pharmacy practice residents.[abstract] *ASHP Midyear Clinical Meeting 2002*.

HIPAA-related issues

AACP PEP SIG Roundtable Discussion on HIPAA issues. *AACP Annual Meeting 2003*.

<http://www.aacp.org/site/tertiary.asp?TRACKID=DKHHZ89FKBCARTHX84XY8D5PGTEMLPU7&VID=2&CID=1047&DID=6150>

Identify learning opportunities at various sites

Briceland, LL. Brodeu, M. Cerulli, J. Development of a quality assessment tool to evaluate the scope of learning opportunities available to clerkship students participating in advanced practice experiences.[abstract] *AACP Annual Meeting 2003*.

Experiential faculty devised the QA assessment tool using as a template the college's CAPE outcome-based Student Evaluation form. Specifically, for each professional and ability-based outcome evaluated, ie, providing seven components of pharmaceutical care, evaluating literature, and exhibiting professionalism, citizenship, and aptitude in communications and self-learning, the learning opportunity at the site will be assessed, predicated on experiential learning cycle theory, which supports that the highest level of learning occurs when a student performs and is evaluated on an activity, and has opportunity to observe the outcome of the activity, as follows: The student: I=performs activity; II=observes the activity; III=reads/learns about the activity; or NA=no opportunity; The Activity is/is not evaluated; Opportunity does/does not exist for student to observe the outcome of activity/work. Upon data collation, sites where sufficient learning opportunity is lacking on the majority of items will be addressed. Implications: This process will offer an objective measure to assist colleges in offering quality experiences with optimal learning opportunity.

Improving Student Knowledge/Skills BEFORE Clerkship

IMPROVING STUDENTS' KNOWLEDGE SKILLS BEFORE CLERKSHIP

Carter M, Wesley G, Larson G. Didactic lecture versus instructional standardized patient interaction in the surgical clerkship. *Am J Surg*. 2005;Feb;189(2):243-8.

Medical schools increasingly employ the standardized patient interaction (SPI) as a teaching and testing modality to prepare students for USMLE Step 2 Clinical Skills (Step 2 CS). However, little is known about the perceptions medical students have toward SPIs. We hypothesized that the SPI would increase the self-confidence of surgery students in their history and physical examination (H&P) skills as compared with the classic lecture format and that students would perceive the SPI as a valuable learning tool.

AACP PEP-SIG survey about whether pharmacy students are educated with pharmacy technicians, June 2004

<http://www.aacp.org/site/tertiary.asp?TRACKID=DKHHZ89FKBCARTHX84XY8D5PGTEMLPU7&VID=2&CID=1049&DID=6155>

Ross, LD. El-Rachidi, AB. Jamero, DJ. White, C. Pharmacy student satisfaction during their experiential rotations. [abstract] *AACP Annual Meeting 2003*.

Objective: To assess pharmacy student clinical rotation satisfaction in order to highlight areas for PharmD curriculum improvement thereby increasing preparedness for patient-care oriented activities. Methods: 1- A study focusing on specific variables/areas of satisfaction and dissatisfaction with their curriculum was conducted. The

study is a descriptive, cross-sectional survey that was administered to all PharmD students attending XU and ULM who were in their experiential year of pharmacy school. 2- The survey consisted of 12 questions regarding their rotation experience. Questionnaires were either distributed to the students during their regularly scheduled professional experience program meeting or were e-mailed to students directly. 3- 60 surveys each were distributed to XU and ULM students. Results: Fifty-eight surveys were collected from XU students (96% collection rate) and 30 surveys were collected from ULM students (50% collection rate). Implications: The higher collection rate from XU is due to the method of collection. Analysis of the results were not completed at the time this abstract was submitted. Both colleges of pharmacy will have access to the data once analyzed for further assessment and enhancement of their programs.

Paulsen, S. Page, R. Nuzum, D. Student opinion of effectiveness of a longitudinal versus an elective herbal course.[abstract] *AACP Annual Meeting 2003*.

Barnhart, CA. Schwartz, JR. Philbrick, AH. Shalaby, KM. An evaluation of medication safety education in U.S. pharmacy school curricula.[abstract] *ASHP Summer Meeting 2003*.

Whelan, AM. Mansour, S. Farmer, P. Outcomes-based integrated hybrid PBL curriculum. *Am J Pharm Educ.* 2002; 66(3):302-311.

Whelan, AM. Mansour, S. Farmer, P. Outcomes-based integrated hybrid PBL curriculum. *Am J Pharm Educ.* 2002;66(3):302-311.

In 1995 we identified several goals for curricular change: increase accountability; lead practice; improved patient health care; increase graduates' communication skills; and improve graduates' problem solving. We developed an outcomes-based integrated hybrid problem-based learning (PBL) curriculum. The curriculum includes integrated PBL units, organized primarily by body system and disease states, a four-year skills laboratory, a three-year critical appraisal series, and practice experiences. The integrated PBL process simulates pharmacy practice and encourages students to develop and practice life-long learning skills. Students are assessed both in each curricular component and comprehensively. Evaluation of the curriculum includes evaluations by students, results of an annual progress examination, and several graduate, preceptor and employer surveys. The College has achieved complete curricular change with the first class graduating in the spring of 2001. Interim curricular evaluation results indicate students achieve levels of knowledge and skills similar to, or better than, those achieved previously. (8 refs.)

Reiman, AT. Grace, PM. Brazeau, GA. Morse, GD. Pre-clerkship intensive on-hands workshop on in-patient pharmacy practice.[abstract] *AACP Annual Meeting 2002*.

Objective: To implement and evaluate an intensive on-hands pre-clerkship workshop on inpatient pharmacy practice. Methods: Two weeks before starting their rotations, fourth year students participated in five distinct modules of inpatient pharmacy practice in a real-time on hands environment. Students assumed the roles of a staff pharmacist. The modules were: 1. medication order entry, 2. IV preparation, 3. controlled substance inventory, 4. cart fill, and 5. drug information. Student evaluation was competency based with 75% considered a passing performance. Students could not start rotations until they successfully completed this program. Approximately 45 students participated in two workshops in the fall 2001 semester. The workshops goals were evaluated by a student focus group and surveys mid preceptor and faculty continents. Results: Students believed this workshop was beneficial in providing direct on hands experiences, however the number of specific activities for the various modules was too many and distracted from learning. Preceptors reported that students were better prepared for their sites. Faculty thought this program was useful, but needed slight modifications before the next round to achieve the goals. Implications: A short intensive on-hands workshop on in-patient pharmacy practice is useful to prepare students for their rotations. This allows students to participate in a standardized mentored approach to learn important skills for institutional practice.

Cheresson, RS. Bilger, RL. Thomason, S. Design of a pharmaceutical care laboratory: A survey of practitioners.[abstract] *AACP Annual Meeting 2002*.

Objectives: To obtain practitioner input which will assist in the development of a new Pharmaceutical Care Laboratory; specifically, to obtain practitioners' opinion of the relative importance of various skills and abilities in a pharmaceutical care practice, and to obtain their assessment of our students' competencies in the skills indicated. Methods: 291 surveys were sent to preceptors involved in the Externship program of the St. Louis College of Pharmacy. The preceptors were asked to indicate, using a 5-point Likert scale, their opinion of the relative

importance of various skills and abilities in a pharmaceutical care practice. They were also asked to assess the level of competency of students they have recently precepted (in the last five years) in various skills and abilities, also using a 5-point Likert scale. 134 surveys were returned for a response rate of 46%. The data is being analyzed by the SPSS program. Implications: Practitioner input is essential in designing a Pharmaceutical Care Laboratory. Practitioners have the "real-world" experience needed to help us plan a laboratory with relevant activities and exercises. The results of this survey will be very valuable to us in doing so. In addition, an assessment of our recent students' strengths and weaknesses in various skills and abilities will enable us to design a laboratory which will help prepare graduates who are competent and confident in providing pharmaceutical care.

Malinowski, JM. A simulated pharmacy and therapeutics committee meeting to an infectious diseases module of a pharmacotherapeutics sequence.[abstract] *AACP Annual Meeting 2002*. Objectives: An educational strategy was developed for students to engage in the active learning process by applying drug information skills using written and oral communication to recently reviewed information on antibiotic pharmacotherapy. Methods: Sixty-four second professional year Doctor of Pharmacy students enrolled in an Infectious Diseases Module of a required 4-semester Pharmacotherapeutics sequence were divided into six groups. Using an instructor-defined topic assignment, each group developed a written submission suitable for inclusion into a simulated Pharmacy and Therapeutics Committee meeting agenda. Written information was assembled and distributed to the class and members of the committee (which included two faculty members and four 4th professional year Doctor of pharmacy candidates on an internal medicine and a drug information elective rotation) one week before the meeting. During the meeting, student representatives provided a brief oral presentation on the assignment and responded to questions from the committee. Following the presentation, students observed the committee interact and vote on each of the assignments. Students evaluated the presenters and their peers for their performance within the groups. Student evaluations of the assignment will be reviewed. Implications: Students will be successfully engaged in active learning while being exposed to the responsibilities of a pharmacist on a Pharmacy and Therapeutics committee and the role of a Pharmacy and Therapeutics committee as it relates to infectious diseases.

El-Ibiary, S. Tsourounis, C. Assemi, M. Innovations in teaching drug information involving online consumer queries.[abstract] *AACP Annual Meeting 2002*. Objectives: Expansion of drug information activities within a clinical clerkship to facilitate development of consumer oriented drug information skills. Student and resident activities include individual assignment of consumer queries, self-evaluation, collaborative learning, and peer-evaluation of written responses. Methods: Third and fourth year students and residents are assigned consumer drug information queries received from an online "Ask Your Pharmacist" (AYP) Service. Students and residents independently identify drug information questions within consumer queries, evaluate available patient background information, and research questions using drug information resources and literature. Students and residents self-assess their work. Responses are reviewed for content, organization, spelling, grammar, and readability (e.g., appropriate use of lay language). Select responses are discussed and/or peer-reviewed among students or residents for teaching purposes. Faculty discuss revisions with students and residents to formulate a final response. In addition, residents develop experience in serving as preceptors by reviewing and editing student work. Implications: Third and fourth year students and residents obtain consumer oriented, written drug information skills within a drug information rotation. This experience familiarizes students and residents with questions commonly asked by consumers, reinforces drug information retrieval and evaluation skills, and enhances written communication.

Coleman, CA. Johnson-Fannin, A. Cultivating academic leaders through a vision realized. [abstract] *AACP Annual Meeting 2002*.

Hampton University School of Pharmacy has set a determined path to develop pharmacists able to advance the profession of pharmacy. As stated in its Vision Statement, "The School of Pharmacy envisions the delivery of its programs in an environment constructed to sensitize the pharmacy graduate to the importance of diversity of cultures, the need for lifelong learning, and a lasting respect for health." With the graduation of its inaugural class in May 2002, the first of its dreams were realized. Most of these graduates are pursuing residency training leading to the formation of practitioners ready to tackle the rigors of academia. By providing innovative coursework, practice experiences, research, and professional development, students are tooled with skills necessary to impact the profession. Integrated concepts of basic, clinical, and administrative sciences are presented simultaneously providing a layering of information. Advanced technology allows continuous access to network and database infrastructure through both wired and wireless capabilities. Critical thinking skills are seamlessly developed through didactic case studies, early experiential education, fourth-year clerkships, and interactions with faculty in research activities.

Students and faculty present research findings at both state and national symposia. Hampton University School of Pharmacy fosters leadership within its student body by exemplifying leadership within its faculty. Faculty serves as officers and on Boards in several pharmacy organizations including the National Pharmaceutical Association, Association of Minority Health Professions Schools, and International Society of Hypertension in Blacks.

Slack, MK. McEwen, MM. Student experience with community health workers facilitates cultural competence.[abstract] *AACP Annual Meeting 2002*.

Kolesar, J. Pitterle, M. Hoel, S. Sobotkiewicz, S. Integration of pharmacogenomics into the pharmacotherapy laboratory. [abstract] *AACP Annual Meeting 2002*.

Dunn, EC. DeKorte, CJ. Student perceptions of physical assessment skills.[abstract] *AACP Annual Meeting 2002*.

Cerulli, J. Schreck, J. Weck, M. Zeolla, M. Evaluation of drug information requests in community pharmacy.[abstract] *AACP Annual Meeting 2002*.

Malinowski, JM. A simulated pharmacy and therapeutics committee meeting to an infections diseases module of a pharmacotherapeutics sequence.[abstract] *AACP Annual Meeting 2002*.

Jones, RM. Monaghan, MS. Faulkner, M. Ryan-Haddad, A. Are students achieving the desired outcomes? - A performance assessment of the school's ability-based outcomes.[abstract] *AACP Annual Meeting 2002*.

AACP PEP-SIG Professionalism for Students Summary Report of the Task Force June 17, 2002
<http://www.aacp.org/site/tertiary.asp?TrackID=DKHHZ89FKBCARTHX84XY8D5PGTEMLPU7DKHHZ89FKBCARTHX84XY8D5PGTEMLPU7DKHHZ89FKBCARTHX84XY8D5PGTEMLPU7&VID=2&CID=1050&DID=6153>

Newton, GD. Stutz, JL. Development, implementation and evaluation of a computer-based simulation for problem solving instruction in self-care pharmacy practice.[abstract] *AACP Annual Meeting 2001*.

Shuford, V. Wright, B. Hill, L. Calarco, P. Digital curriculum: pharmacy and library collaboration to support the PharmD curriculum.[abstract] *AACP Annual Meeting 2001*.

Waite, N. Hobson, E. Documenting gains in student professional abilities through an active learning-based pharmacotherapeutics course sequence.[abstract] *AACP Annual Meeting 2001*.

Zlatic, T. Maddux, M. Hurd, P. Beale, J. Integrating general and professional ability outcomes through writing.[abstract] *AACP Annual Meeting 2001*.

Madejski, RM. Implementing an immunization certificate program in the PharmD curriculum.[abstract] *AACP Annual Meeting 2001*.

Page, RL. Saseen, JJ. Follin, SL. Hammer, D. Implementation of an oral examination process in a pharmacotherapy course series.[abstract] *AACP Annual Meeting 2001*.

Calligaro, IL. Borenstein, MR. Jacobs, MR. Burman, CA. Implementation of sequential learning activities integrating professional and general abilities.[abstract] *AACP Annual Meeting 2001*.

Glasser, D. Caffee, A. Ahrens, R. Johnson, M. Standardized patient assessment--innovations in pharmaceutical education.[abstract] *AACP Annual Meeting 2001*.

Fant, WK. Wall, A. Brown, B. Kessinger, C. Professional and general abilities assessment in a pharmacy practice skills laboratory sequence.[abstract] *AACP Annual Meeting 2001*.

Caffee, A. Glasser, D. Ahrens, R. Johnson, M. Implementation and assessment of a novel strategy to teach interprofessional communication skills.[abstract] *AACP Annual Meeting 2001*.

Improving Student Knowledge/Skills DURING Clerkship

University of North Carolina Clinical Scholars Program.

<http://www.aacp.org/site/tertiary.asp?TRACKID=&VID=2&CID=53&DID=4963#Policies%20on%20Experiential%20Education%20&%20Training> The Clinical Scholars Program of the UNC School of Pharmacy is like an honors course for the Professional Experience Program. The goal of the Clinical Scholars Program is to provide a challenging combination of clinical experiences that will prepare those students who plan on completing post-graduate training. The Clinical Scholars Program focuses on either (a) inpatient experiences, or (b) outpatient experiences

Goldman-Levine, JD. Mukherjee, SM. Karish, SB. Evans, JN. Hardy, H. et al. The effectiveness of faculty-led ambulatory care workshops to enhance pharmacy student's clinical skills. [abstract] *ASHP Midyear Clinical Meeting 2004*.

An Ambulatory Care Practice Group (ACPG) was developed to foster faculty and student professional development. Within this group, five weekly faculty-led learning sessions are held during the student's six week ambulatory care rotation. ACPG faculty identified five topics pertinent to the practice of ambulatory care and developed workshops designed to strengthen student's clinical skills in these areas. Objective: To evaluate the effectiveness of faculty-led ambulatory care learning sessions to improve clinical skills for sixth year Pharm.D. students. Methods: Five workshops and learning sessions were developed addressing the following subjects: Hypertension, Diabetes, HIV/113, Asthma and Geriatrics. These workshops are repeated every six weeks for each new rotation. Students are asked to anonymously evaluate each workshop on whether they strongly agree, agree, are neutral, disagree or strongly disagree with the following statements: The topic was interesting, the topic was relevant, the topic was at an appropriate level, the topic was organized, the presentation increased my knowledge, you would recommend this session to a friend?. Descriptive feedback is also solicited asking for at least two aspects of the program that the student liked, suggestions to improve the session, and if these sessions should continue for the next group of ambulatory care students. Data collected will be analyzed to evaluate the effectiveness of the faculty led sessions. IRB approval was obtained and informed consent from participating students is obtained from all students at the start of each ambulatory care rotation.

Wharton, B. Brown, M. Williams, R. A systematic approach to promoting leadership development through pharmacy residency programs nationwide.[abstract] *ASHP Midyear Clinical Meeting 2004*.

Weitzel, KW. Gums, J. Nguyen, B. Terpening, C. A post-clerkship pharmacotherapy course. *Am J Pharm Educ*. 2003;67(4):Article 110. <http://www.ajpe.org/view.asp?art=aj6704110&pdf=yes>

Objective. A required 8-week, 2-credit hour, postclerkship pharmacotherapy course was incorporated into the Doctor of Pharmacy curriculum in the spring of 2001. This article reviews the implementation and evaluation of this pharmacotherapy course in its first 3 years. Methods. Presurvey and postsurvey instruments were administered to the students, assessing their attitudes about the class and its application to their ability to practice as a pharmacist. Students also completed standard course and instructor evaluations, and a written evaluation was administered at the end of the course to further identify students' perceived strengths and weaknesses of the class. Results. One hundred students completed the course the first year, with a mean final score of 94%. The majority of students agreed or strongly agreed that the course would provide them with the opportunity to demonstrate clinical and therapeutic knowledge and presentation skills, and the ability to answer faculty and student questions. Twenty percent of students agreed or strongly agreed that it would be useful to return to campus for didactic classes after completing clerkships, while 39% of students were neutral and 41% felt that it would not be useful. Conclusion. This course was well received by students and faculty. Feedback from surveys and student evaluations continues to shape the direction and format of the course. (3 refs.)

Sauer, BL. Winter, ME. Youmans, SL. Inciardi, JF. Young, LY. Student research projects as a foundation for career success.[abstract] *AACP Annual Meeting 2003*.

Pharmacy students today must be prepared to adapt to emerging roles throughout their careers. Scientific inquiry, a skill that can be developed through design and completion of a research project, provides a foundation for future success. In 1998, UCSF implemented a revised curriculum comprised of a core (2/3 of the units for graduation) and three pathways. The pathways (Pharmaceutical Care, Pharmaceutical Health Policy and Management, Pharmaceutical Sciences) provide a foundation for a career focus. To better prepare our students to be successful, the School now requires all students to complete a research project. The nature of these projects differs by pathway. In the Pharmaceutical Care Pathway, students may collaborate on a project to assess drug therapy outcomes, an aspect of the drug use process (eg, Medication Use Evaluation), or some other characteristic of the pharmaceutical services provided. In the Pharmaceutical Health Policy and Management Pathway, the health services research project is a combined practicum-clerkship. In the Pharmaceutical Sciences Pathway, the research project is a pre-clinical or clinical pharmacology-based project contributing toward drug development. We will provide a brief description of the process and challenges associated with implementing required projects and showcase some examples of those completed in 2002-03.

Plake, KS. Wilhite, T. Krypel, L. Implementation of a nonprescription medication use service: The student experience. [abstract] *AACP Annual Meeting 2003*.

Objectives: To give students experience in the implementation of a patient care service, and enhance their knowledge of nonprescription medication use in cardiac patient population. Methods: As a part of a four week cardiology rotation, students assisted in the implementation of a nonprescription medication use service in a clinic setting. Student responsibilities included contacting eligible patients prior to and after the appointment, obtaining informed consent, interviewing patients, assessing the appropriateness of nonprescription medications, and making recommendations to patients and physicians. Students were surveyed before and after their experience with the patient care service. Using the Wilcoxon Sign Ranks test, responses were compared to determine the students' perceptions of the experience and their learning. Results: After completing the experience, students felt more (1) knowledgeable about nonprescription medication use ($p=0.005$) and drug-herb interactions ($p=0.012$), (2) able to implement a patient service program ($p=0.033$), (3) able to collect patient data and make recommendations ($p=0.007$), (4) confident in discussing nonprescription medication use with patients ($p=0.16$), and 5) confident in making recommendations to physicians regarding patients' use of these medications ($p=0.002$). Implications: Student experience with this patient care service enhanced their knowledge and confidence in caring for patients using nonprescription medications as well as their ability to implement a patient care service. Since there is an increasing emphasis within the pharmacy community for these types of patient services, experiences similar to this one would help students feel more capable of implementing a patient care program when entering practice.

Melnyk, SD. Rodgers, PT. Joyner, PU. Use of an interactive case presentation to teach problem solving in an ambulatory care elective. [abstract] *AACP Annual Meeting 2003*.

Objectives: Problem-solving and critical thinking skills are essential to student performance on clinical clerkships. Interactive case presentations serve as a means of teaching these skills in the classroom setting. The purpose of this study is to determine if this strategy used in our ambulatory care pharmacy elective class is effective in regards to improving student performance on future ambulatory care clinical clerkships. Methods: Third-year pharmacy students may enroll in this elective, the year before they go on clerkships. One or two students in the class are assigned to one of eleven therapeutic topics. Students evaluate an actual patient with the assigned disease at a real clinic. The students then lead an interactive presentation of their patient with the class, encouraging comments and questions to facilitate the work-up, including assessment and plan of the problem. The students present primary literature to support their recommendations and rigorously critique the studies' with the class. To determine the effects on their ambulatory care clerkships, the ambulatory care rotation grades of students who have taken the class are compared to a separate group of pharmacy students who have not taken the elective. Results: One hundred third-year pharmacy students have completed the elective from Spring 2000 to Spring 2002, and will have ambulatory care clerkship grades available for evaluation. Data collection is ongoing. Implications: Evaluating student performance on ambulatory care rotations following participation in the ambulatory care elective will provide insight into the application of an interactive case presentation as a learning strategy.

Paulsen, SM. Turner, CJ. Health-promotion activities in the community setting. [abstract] *AACP Annual Meeting 2003*.

Objective: Develop health-promotion and disease-prevention patient interview tools for use by P2 students in their community pharmacy based experiential course. Methods: P4 students on an elective education rotation were asked to create health-promotion/disease-prevention tools for use by P2 students in their community pharmacy-based

introductory experiential course. These tools serve as a resource guide for conducting interviews with patients in the community pharmacy setting. Each P4 student was allowed to choose a topic and given a template. One course director of the introductory pharmacy practice experiential courses reviewed the tools for content, accuracy and utility. Clinical Pharmacy faculty chosen for their areas of expertise conducted the final review. These interview resource guides now reside on the School of Pharmacy website for use by students and preceptors. Monographs on colorectal cancer screening, breast cancer screening, hypertension, hypothyroidism, depression, and gastroesophageal reflux disease were created in the Fall 2002 semester by five P4 students and one pharmacy practice resident, and are in use by P2 students in the Spring 2003 semester. Use of these tools by P2 students will be assessed at the end of the Spring 2003 semester. Implications: The utility of this project is two-fold (1) It mentors P4 students into leadership roles for promoting effective patient communication in the community pharmacy setting, and (2) promotion of pharmacy practice in supporting accessible promotion of public health.

Velez, AE. Gutierrez, LM. Evaluation of an introductory practicum for first professional year students in an ability-based PharmD program.[abstract] *AACP Annual Meeting 2003*.

Eley, MT. Nemire, RE. Integrating social-behavioral pharmacy concepts and early experiential education to facilitate student learning.[abstract] *AACP Annual Meeting 2003*.

Jones, RM. Monaghan, MS. Faulkner, M. Ryan-Haddad, A. Are students achieving the desired outcomes? - A performance assessment of the school's ability-based outcomes. [abstract] *AACP Annual Meeting 2002*.
Objectives: Our school recently developed 12 ability-based outcomes (ABO) for graduates. The purpose of this project was to determine the effectiveness of the curriculum in preparing students to meet these ABO and evaluate the effectiveness of an experiential ABO assessment instrument developed for clerkships. Methods: Forty-eight randomly selected senior students were randomized into two groups of 25 each (intervention and control). Prior to beginning clerkships, all students completed a 12-station pharmacy objective structured clinical examination (P-OSCE) using standardized patients (SPs). After this initial assessment, all students completed their clerkships. During the clerkship year, the intervention group had their performance monitored using a formative ABO assessment instrument. The control group did not. At the end of the clerkship year, all students repeated the P-OSCE. Stations were videotaped and scored by a faculty-grading panel according to performance criteria. Results: Student performance data will be presented as an overall and a per-case percent score. Group means will be compared before and after the fourth year to determine the effectiveness of the formative ABO assessment instrument. Implications: The data presented will be used to (i) evaluate how well the curriculum prepares students for the performance of the ABO; and (ii) validate the effectiveness of the experiential ABO assessment instrument as a formative evaluation process.

El-Ibiary, S. Tsourounis, C. Assemi, M. Innovations in teaching drug information involving online consumer queries.[abstract] *AACP Annual Meeting 2002*.

Brown, DL. Ferrill, MJ. Hinton, AB. Shek, A. Self-directed professional development: pursuit of affective learning. *Am J Pharm Educ*. 2001;65(3):240-246.

Howard, PA. Student attitudes toward web-based case studies on a cardiology clinical clerkship. [abstract] *AACP Annual Meeting 2001*.

Legal issues with comprehensive assessment

Morris RN, Davis LE. Striking the Balance Between Comprehensive Assessment of Student Readiness to Practice And School Exposure to Liability by Student Negligence and Misconduct. Presentation from *AACP Annual Meeting 2004*

<http://www.aacp.org/site/tertiary.asp?TrackID=DKHHZ89FKBCARTHX84XY8D5PGTEMLPU7DKHHZ89FKBCARTHX84XY8D5PGTEMLPU7DKHHZ89FKBCARTHX84XY8D5PGTEMLPU7&VID=2&CID=1050&DID=6277>

Marketing Exp Ed to Faculty and Administration

AACP PEP-SIG Committee on Marketing. Developing Strategies for Marketing Experiential Education to Administration/Faculty (i.e., get more knowledge out to Faculty and Administration). Alexandria, VA: July 2004. <http://www.aacp.org/site/tertiary.asp?TRACKID=DKHHZ89FKBCARTHX84XY8D5PGTEMLPU7&VID=2&CID=1069&DID=6260>

Matching preceptors to students

Lockwood-Rayermann S. Preceptor leadership style and the nursing practicum. *J Prof Nurs.* 2003; 19(1): 32-7. http://www.sciencedirect.com/science?_ob=MIimg&_imagekey=B6WKV-4869WHV-8-1&_cdi=6916&_user=582538&_orig=browse&_coverDate=01%2F31%2F2003&_sk=999809998&_view=c&_wchp=dGLbVlb-zSkzV&_md5=185b2d3496e1279e5f4566fd74b53e1a&_ie=/sdarticle.pdf Student learning and clinical experience can be influenced directly by the leadership characteristics that a preceptor possesses. To make the experience of precepting positive and beneficial for preceptor, student, and faculty, an examination and discussion of the potential preceptor's leadership style should be conducted.

Preceptor relations/assessment

AACP PEP-SIG Committee on Preceptors. Preceptors: Understanding and consistency in performance -- do preceptors understand expectations of the university? Is there consistency with assessment? Alexandria, VA: July 2004. <http://www.aacp.org/site/tertiary.asp?TRACKID=DKHHZ89FKBCARTHX84XY8D5PGTEMLPU7&VID=2&CID=1069&DID=6261>

Quality Assurance in Exp Ed/Practitioner Input

Cerulli J and Malone M. Using CAPE Outcomes-Based on Goals and Objectives to Evaluate Community Pharmacy Advanced Practice Experiences. *Am J Pharm Educ.* 2003; 67(2): 1-4 <http://www.ajpe.org/aj6702/aj670234/aj670234.pdf>

A focus group of preceptors was convened to conduct a needs assessment. Resulting document combines CAPE-based objectives with specific clerkship activities and assessment tools, as well as a midpoint and final evaluation form. The document has been used for 55 experiences, resulting in positive feedback from preceptors and students.

Kieser, MA. Assuring quality in experiential learning: Establishing a quality review council.[abstract] *AACP Annual Meeting 2003.*

A Quality Review Council was established and guidelines were set. The council meets on a quarterly basis and has completed significant activities in the short time it has been established. The council has reviewed clerkship policies and procedures and set expectations for students and pharmacists. The council has also pushed to have student feedback provided to pharmacists in a timely fashion and in an easy to use format.

Krause, JE. Shepler, BM. Abel, SR. Quality assurance for experiential programs at Purdue University.[abstract] *AACP Annual Meeting 2003.*

Preceptors review the student's clerkship portfolio at the beginning of each rotation which allows for maximization of the student experience. Students complete a mid-rotation self-assessment and receive preceptor feedback in addition to the end-of-rotation assessment. Students precepted by non-faculty members are visited on-site each month by a clerkship coordinator who reviews rotation specific opportunities and communicates program information to the student and preceptor. Throughout clerkship, students maintain competency assessment checklists (skilled based, ambulatory objectives, inpatient objectives) which correspond to the School's general and professional outcome abilities. Interactive sessions are scheduled each month in four locations throughout Indiana allowing students and preceptors to exchange project ideas and information. Students complete assessments of each rotation which are summarized and serve as the basis for feedback to preceptors at the conclusion of each clerkship year. Each student completes an exit survey providing the School with written feedback regarding all aspects of the experiential program. Preceptor/Coordinator conferences are held each spring at six locations throughout Indiana allowing preceptors to exchange ideas and for the School to discuss program refinements with the conference attendees. These quality assurance initiatives have facilitated student progress, supported site and preceptor development, and standardized experiential education at Purdue University.

Rotation-specific Innovations/descriptions

Academic/Research (not all do both)

****RESEARCH**** Ter Riet L, Coll R, Reilly K, Fitzgerald T. Pharmacy society and industry partnership to enhance residency training in Florida. *ASHP Midyear Clinical Meeting 2003*.

****Includes DI****Kendrach MG. Drug information pedagogics - advanced practice experience (clerkship). *ASHP Midyear Clinical Meeting 2003*.

A pedagogic (teaching) clerkship rotation has been developed not only to stimulate students to consider academia as a practice type, but also prepare them to be pharmacy mentors and/or supervisors. The primary learning objectives of the pedagogic advanced practice experience are: Develop skills in planning/preparing to teach in a pharmacy-related course; prepare class lecture materials/content and effectively deliver; develop skills in assessing student performance; build skills in motivating students; display professional performance and demonstrate leadership skills. The Drug Information (DI) Pedagogic rotation is designed for the student to complete both the required DI plus elective pedagogic rotations over two consecutive months. During the first month, the majority of the DI plus selected pedagogic rotation goals and objectives are completed. The experiences gained during the first month plus constant preceptor feedback will be used by the student to teach the following month's clerkship students. In addition, the pedagogic student is required to partake in the teaching (i.e., lecturing) of the required didactic DI class. Furthermore, the pedagogic student prepares exam questions, grades student projects, assesses student performances, plus provides feedback to the instructors for improving various teaching activities. The student is provided a notebook of required readings that are discussed during the rotation with the preceptors; additionally, the contents are used to complete the rotation learning experiences. By the end of this two month learning session, the student should be better prepared to not only teach, but also nurture individuals to become competent practitioners.

****RESEARCH****Hu JH, Shi LF, Cai Z, Quan SC, Sun HJ. A new internship program for pharmacy students. *Pharm Care Res. (Yaoxue Fuwu Yu Yanjiu)*. 2003;3(1):16-18.

Internationally there has been acknowledgment that pharmacy education has evolved from a drug-centered model to a patient-centered care model. Pharmacy education now goes beyond teaching specific laboratory research competence emphasized before to include integration of skills and attitudes necessary in future pharmacy. Results of a graduated student career survey suggested that pharmaceutical college graduates are more likely to be employed as pharmacists in hospital settings and in community settings in China. Pharmacists in patient focused settings must be competent in a number of essential skills to deliver pharmaceutical care rather than skills in laboratory research. A reform in pharmacy practice internship program designed for the goal is discussed in this paper. The program includes two steps the students must be taken: (1) experimental research in laboratory to learn basic conception for operating a project, (2) an indepth investigation in pharmacy which is different from traditional rotation to gain the abilities to identify problems and solve them. Students will complete a research report and an investigation report to further their problem-solving skills in varied areas of pharmacy. The innovative practice program has been implemented for five years and was welcomed by the students who took part in the practice. The impact of the program on pharmacy education focusing on training students' skills needs further assessment. (13 refs.)

Todd TJ, Burkiewicz JS, Patton LR, Zgarrick DP. Increasing types and numbers of residents to meet society's needs in a dynamic time. *AACP Annual Meeting 2003*.

Patton LR, Fjortoft N. Leadership and teaching skills for successful pharmacists. *AACP Annual Meeting 2003*.

****RESEARCH**** Hinton S, Pillifant B, Hart T, Bailey J, Kishore V. Integration of research methodology in clinical experiential training of senior entry-level PharmD students: An innovative approach. *AACP Annual Meeting 2003*. Objective: To develop an innovative experiential rotation for PharmD students whereby practical aspects of research involving human subjects are seamlessly integrated into a traditional clinical experiential rotation. Methods: The rotation was developed using research objectives from an NIH-funded longitudinal experimental study to test the effectiveness of pharmacist delivered alcohol intervention. During each 4-week long rotation, two to three students are made an integral part of the research team. Students not only "shadow" the research team, they also actively participate in various aspects of the study such as subject recruitment; data collection, entry, and management using ACCESS and SPSS; and follow up. They also complete a certification on protection of human subjects and a mock Institutional Review Board application; and make a 50-minute oral presentation on latest developments in alcohol

use prevention. Finally, they also master various drugs used in the treatment and rehabilitation of alcoholism. Results: The new rotation was begun in April 2002 and so far 17 students have participated in it. Feedback from the students indicates high enthusiasm both for the hybrid format and the learning outcomes. Most favored learning activities cited are the ACCESS Project, and interaction with the subjects in the health care centers. Least favored activity was reading assignments which were deemed to be extensive. Implications: Our innovative approach affords senior PharmD students an opportunity for learning practical aspects of research involving human subjects, an opportunity that is not available through other more traditional experiential rotations.

****Applied teaching**** Bislew HD, Janke KK. Mentoring pharmacy students in the design and development of educational materials for Online self-study courses for non-pharmacy students. *AACP Annual Meeting 2003*. Objectives: To provide opportunities for students to participate in the development of a new course, thereby building instructional skills and developing an understanding of educational design/development processes. Methods: Honors projects and clerkships were used to assist in developing Phar 1003: Self Care: A Guide to Today's Nonprescription Pharmacy, a two credit online, self-study elective for University students. E-mail solicitations were sent to all pharmacy students and non-traditional PharmD Clerkship students. After orientation to the syllabus, students worked on assigned topic areas, submitting materials, receiving comments and re-drafting according to mutually determined timelines. To assist in student learning, a number of online instructional resources were provided, such as information on how to write multiple-choice questions. Results: Two honors students and four clerkship students developed educational materials, which included instructional objectives, educational handouts, self-test questions, and audio-narrated PowerPoint presentations. To support a quality educational experience, it is necessary to orient the students to the "audience" of the course, convey clear expectations, properly equip the students with resources, and emphasize the importance of meeting deadlines. Participants reported enjoying this unique educational opportunity and valuing the feedback. With improvements based on this initial experience, this student-involvement model will be used in preparing a Rehabilitation Pharmacotherapy course. Implications: When developing a course, students at a variety of levels can play an important role, gaining instructional skills as they assist in creating educational materials. These experiences provide confidence, appreciation for the educational process, and may encourage participants to consider future involvement in instruction.

****RESEARCH**** Sauer BL, Winter ME, Youmans SL, Inciardi JF, Young LY. Student research projects as a foundation for career success. *AACP Annual Meeting 2003*. Pharmacy students today must be prepared to adapt to emerging roles throughout their careers. Scientific inquiry, a skill that can be developed through design and completion of a research project, provides a foundation for future success. In 1998, UCSF implemented a revised curriculum comprised of a core (2/3 of the units for graduation) and three pathways. The pathways (Pharmaceutical Care, Pharmaceutical Health Policy and Management, Pharmaceutical Sciences) provide a foundation for a career focus. To better prepare our students to be successful, the School now requires all students to complete a research project. The nature of these projects differs by pathway. In the Pharmaceutical Care Pathway, students may collaborate on a project to assess drug therapy outcomes, an aspect of the drug use process (eg, Medication Use Evaluation), or some other characteristic of the pharmaceutical services provided. In the Pharmaceutical Health Policy and Management Pathway, the health services research project is a combined practicum-clerkship. In the Pharmaceutical Sciences Pathway, the research project is a pre-clinical or clinical pharmacology-based project contributing toward drug development. We will provide a brief description of the process and challenges associated with implementing required projects and showcase some examples of those completed in 2002-03.

Hixson-Wallace JA, Turberville-Vega V, Strom JG, Jackson RA. Academic courses and experiences at Mercer University Southern School of Pharmacy. *AACP Annual Meeting 2002*.

Lintner KA, Martin BA. Design and implementation of a teaching certificate program for pharmacy residents. *AACP Annual Meeting 2002*

Coleman CA, Johnson-Fannin A. Cultivating academic leaders through a vision realized. *AACP Annual Meeting 2002*.

Haase KK. Incorporating clinician-educator training into a school of pharmacy-based residency program to cultivate future academicians. *AACP Annual Meeting 2002*.

Scimeca SG, Owens NJ, Hume AL. Academic longitudinal rotations. *ACCP Annual Meeting 2002*.

Sanoski C, Boyce E, Takiya L, Peterson A, Poon C. Description and analysis of an elective teaching rotation. *ACCP Annual Meeting 2002*.

Medina MS, Reinke LA, Swanson KA, Burton ME. Introducing students to the many faces of pharmacy. *ACCP Annual Meeting 2002*.

Aparasu R, Billow J, Currie B, Dwivedi C, Van Riper G. Multi-year commitment to developing future faculty members and future leaders. *ACCP Annual Meeting 2002*.

The SDSU College of Pharmacy has been engaged in a multi-year commitment to encourage students to become interested in an academic career and develop leadership skills. These approaches include involving students in research projects, students involved in campus activities outside of the classroom, students involved in professional pharmacy organizations and/or selection of a P-4 elective rotation with a faculty mentor. The Research Committee sponsors an optional lunch meeting for students interested in research with a faculty member. Faculty make brief presentations of projects available for students. After students and faculty agree to work together, applications are submitted for AFPE Merck and Gateway fellowships, and on-campus programs such as the Joseph Nelson Summer Research and/or NSF EPSCoR programs that fund stipends for the summer semester. These stipends are only obtained following the submission of a competitive proposal that is developed by the student and faculty member. Many pharmacy students are involved in interscholastic athletics, band, chorus, and student government. In addition, College chapters of ASP, Phi Lambda Sigma, Kappa Epsilon, Kappa Psi, and Rho Chi are very active, and they provide multiple opportunities for faculty and students to work together outside of the classroom. Data will be reported concerning the specifics and outcomes of these activities.

Scott, SA. Exposing students to careers in academic pharmacy at Purdue University. *ACCP Annual Meeting 2002*
Purdue University has a long tradition of supplying academic pharmacy with many faculty and administrators. In an attempt to encourage more professional degree students to consider pursuing post-graduate educational opportunities and a career in academic pharmacy, several independent efforts have been started by faculty and administrators. These efforts include: 1. Using upper level undergraduate students as teaching assistants in first and second professional year courses. Students receive academic credit and acquire the experience of teaching and tutoring other students. 2. Many students participate in undergraduate research opportunities with a number of faculty exposing the students to both faculty and graduate students as they work on their research. 3. Students now have the opportunity to complete an academic clerkship where they work one-on-one with pharmacy faculty and get a real taste of academic life both in the classroom and lab but also behind the scenes. 5. A career exploration workshop has been developed where students actively explore and report on the benefits, limitations, and required education/training for a variety of different career options, one being pharmacy education. 6. The most recent effort to expose students to academic pharmacy is the Dean's Executive Forum, a weekly seminar class which features a variety of leaders in pharmacy, many of who are Deans at other schools of pharmacy. These academicians share their personal stories with students, describing why they choose a career in pharmacy education.

Cannon BC, Kawahara NE. Contemporary pharmacy practice: An academic experience for senior students. *ACCP Annual Meeting 2002*

This poster outlines the use of senior pharmacy students as instructors in a core curriculum course. Since 1995, 111 senior students have provided instruction to students enrolled in Contemporary Pharmacy Practice, a core course designed to introduce students to patient counseling and to enhance their problem solving skills. During each six-week rotation, senior students are responsible for instructional design, implementation, and evaluation in two of the four performance-based laboratories. Goals and objectives for the senior students focus on lecture planning and delivery, feedback skills, small group facilitation, defense of grading decisions, and development of standardized role-playing scenarios. Feedback from enrolled students indicates the perception of a positive effect on learning as a result of working with senior students. Furthermore, feedback obtained from end of module surveys indicates that the senior students perceive the rotation to be a positive experience. Additional information from graduates will be evaluated to determine the impact of this experience with regard to career choices, and involvement in additional academic-related activities.

Isetts BJ, Schommer JC. Building a culture of success for future academic leaders: The Minnesota experience. *ACCP Annual Meeting 2002*.

Background: The University of Minnesota has a history of cultivating academic pharmacy's future leadership. Early successes in cultivating future leaders focused on the networking efforts of influential deans and faculty members combined with the initiation of innovative graduate school programs. Methods: Encouraging students to pursue careers in academia are facilitated by the successes of previous Minnesota graduates. Current programs for cultivating future academic leaders include those designed for professional students and those for graduate school students. Professional school programs include: the Mentoring Program, the Melendy Scholarship Program, the Research Day Program, Academic Experiential Clerkships, and the Research Track emphasis option. Graduate school programs include: Practicum for Future Faculty, AFPE Scholarships, M.S. in Leadership, Seminar Series for Teaching and Research, the Peters Scholarship Program, and the Program for Preparing Future Faculty. Results: The learning objectives and the numbers of students participating in each professional school academic leadership program will be presented. A listing of academic leaders from Minnesota, including over 100 graduates who have completed doctoral and master's levels degrees in Social and Administrative Pharmacy, will be displayed. Discussion: The University of Minnesota College of Pharmacy has established a reputation of cultivating academic pharmacy leaders. Current programs have been created to build a culture of success among students by drawing upon the pioneering efforts of previous Minnesota leaders.

Kalis MM, Sylvia L, McCloskey W, Welch B. Experiential rotations aimed at stimulating interest in academic careers. *ACCP Annual Meeting 2002*.

Exposure to academic career paths is offered to interested MCPHS students through experiential rotations in addition to informal activities throughout the PharmD curriculum. One of the primary aims of the experiential education program at MCPHS is to provide a wide range of experiences to PharmD students. Students may select up to three elective rotations. Among the elective rotations are several options that allow students to gain an appreciation of the career opportunities available in academia. Students have the opportunity to work with pharmacy practice faculty members as teaching assistants or academic administrators during these four week rotations. The rotations provide students with hands-on experience with the three facets of academia; teaching, service, and scholarship. Students are exposed to educational literature, didactic and experiential instruction and assessment strategies, accreditation issues, scholarly activities, and committee responsibilities. In addition to their primary preceptor, students are encouraged to interact with other faculty members and academic administrators to gain a greater appreciation for the career opportunities available in academia. Faculty members have precepted both traditional and non-traditional PharmD students in these academic rotations. In addition to students, pharmacy residents in affiliated residency programs are given the opportunity to learn more about teaching and academic administration. It is our hope that offering students exposure to the field of academia will inspire future academic leaders.

Roche VF, Alsharif NZ, Garis RI, Haddad AM, Vuchetich PJ. Fostering interest in academic careers through structured academic clerkship experiences. *ACCP Annual Meeting 2002*

Career choice decisions are among the most important students make, as they profoundly impact one's level of professional and personal satisfaction. The impact of positive role models in making this critical decision cannot be overstated. While pharmacy schools have focused intently on guiding graduates into rewarding practice or research careers, they have not been explicit in promoting the academy as a viable career path. To allow students an in-depth and focused opportunity to explore the roles, responsibilities and professional joys of academia, we have implemented a four-week experiential rotation entitled the Elective Academic Clerkship. In this clerkship, students work closely with a dedicated mentor in their area of highest interest to learn pedagogic theory and experiment with teaching/learning strategies to accomplish thoughtfully constructed goals for the classes they help instruct. Students participate in faculty development activities and research projects, and work on committee assignments and departmental or School projects. Opportunities for reflection are included so that experiences can be put into career-shaping perspective. The syllabus provides faculty mentors the flexibility needed to tailor in experience that compliments student interests while providing comprehensive exposure to academic life. Examples of techniques used by faculty in all disciplines to generate enthusiasm for pharmacy education as a rewarding career choice, and student reflections on their experience, will be shared.

Carter JT, Morin LJ. Promoting academic careers throughout the curriculum. *ACCP Annual Meeting 2002*.

Over the past five years, faculty members in the pharmacy program at the University of Montana have actively sought to increase student exposure to careers in academia. In 1997, all pharmacy students learned about careers in academia through the Glaxo Pathways activity. Some students received additional exposure through school committees or research experiences. By 2002, the list has increased dramatically. Entry-level students now receive

several lectures about various careers in academia. A new elective rotation, Pharmacy Education Clerkship, is available. A new PharmD/PhD program has begun enrolling students and promises to be another mechanism for increasing interest in academic careers in the pharmaceutical sciences. The pharmaceutical sciences graduate students have access to a career development seminar where they can learn about teaching, preparing grant proposals, and negotiating for faculty positions. The recently funded NSF EPSCoR, COBRE Center, and Center of Excellence grants provide additional support for efforts to recruit and train graduate students for academic careers. Other opportunities exist for undergraduate and graduate students to practice their teaching skills, such as assisting with the pharmacy technician sterile products lab and teaching during the summer in the Health Careers Opportunity Program (HCOP) for disadvantaged students. Faculty development for leadership positions is also encouraged through School support for attendance at education meetings, workshops, and AACP institutes. With the influx of many new faculty members, mentoring has also received renewed attention and effort.

Broedel-Zaugg K, Allison JC, Sweeney M. Experiential rotations in pharmacy education. *AACP Annual Meeting 2002*.

Ohio Northern's Raabe College of Pharmacy requires PharmD candidates to complete nine advanced practice rotations. Candidates may choose an elective education rotation with a faculty member at the college. During this rotation PharmD candidates are introduced to the University's expectations of faculty members which include teaching, scholarship, and service. A faculty member mentors the PharmD candidate to better understand post-graduate training in academia, residencies, and fellowships that may lead to an academic career. Educational activities of the rotation include syllabus development with learning objectives, consideration of appropriate teaching strategies, presentation of lectures using various technological methods, and evaluation of student performance. PharmD candidates complete a self-evaluation and compare themselves to their academic role models. In addition, PharmD candidates are encouraged to write grant proposals, participate in continuing education, and assess various aspects of the pharmacy curriculum as it evolves in accordance with current standards.

Miller DR. Elective fourth professional year academic rotation. *AACP Annual Meeting 2002*.

Objective: In response to calls for increasing the interest of pharmacy students in academic careers, a six week, fourth year rotation was developed and implemented for the 2001-02 school year. Methods: The rotation was offered by one faculty member, with a second member acting as secondary preceptor. The student meets with the preceptor daily and attends as many meetings as possible with the preceptor. In addition, the student works independently on his or her own projects. Objectives for this rotation are: to assist the preceptor in his classroom teaching and be primarily responsible for teaching at least one classroom session; to write an article suitable for publication and/or work on a small research project related to pharmacy; to understand the governance structure of a College of Pharmacy and the role of committees and administrators; and to effectively use drug information resources to assist pharmacists through the ND Institute for Pharmaceutical Care. Results: This rotation has been a good experience for the students and the preceptor. Two students elected the rotation in 2001-02. They were involved in many activities, resulting not only in development of theoretical and applied teaching skills, but in small research projects, book reviews, and publications. Implications: The NDSU College of Pharmacy will continue to offer this rotation and looks forward to the impact it will have on students' careers.

Brocovich JM, Etzel JV. Exposing practitioner option doctor of pharmacy students to academic pharmacy practice at St. John's University. *AACP Annual Meeting 2002*.

Successful recruitment of qualified individuals as clinical faculty members is a challenge that many pharmacy programs must address. For many students, the career options and activities associated with an academic appointment may be unclear. In an effort to expose students to this vital career opportunity, St. John's University, College of Pharmacy and Allied Health Professions developed an experiential rotation in pharmacy education for Practitioner Option Doctor of Pharmacy students in Spring of 2000. The goals of this part-time experience are three-fold: (i) to develop a clear understanding of the theoretical and pedagogical issues associated with curricular development, implementation and assessment; (ii) to provide each student with the opportunity to serve as instructor in the pharmacy practice simulation laboratory under the direction of a faculty preceptor, and (iii) to develop a formal proposal that addresses a pertinent topic in pharmacy education that can be applied at this institution. To date, eleven students have completed this rotation and an additional eight are enrolled in the current semester. Overall, the majority of students have stated that based on his/her experiences that he/she might consider a career in academia in the future. Additionally, two students, after completing the Doctor of Pharmacy program, have already accepted appointments as adjunct faculty.

Briceland LL, Hobson EH. Comprehensive pharmacy education clerkship experience: Preparing students for academic pharmacy practice. *AACP Annual Meeting 2002*.

Because entry-level PharmD programs do not historically foreground teaching and learning training and practice opportunities, academic pharmacy practice is an under-recognized career path. To broaden students' awareness, since 1995 Albany College of Pharmacy has offered to select students a structured, comprehensive 5- week elective pharmacy education clerkship. Coordinated by the college's teaching and learning specialist, co-preceptors for this rotation include faculty from Pharmacy Practice (Therapeutics, Pharmacy Practice/Ethics, Professional Practice Laboratory), Basic & Pharmaceutical Sciences (Pharmacology, Immunology, Seminar), Humanities and Pharmacy Administration (Pharmacy Management), and Continuing Education. Working with the college's faculty developer, students are introduced to teaching and learning theory and practice through guided readings, case discussions, and teaching opportunities. Typical rotation activities conducted under the guidance of faculty co-preceptors include: large and small group didactic classroom and/or continuing education experiences, including developing handouts, quizzes, exam questions, lectures or recitation sessions, internet bookmarks or videoconferencing for nontraditional students. To understand the range of duties associated with academic pharmacy practice, students also attend college committee and department meetings, shadow preceptors, and participate in on-going faculty development workshops. Thirty-seven students have completed the rotation, all evaluating the clerkship positively. At least 10 students have entered academic careers; all have provided positive feedback linking the clerkship to their career preparedness. Future plans include adding undergraduate student tutoring and guided patient counseling activities.

****RESEARCH****Wagner ML, Sturgill M, Mathis AS. Cultivating pharmacy students' interest in academic careers through expanding research opportunities. *AACP Annual Meeting 2002*.

Pharmacy students interested in pursuing an academic career, generally obtain most of their relevant research experience after graduation through involvement in postdoctoral training programs. The opportunity to participate in research while attending school can improve a candidate's chances of entry into a good post-doctoral training program and provides an opportunity to stimulate interest in research for students unsure of their career path. In response to market demands, Doctor of Pharmacy programs have grown recently and many schools have dropped their research requirement for enrolled students. A priority remains to make research opportunities available to students. At the EMSP at Rutgers University, a number of research opportunities are available to the interested student. Students with a 3.5 grade point average can enroll in an Honors Program, where they conduct clinical or basic science research, develop, and present a thesis over a 2-year time period. Opportunities for independent research involving elective credits also exist. Grant funding is available for students to work during the summer. Lastly, students may also participate in faculty- or site-sponsored research during clerkship rotations by collecting data as part of patient care or quality improvement projects. Evaluations of student research at EMSP are in progress to determine the relationship between the student research experience and a future interest in an academic career.

Haase KK. Incorporating clinician-educator training into a school of pharmacy-based residency program to cultivate future academicians. *AACP Annual Meeting 2002*.

Residency programs provide a unique opportunity to train future academicians. Of forty candidates that have completed residencies with Texas Tech, 55 percent accepted full faculty positions and 93 percent accepted either full or adjunct faculty positions. Residents had a tendency to stay with Texas Tech post-training with 28 percent as full faculty and 50 percent as either full or adjunct faculty. With a high percentage of residency graduates entering into academia, programs that incorporate structured experiences in teaching and scholarship are warranted. The clinician-educator program is built upon a broad definition of "scholarship", including application (clinical practice), teaching, integration, and discovery. The goal of the program is to develop well-trained clinicians with the skills needed to become successful faculty members. Each activity involves a process of learning, application, and feedback. Teaching components include didactic and web-based lectures, facilitation of problem-based learning, and precepting of clerkship students. For development of scholarship, residents receive instruction in grant writing, statistics, and clinical trial design; submit a project to the institutional review board; and collect, interpret and publish their results. Additional activities to enhance discovery, integration, and writing skills are described. Open discussion sessions are used to cover topics such as writing test questions, student evaluation techniques, and balancing life outside of career. Clinician-educator training is an innovative way to prepare residents for positions in academia and beyond.

Snyder BH, Sewchok DR, Bristol SL, Patel, SM, Drab SR, et al. Developing an educational partnership linking pharmacy students with pharmacy technician students. *AACP Annual Meeting 2002*.

Objectives: Expand professional interactions by promoting a better understanding of the role of pharmacists and pharmacy technicians. Instruct pharmacy students in lesson preparation and presentation. Methods: Educators at Bidwell and faculty at the school of pharmacy met to design and implement an educational rotation for P-4 pharmacy students. Students met with Bidwell educators twice a week for 4 weeks, during which they observed classroom instruction and then prepared and presented on a relevant topic. An evaluation form for both groups of students was used to assess the educational experience. Results: Pharmacy students presented lessons on diabetes, self blood glucose monitoring, study skills, test taking strategies, grapefruit juice-drug interactions, bioterrorism: anthrax and smallpox, sports-enhancing drugs/supplements and HIV/AIDS. Both groups of students agreed that this was a valuable experience. Implications: The success of this partnership has led to discussions regarding expanding the rotation and creating an elective teaching course. Future presentation topics include hepatitis, food-drug interactions, patient compliance issues, Alzheimer's disease, and obesity.

Nemire RE, Shepherd EF. Promoting academic careers throughout the curriculum. *AACP Annual Meeting 2002*. Students have the opportunity to learn about academia early in their pharmacy education in an Early Experience course. The course was developed for topic discussion and reflection of early practice experiences. First semester second year students are required to pick a project with a faculty mentor, exposing them early to various aspects of being a faculty member. Projects include poster presentations, video development, new student recruitment, and career week planning. Once students reach the advanced practice level they may choose to do an academic elective clerkship with the Director of Experiential Education. These students are exposed to all aspects of academic life, including meeting with Deans and faculty, teaching in a course, readings and discussion of educational theories. Students are exposed to administrative, service and teaching responsibilities of faculty members. Weekly discussions of educational theories and methods are the core of this rotation. Students build on the discussions by developing a lecture for a class of their choosing. Students are evaluated during this lecture. Students are involved in creating policies, student manuals, and writing. NSU College of Pharmacy residents may also choose to work with the Directors of Experiential Education and Clinical Education to complete an academic elective clerkship. The goals and objectives are similar to the advanced practice rotation, however, the resident is expected to tailor the assignments to their interests and personal goals and function at an advanced level.

Besinque KH, Gill MA, Gong WC. University of Southern California School of Pharmacy: Fostering the development of academic pharmacy's future leadership. *AACP Annual Meeting 2002*. The USC School of Pharmacy has demonstrated a tradition of innovation and excellence in pharmacy education. The School's vision statement "Setting the Direction for Pharmaceutical Care, Education and Research" is reflected throughout teaching and research programs that include the development of future academic leaders. USC has developed several initiatives to foster interest in academic pharmacy including student mentorship teaching experiences, clerkship electives and a residency program. The ASHP accredited residency programs at the School emphasize teaching and research. There are twenty-five residents participating in the program in a wide range of clinical specialties. The program is unique because in addition to the traditional activities of a residency, extensive coursework and practice in research methods and teaching skills are included. After the coursework, each resident teaches a group discussion course for the academic year and completes a research project. The research project must be publishable and presented at the annual Western States Residency Conference. Teaching experiences include development of a clinical case and teaching guide for the Therapeutics course, seminars, clerkship teaching and the providing lectures in didactic courses. The residency program has trained a significant number of residents that are faculty in pharmacy schools and as clerkship faculty at affiliated sites. Building on a century of excellence, USC continues to provide new directions for the profession of pharmacy.

Henderson RP, Thompson PA, Kendrach MG, Worthington MA, Lander RD, et al. Development and implementation of an advanced practice experience in pedagogics. *AACP Annual Meeting 2002*
Objectives: Development and implementation of an elective pedagogics rotation for fourth year Pharm.D. students allowing them to learn teaching methodologies in a variety of settings. Methods: Late in the Fall 2000 semester, pharmacy faculty expressed interest in an elective pedagogics rotation, and the Department of Pharmacy Practice Educational Policy Committee developed specific goals and objectives for such a rotation. It was offered to students beginning in June 2001, and by the end of the 2001-02 academic year eleven students and eight preceptors will have participated. Experiences of the students have varied widely, depending upon the setting and preceptor, and have included classroom lecturing, small-group facilitation, clinical instruction, administrative tasks and testing. In May, a survey will be administered to all students and faculty participating in this rotation and the results discussed in a meeting of all participants. This information will be used to refine the experience for the coming year. Implications:

Pharmacy educators have a responsibility to provide leadership in the profession by cultivating future leaders, especially in the academic setting. Whether or not students who participate in a pedagogics rotation decide to practice in academia, they should be better prepared to teach and have an impact upon a broad range of practitioners, positively influencing the profession of pharmacy.

****APPLIED TEACHING**** Lem K, Kroon L, Dennehy C. First year pharmacy practice seminar sections taught by volunteer faculty, residents and P-4 students. *ACCP Annual Meeting 2001*.

Fuhrman LC, Arant M, Brown KS, Buff WE. Development and implementation of an academic pharmacy practice experience rotation. *ACCP Annual Meeting 2001*.

Objectives: The objectives were to design, develop, implement, and assess a teaching rotation for senior students interested in pursuing academic careers. Methods: College of Pharmacy faculty (Administration, Pharmacy Practice, Basic Science) and senior students developed objectives for the rotation. Objectives included teaching philosophies, research, service, course and test design, and classroom instruction. The underclass students (P1) assessed the senior student at the end of the rotation using a 5-point Likert questionnaire (5=strongly agree, 1=strongly disagree) developed by faculty and senior students taking part in the rotation. An exit interview, concerning the 4-wk rotation, of the senior student was also conducted. Outcomes: Underclass students (n=75) considered having a senior student in the lab beneficial (mean=4.76) and would like to see this rotation continued in the future (mean=4.76). The rotation students performance in class was evaluated favorably by the P1 students (mean 4.8). A question focusing on the willingness of underclass students taking part in a similar rotation during their senior yr was rated at 3.58. Implications: The rotation students were provided with the opportunity to develop lectures, teaching material, and had an exposure to the rigors of the academic arena. Underclass students benefited from this rotation by interacting with a senior student and recognizing the students' ability to impart knowledge and instruction from the education that they had received during the first 3 yr in their professional program.

Janke KK, Wattson EA. Staffing and roles required to optimally support online course development. *ACCP Annual Meeting 2001*

Hammer DP, Paulsen SM. Innovative clerkship in pharmacy education. *Am J Pharm Educ.* 2001;65(3):284-293.

Administrative/management

McGregor RJ. A precepted experience for senior nursing students. *Nurse Educ.* 1999;May-Jun;24(3):13-16. The author discusses an undergraduate course that provides students with a clinical experience focusing on setting priorities, managing time, and organizing assignments and responsibilities, with the support of, and under the direction of, an experienced RN preceptor. In addition to building confidence and making students more competitive during job interviews after graduation, the preceptorship course promotes collaboration between academia and service, provides students with the opportunity to implement their professional practitioner role, and promotes the personal and professional development of the preceptors and nursing staff.

Latif DA, Wachsmann HO. A specialized management rotation for dual PharmD/MBA candidates. *Am J Pharm Educ.* 2003;67(2):XXX.

Objectives. This paper describes the development; implementation; and assessment of a unique 8-week management experiential rotation designed for students in the dual Doctor of Pharmacy/Masters of Business Administration (PharmD/MBA) program at Shenandoah University who aspire to management and leadership positions within the healthcare industry. A major goal of this rotation was to allow students to apply the management concepts they learned in the classroom to the healthcare organization. Methods. Twenty-eight PharmD/MBA students from the classes of 2001 and 2002 participated in an 8-week management rotation. Rotation settings included chain stores, hospital pharmacies, pharmacoeconomic organizations, pharmaceutical companies, and pharmacy associations. The 8-week rotation focused on working with a preceptor to observe and learn the various managerial components of the specific healthcare organization. Results. Students were assessed on 7 dimensions. Based on both student assessments of their rotation experience, and preceptors' assessments of the students, it appears that the students exhibited excellence in the areas examined. Conclusion. The rotation experience was beneficial in bridging the gap between learning about management skills and demonstrating them. Specific suggestions are offered for those schools of pharmacy that are considering adding a specialized management rotation to their programs.

Ambulatory Care

Cochran GH, Dent LA, Swain JH. Development of ambulatory care clerkships in a community health center. *AACP Annual Meeting 2002*.

Objective: To develop, implement and evaluate an ambulatory care clerkship in a community health center (CHC). Methods: Utilizing the school's ambulatory care clerkship objectives, a clerkship site was established at Partnership Health Center, a federally-qualified health center. A faculty member instrumental in developing distributive and clinical pharmacy CHC services precepted the clerkship initially. Clerkship activities include patient and provider drug information, medication histories, patient counseling and education, polypharmacy reviews and recommendations, warfarin monitoring and dosage adjustment, inservice presentations, newsletter production, interdisciplinary team interaction, and quality assurance projects. Students evaluate the clerkship activities at the conclusion of the experience. The instructor evaluates the student's clerkship performance. Results: Since May 1999, 16 students have completed the 8-week required clerkship experience and 4 have completed 4-week elective. Student performance has been above average in the site with 13 students receiving A's (81 %) in the required clerkship; the rest have received B's. Student evaluation of the activities has been favorable with 88% rating them either satisfactory or of great value. Students rated the balance of clerkship activities as satisfactory 84% of the time. Implications: CHC's provide a rich environment for ambulatory care clerkships. Patient and disease state variety is excellent; the educational needs of providers and patients are great. There are many opportunities for pharmacy students to provide service as they gain experience in patient care.

Smith MM, Koronkowski M, Richardson H, Doherty C. Combining a state-funded community-based geriatric educational outreach program and an ambulatory care clerkship rotation as an effective model for teaching. *AACP Annual Meeting 2002*.

Objectives: Pharmacists are key professionals in health promotion and disease prevention initiatives among older adults, a population at significant risk for morbidity and mortality. Didactic pharmacy education and traditional clerkship teaching strategies; however, may not adequately prepare the pharmacy student for contemporary geriatric pharmacy practice. Our goal was to develop a teaching method, in collaboration with a community health outreach program, which enhanced the development of skills necessary to successfully deliver pharmaceutical care to the growing, diverse geriatric population. Methods: Ambulatory Care clerkship students are required to complete a special project that focuses on pertinent issues that are commonly encountered in that practice setting. This project was restructured to require the students to provide medication evaluation and counseling, immunization education and associated risk-level stratification for up to six diverse geriatric populations participating in a collaborative College of Pharmacy and State-agency funded outreach program. Results: Students demonstrated a greater understanding of geriatric health concerns and needs. They exhibited enhanced communication skills and self-confidence in caring for diverse, older adult populations. Students improved participants' perceptions about the role of pharmacists. The importance of collaborative initiatives was validated. Relationship with the State agency was enhanced. Implications: 1. Learning enhancement and reinforcement of didactic principles. 2. Mutually beneficial for students, faculty, participants and agency. 3. Will be continued in subsequent rotations.

Dent LA, Stratton TP, Cochran GA. Establishing an on-site pharmacy in a community health center to help indigent patients access medications and to improve care. *J Am Pharm Assoc.* 2002;42(3):497-507.

Byrne ML, Goldman-Levine JD, Brennan WP, Amato M, Clark LE, DiTusa L, Eugenio KR, Mukherjee M. Establishment of an ambulatory care practice group (ACPG): model to support and foster innovative pharmacy practice faculty and site development. *AACP Annual Meeting 2001*.

Asthma Camp

Kirwin JL, Van Amburgh JA, Napoli KM. Service-learning at a camp for children with asthma as part of an advanced pharmacy practice experience. *Am J Pharm Educ.* 2005;XX
<http://www.ajpe.org/view.asp?art=aj690349&pdf=yes>

Objectives. To describe a service-learning opportunity within an advanced pharmacy practice experience and report satisfaction survey results from 2001 through present. Design. Pharmacy students volunteered to attend asthma camp during an ambulatory care rotation. Students administered and monitored medications and coordinated educational activities for campers. Students set goals for the week and completed reflective journals about the experience. A survey was administered 1 week and 6 months after the experience to assess satisfaction, changes in attitudes toward children with chronic asthma, and empathy towards patients. Assessment. Most students accomplished their goals and were satisfied with the experience. Approximately 40% of students believed the experience changed their attitudes. Students agreed that volunteering at camp increased feelings of empathy towards

patients with asthma. Conclusion. Students were satisfied with the camp and perceived that the combination of service-learning and clinical rotations enhanced their professional development.

Bioterrorism

White CA, Dallas C, Rollor E, Nichols-English G. Educating pharmacists as first receivers in disaster preparedness/bioterrorism. *ACCP Annual Meeting 2003*.

Objective: To develop, implement and evaluate a disaster/bioterrorism preparedness course for PharmD students. Methods: Course objectives were designed to enhance student learning in domestic preparedness using traditional lecture format coupled with active learning exercises. Scientific information regarding biological and chemical agents was presented in didactic lecture format by professionals with expertise in these areas. Active learning exercises included first aid training, emergency communications, personal safety devices, triage, tabletop exercises (pharmacy based) and a live exercise. In addition, pharmacists working with Disaster Medical Assistance teams and the American Red Cross were invited to lecture about their experiences in the field. Students completed a course evaluation which included closed and open ended questions. Results: This course was first offered as an elective in Spring 2002 for 52 students and currently 21 students are enrolled. Students appreciated the active learning sessions (mean score 4.2/5.0) and the lectures on biological/chemical agents (mean score 4.5/5.0). Open-ended comments suggested the utility of more triage, tabletop and live exercises. Students perceived this course as very important to their pharmacy careers and 16 opted for the 4th year bioterrorism rotation. Implications: The need for pharmacists to respond to natural or man-made disasters as first receivers will only increase in the future and they will be expected to perform both traditional (dispensing) and nontraditional (triage) roles. Expansion of this program is essential and desirable to the emergency medical community to prepare pharmacists for the new roles as first receivers in mass casualty disasters.

Cardiac

Shara M, Garis RI, Moore FC. The impact of a clinical pharmacy educator in a part-time role as a member of a multi-disciplinary heart failure care team. *ACCP Annual Meeting 2003*.

Combination clinical/distributive

Young SA, Fera T. Innovative residency training: The "non-traditional" experience. *ASHP Midyear Clinical Meeting 2003*.

Collette DR, Dang MM. Integration of pharmacy students into the workflow of a hospital pharmacy department. *ASHP Midyear Clinical Meeting 2002*.

Community

Willink DP, Isetts BJ. Becoming 'Indispensable': Developing innovative community pharmacy practices. *J Am Pharm Assoc.* 200X;45(3):376-389.

Pai AK. Integration of a clinical community pharmacist position: Emphasis on workflow design.

XXXXXXXXXXXXXXXXXXXX

Kassam R, Volume-Smith CI. Focus group methodology to develop a community pharmaceutical care clerkship program. *Am J Pharm Educ.* 2003;67(3):1-4. <http://www.ajpe.org/aj6703/aj670388/aj670388.pdf>

Objectives. The specific objectives were to generate ideas relating to: (1) the skills necessary for new graduates to practice pharmaceutical care in the community, (2) the learning activities that foster these skills, and (3) the extent of preceptor-student contact time that would be feasible and necessary to meet the desired educational outcomes. Methods. A standardized focus group methodology was used to design a community-based pharmaceutical care clerkship experience for the senior year program. Nine pharmacy preceptors, representing a variety of community pharmacy settings, and the Deputy Registrar from the College of Pharmacists of British Columbia were recruited using purposeful selection. The project team followed acceptable qualitative research protocols to ensure the validity and reliability of the data collected and analyzed. Results. Common themes from focus group discussions were summarized and incorporated into the new clerkship program. The focus group participants identified the skills that they considered to be important for practicing pharmaceutical care and outlined the learning activities that would hone these skills. Curriculum issues related to preparing students for their pharmaceutical care rotation were also addressed. In addition, at the request of the participants, the clerkship director developed a 4-week clerkship schedule for preceptors to use as a template when designing their student's rotation and a student evaluation tool to

facilitate the evaluation process. Conclusion. The focus group process was a useful tool for developing the senior year clerkship syllabus. The process provided the university with the opportunity to work collaboratively with its preceptors to determine the appropriate student learning activities, and it also provided a mechanism to elicit preceptor concerns.

Diabetes

Condren M. Diabetes camp as an experiential clerkship site. *Am J Pharm Educ.* 2003;67(4): [http:xxxx](http://xxxx)

Objective. This paper describes the incorporation of a diabetes camp into the experiential pharmacy education program at the Texas Tech University School of Pharmacy. Methods. Students on the clerkship attended a weeklong diabetes camp where they were responsible for the care of 5 to 9 children. Before attending the camp, the students prepared to perform the following tasks: preparing and administering insulin, performing blood sugar testing, providing diabetes education to children, participating in meal planning and carbohydrate counting, treating hyperglycemia and hypoglycemia, adjusting insulin regimens, managing insulin pump therapy, and describing how diabetes may affect a child's quality of life. Assessment. Evaluations of the clerkship experience have been positive and student interest has increased over time. Conclusion. The use of pediatric diabetes camps as an experiential clerkship site for pharmacy students is educational and rewarding and has enhanced the visibility of the pharmacy profession.

Drug information

Wilson AF, Moores KG, Bartels CL, Ohri LK, Malone PM. Expansion of drug information services in response to an increased clerkship teaching load. *ASHP Midyear Clinical Meeting 2004.*

The Pharm.D. curriculum at Creighton University School of Pharmacy and Health Professions places a strong emphasis on the importance of drug information skills. Students are required to complete two didactic courses, in addition to a required Drug Information Clerkship. In 2005, the first class of web-based pathway students will graduate. In order to accommodate additional students needing clerkship training beginning in the 2004-2005 academic year, the main Drug Informatics Service on the Creighton campus was expanded to allow clerkship seats for 8 students per rotation. In response to this increase in teaching volume, the center was physically expanded, additional faculty were hired, and marketing and promotional services were initiated to provide an excellent learning environment for students. Multiple methods of expanding drug information services were implemented. Various marketing and promotional tools were developed and innovative methods of increasing drug information request volume and student learning activities were established. This presentation will outline our promotional strategy, center activities and student learning objectives.

Kendrach MG, Naro PB, Kelly M, Schrimsher RH, Boyken SP. Precepting ≥ 70 drug information clerkship students annually at one site. *ASHP Summer Meeting 2004.*

Purpose: The McWhorter School of Pharmacy is one of a few pharmacy schools/colleges requiring all Doctor of Pharmacy students during the fourth-professional year to complete a drug information (DI) clerkship (i.e., advanced practice experience). This poster describes the process of precepting multiple students at one DI center to accomplish the overall DI rotation goal of efficiently locating, critically analyzing, and effectively communicating drug information. Methods: The DI center accommodates up to 10 students per 4-week rotation during the 10-clerkship rotation periods per year. Students use the activities of the fee-for-service DI center as real-world learning experiences. The first three days of each rotation consist of a series of group orientation sessions to prepare the student for the month. Also, each student is provided with a notebook of required readings, project instruction sheets and examples, plus other materials necessary for completing the rotation requirements. Although each student is assigned to a primary preceptor, each DI Center faculty and resident are responsible for facilitating selected learning activities. Student activities are monitored on a weekly basis to ensure that learning experiences between students are well-balanced. Results: Since the summer of 1997, an average of 73 students per year (>70% of each class) have completed the rotation at this site. An average number of students assigned to this site each month is seven with a minimum and maximum of six and ten students per month, respectively. Four major individual student learning activities consist of answering DI questions, presenting a journal club, preparing a writing assignment (e.g., drug monograph or policy/procedure), and writing a newsletter article. Other learning activities include group discussion sessions (e.g., evaluate an article and calculate the measures of association, report daily newspaper healthcare topics, discuss unlabeled drug uses, critique drug advertisements) and DI database demonstrations. In addition to the students being individually assessed according to the seven rotation goals (which consist of 39 total learning objectives), each student is required to complete a practical/written examination at the end of the rotation (worth 20% of final grade). The two-part examination is designed to assess drug information retrieval and literature

evaluation skills for activities encountered daily in various pharmacy practice types. Conclusion: This clerkship is designed for at least seven students per month to enhance their drug information skills. Various goals and objectives are completed that focus upon the learning objectives of the two required didactic DI classes and other learning experiences.

Ansani NT, Schober CE, Fedutes BA, Culley CM, Patel SM. Meeting the modified drug information requirements of ASHP-accredited pharmacy practice residency programs. *Am J Health-Sys Pharm.* 2003;60(22): 2329-2332.

Includes DIKendrach MG. Drug information pedagogics - advanced practice experience (clerkship). *ASHP Midyear Clinical Meeting 2003.*

A pedagogic (teaching) clerkship rotation has been developed not only to stimulate students to consider academia as a practice type, but also prepare them to be pharmacy mentors and/or supervisors. The primary learning objectives of the pedagogic advanced practice experience are: Develop skills in planning/preparing to teach in a pharmacy-related course; prepare class lecture materials/content and effectively deliver; develop skills in assessing student performance; build skills in motivating students; display professional performance and demonstrate leadership skills. The Drug Information (DI) Pedagogic rotation is designed for the student to complete both the required DI plus elective pedagogic rotations over two consecutive months. During the first month, the majority of the DI plus selected pedagogic rotation goals and objectives are completed. The experiences gained during the first month plus constant preceptor feedback will be used by the student to teach the following month's clerkship students. In addition, the pedagogic student is required to partake in the teaching (i.e., lecturing) of the required didactic DI class. Furthermore, the pedagogic student prepares exam questions, grades student projects, assesses student performances, plus provides feedback to the instructors for improving various teaching activities. The student is provided a notebook of required readings that are discussed during the rotation with the preceptors; additionally, the contents are used to complete the rotation learning experiences. By the end of this two month learning session, the student should be better prepared to not only teach, but also nurture individuals to become competent practitioners.

Price SO. Implementation of PDAs in a drug information clerkship program. *ASHP Midyear Clinical Meeting 2003.* Use of personal digital assistants (PDAs) is becoming widespread throughout the healthcare community. Many healthcare-related and database programs are available. Beginning in 2002, McWhorter School of Pharmacy provided PDAs for all students. Faculty members were charged with integrating PDAs into the curriculum. PDA use could benefit students in pharmacy-related tasks as well as information collecting. The first year, Drug Information clerkship students had little prior PDA experience. Thus, phase one of the PDA implementation provided information about some of free, but highly useful, programs available. Questionnaires completed the first day of each rotation assessed student PDA comfort levels, types of programs currently utilized, and specific problems experienced (i.e., downloading programs, use of expansion cards). A subsequent learning experience incorporating two free programs - ePocrates qRx and MedCalc - posed scenarios that might occur in an institutional or community setting. Solutions to the scenarios and key features of the two programs were identified. Problems mentioned on initial surveys were discussed. Follow-up questionnaires evaluated interest usefulness, and suggestions for future sessions. PDAs were required to be resources during further rotation activities. Phase two is the design of a HandDBase form allowing students to enter information about learning experiences gained during the rotation. This information will sync to Microsoft Access, thereby creating a cumulative database of experiences for faculty informational and quality assurance purposes. In addition, the student can export records to the Memo Pad function and print out the required portfolio of the clerkship experiences for the Experiential Coordinator.

Malinowski JM. A simulated pharmacy and therapeutics committee meeting to an infections diseases module of a pharmacotherapeutics sequence. *ACCP Annual Meeting 2002.*

Objectives: An educational strategy was developed for students to engage in the active learning process by applying drug information skills using written and oral communication to recently reviewed information on antibiotic pharmacotherapy. Methods: Sixty-four second professional year Doctor of Pharmacy students enrolled in an Infectious Diseases Module of a required 4-semester Pharmacotherapeutics sequence were divided into six groups. Using an instructor-defined topic assignment, each group developed a written submission suitable for inclusion into a simulated Pharmacy and Therapeutics Committee meeting agenda. Written information was assembled and distributed to the class and members of the committee (which included two faculty members and four 4th professional year Doctor of pharmacy candidates on an internal medicine and a drug information elective rotation) one week before the meeting. During the meeting, student representatives provided a brief oral presentation on the assignment and responded to questions from the committee. Following the presentation, students observed the

committee interact and vote on each of the assignments. Students evaluated the presenters and their peers for their performance within the groups. Student evaluations of the assignment will be reviewed. Implications: Students will be successfully engaged in active learning while being exposed to the responsibilities of a pharmacist on a Pharmacy and Therapeutics committee and the role of a Pharmacy and Therapeutics committee as it relates to infectious diseases.

Cerulli J, Schreck J, Weck M, Zeolla M. Evaluation of drug information requests in community pharmacy. *AACP Annual Meeting 2002*.

Objectives: To document drug information requests received by students during community pharmacy advanced practice experiences (CPAPE) and identify the resources used to answer those questions. Methods: A form was developed to document drug information (DI) requests by capturing requestor information, background information, medication category, search notes and the response. Questions will be classified by these categories: adverse effect, availability, compounding, cost, dosage/administration, off-label use, drug interactions, patient education, pharmacology, pharmacotherapy, pregnancy/lactation, tablet identification, stability/storage, toxicity/poisoning or other. The form was piloted using 50 previously documented requests and revised. Fifty students will be asked to document a minimum of 10 drug information requests received during their 5-week CPAPE. Students will identify references utilized and rate the usefulness of each reference. Clerkship preceptors and the clerkship coordinator will review the forms for completeness and accuracy. The data will be analyzed using a Microsoft Access database to determine the most frequent question classification and the usefulness of the resources available. Implications: The DI form will foster documentation skill development in pharmacy students and serve as a tool for preceptors to assess those skills. The database will assist clerkship preceptors with the selection of appropriate DI resources for the community pharmacy. Faculty teaching DI in the curriculum can use the database to obtain sample questions and identify resources useful in the community pharmacy setting.

Cerulli J, Schreck J, Weck M, Zeolla M. Evaluation of drug information requests in community pharmacy. *AACP Annual Meeting 2002*.

El-Ibiary S, Tsourounis C, Assemi M. Innovations in teaching drug information involving online consumer queries. *AACP Annual Meeting 2002*.

Objectives: Expansion of drug information activities within a clinical clerkship to facilitate development of consumer oriented drug information skills. Student and resident activities include individual assignment of consumer queries, self-evaluation, collaborative learning, and peer-evaluation of written responses. Methods: Third and fourth year students and residents are assigned consumer drug information queries received from an online "Ask Your Pharmacist" (AYP) Service. Students and residents independently identify drug information questions within consumer queries, evaluate available patient background information, and research questions using drug information resources and literature. Students and residents self-assess their work. Responses are reviewed for content, organization, spelling, grammar, and readability (e.g., appropriate use)of lay language). Select responses are discussed and/or peer-reviewed among students or residents for teaching purposes. Faculty discuss revisions with students and residents to formulate a final response. In addition, residents develop experience in serving as preceptors by reviewing and editing student work. Implications: Third and fourth year students and residents obtain consumer oriented, written drug information skills within a drug information rotation. This-experience familiarizes students and residents with questions commonly asked by consumers, reinforces drug information retrieval and evaluation skills, and enhances written communication.

Ansong MA, Howard AR, Ford C. Using a guided self-teaching technique to help students learn to efficiently navigate drug information databases. *AACP Annual Meeting 2002*.

Saseen JJ, May S, Hammer D. Implementation of a longitudinal drug information (DI) portfolio in lieu of a DI clerkship. *AACP Annual Meeting 2001*.

Emergency Medicine

Balch N, Mitrano EA, Hallisey RK, Clapp MD. Clinical pharmacy services in the emergency department. *ASHP Midyear Clinical Meeting 2003*.

General institutional clinical skills

Nesbit TW, Davies KL, Walker CL. Implementation of a baseline assessment program for pharmacy practice residents at The Johns Hopkins Hospital. *ASHP Midyear Clinical Meeting 2003*.

Geriatrics

Bloom M. How teaching students about geriatric pharmacy can help patients -- and you, *Cons. Pharm.* 2005;20(1):16-28

Williams BR, Albertson RP. Immersion in geriatrics: A new clerkship experience. *ACCP Annual Meeting 2003*. Objectives: To develop, implement, and evaluate an innovative geriatrics clerkship experience in an assisted living facility. Methods: A clerkship site based at the Anchorage Pioneers' Home (APH), an assisted living facility operated by the state of Alaska, was identified. Two Level IV (senior) student pharmacists live and interact with the residents at APH during the six-week clerkship. The students participate in all aspects of pharmacy services, including drug regimen review, consultations with prescribers, resident education programs, staff inservice programs, and Pharmacy and Therapeutics Committee. They also are exposed to the unique drug distribution system, which serves five other Pioneers' Homes throughout the state. Students are evaluated based on meeting the clerkship goals and objectives, formal and informal presentations, professional interactions, clinical interventions, and examinations. Results: Eight students participated in the clerkship during its first two years, beginning in 1999. Students evaluated the clerkship very highly, with an average composite score of 4.65+0.26 (5 point scale) on 17 items. Students noted the ability to live at the facility and participate in many diverse clinical activities were valuable parts of the experience. Implications: Student evaluations indicate that this is a unique and valuable clerkship that allows them to interact directly with older adults and to understand their unique health care needs. Students had positive interactions with the older adults living in the facility.

Smith MM, Koronkowski M, Richardson H, Doherty C. Combining a state-funded community-based geriatric educational outreach program and an ambulatory care clerkship rotation as an effective model for teaching. *ACCP Annual Meeting 2002*.

Objectives: Pharmacists are key professionals in health promotion and disease prevention initiatives among older adults, a population at significant risk for morbidity and mortality. Didactic pharmacy education and traditional clerkship teaching strategies; however, may not adequately prepare the pharmacy student for contemporary geriatric pharmacy practice. Our goal was to develop a teaching method, in collaboration with a community health outreach program, which enhanced the development of skills necessary to successfully deliver pharmaceutical care to the growing, diverse geriatric population. Methods: Ambulatory Care clerkship students are required to complete a special project that focuses on pertinent issues that are commonly encountered in that practice setting. This project was restructured to require the students to provide medication evaluation and counseling, immunization education and associated risk-level stratification for up to six diverse geriatric populations participating in a collaborative College of Pharmacy and State-agency funded outreach program. Results: Students demonstrated a greater understanding of geriatric health concerns and needs. They exhibited enhanced communication skills and self-confidence in caring for diverse, older adult populations. Students improved participants' perceptions about the role of pharmacists. The importance of collaborative initiatives was validated. Relationship with the State agency was enhanced. Implications: 1. Learning enhancement and reinforcement of didactic principles. 2. Mutually beneficial for students, faculty, participants and agency. 3. Will be continued in subsequent rotations.

Grand Rounds

Sweeney MA, Kier KL. Ensuring quality rotations for non-traditional doctor of pharmacy programs. *ASHP Midyear Clinical Meeting 2002*.

Implemented state-wide grand rounds with videoconferencing -- Using for traditional students too

Infectious Disease

Rubio T, Orynchak I, Lemanowicz J. Evaluation of community acquired pneumonia treatment: utilization of pharmacy students and hand held technology. *ASHP Midyear Clinical Meeting 2002*.

Inpatient

Vesta KS, Farmer KC, Stipek WJ. Pharmacy students' perspectives on the value of taking call during acute care practice experiences. *Am J Pharm Educ.* 2005;XX: <http://www.ajpe.org/view.asp?art=aj690348&pdf=yes>

Objective. Determine graduates' perceptions of the benefits and limitations of taking call with the medicine team while in the experiential portion of the doctor of pharmacy (PharmD) degree program. Methods. Survey questionnaires were mailed to graduates who completed a medicine advanced pharmacy practice experience offering an on-call experience. Data collected included on-call requirements, participation, and perceptions of the benefits and limitations of participating in on-call activities. Results. Respondents generally agreed that they learned more about disease states and healthcare logistics during on-call experiences. Respondents also agreed it was a teambuilding experience and would encourage other students to take call. Conclusions. Taking call as a pharmacy student provides a unique opportunity to learn about disease states and build professional relationships with other healthcare professionals. This initial survey suggests that the perceived benefits of taking call outweigh the limitations, and that the experience incorporates professional development into pharmacy education.

Skeffington PJ, Thai X. Pharmacy student education at an integrated health-care system. *ASHP Midyear Clinical Meeting 2004*.

Purpose: To expand the pharmacy education of New England students so that they are exposed to various types of hospital settings during their inpatient rotations. Methods: Cambridge Health Alliance (CHA) serves as a clinical teaching site for four of the local colleges of pharmacy in New England: Massachusetts College of Pharmacy-Boston, Massachusetts College of Pharmacy-Worcester, Northeastern University, and the University of Rhode Island. Pharmacy students (Pharm.D. candidates) are recommended to sign up for a twelve-week rotation at CHA where they encounter three very different types of hospital experiences. Because this is a continuous twelve-week rotation, time is not spent repeating orientation, HIPPA training, safety fair etc. at each site. As a Harvard Medical School affiliate, the Cambridge Hospital (TCH) is a primary practice site for interns, residents, and medical students from Harvard which allows pharmacy students to work hand in hand with the medical teams. Somerville Hospital (SH) provides the variety of traditional teaching model on the Medical/surgical units with the use of a hospitalist model in the Intensive Care Unit. The Whidden Hospital (WH) is a traditional community hospital where private attending physicians practice. Results: Students are exposed to dispensing aspects of hospital pharmacy, and work on projects such as drug utilization evaluations (DUEs), surveys and quality improvement initiatives. These projects are reported back to various committees such as Quality Management, Medication Use, Medication Safety and Formulary. Antibiotic classes are held weekly throughout the rotation. Conducted by one of the Infectious Disease doctors, classes start out as an overall review of antibiotics that progresses to case based analyses to test the student's comprehension. Some of the advanced students become mentors for the Introductory Pharmacy Education Program (IPEP) students so that they can become part of the team. Journal Club meets once a week for case presentations or article analyses and Medical Grand Rounds meet weekly; attendance at both is required. Participation in daily rounding teams, chart reviews, presenters at nursing education programs and medication reconciliation are all required. Attendance at hospital meetings such as Pharmacy and Therapeutics Committee and Investigational Review Board is also strongly encouraged. Conclusion: Using this twelve-week model, CHA has successfully integrated the traditional dispensing and clinical functions into one rotation. CHA has used this advanced practice student rotation for over a year. Feedback from student evaluations indicates the variety of the work environment in the rotation and the exposure to students from the other colleges are the two key strengths to this clinical rotation.

Ohta Y, Naruhashi K, Nishio C, Ohta H, Nakada M. et al. Designing pharmacy practice curriculum for mid-sized hospitals to accept undergraduate pharmacy school students. *Jpn J Pharm Hlth Care Sci*. 2003;29(2):129-139. A curriculum was designed for a pharmacy school student completing a practicum at the pharmacy of the Neagari Municipal Hospital, a mid-sized hospital, and the practicum was carried out according to the curriculum. The curriculum was based on the criteria described in a medical educational manual and incorporated three factors, namely "Objectives, Learning Strategies, and Educational Evaluation," which together covered the educational processes. The time schedule was designed to be similar to that of typical work duties, thus enabling the student to experience real pharmacy practice. During the practicum, no exercises were omitted and we were able to implement, as requested by a doctor, modifications to the program. Accordingly, the quality of the practice was maintained, since each factor was based on a specific behavioral objective. The student's accomplishments were evaluated by the medical staff, including pharmacists and doctors, in order to reduce the individual instructors' burden as well as to maintain objectivity. By this manner of evaluation, not only were the achievements graded more objectively, but we could also evaluate the curriculum by comparing the evaluations of the instructors with those of the student. In conclusion, this curriculum is practical for small-and mid-sized hospitals accepting undergraduate pharmacy students and does not negatively influence the daily duties, while still maintaining the quality of the educational experience. This curriculum is simple to initiate and easy to modify. As a result, such a program is considered to be

useful for other similar mid-sized facilities since it can help such institutions to promote efficiency in designing their own curriculum.

International

Heminger M, Letting-Mangira D. Pharmacy in Africa ... and the trials and tribulations - Ohio Northern University pharmacy student's perspective. *Ohio Pharm.* 2003;52(1):14-15.

An account of a pharmacy student's experience and challenges involved in the provision of pharmacy services while on an educational rotation in Kenya, is presented.

Medication safety

Reddan JG, Sheehan AH. Development of a medication safety/adverse drug event rotation for pharmacy students and pharmacy practice residents at a large, multi-hospital system. *ASHP Midyear Clinical Meeting 2003*. Establishment of safe medication practices to reduce the frequency of adverse drug events (ADEs), has been a primary focus in pharmacy practice for years. While exposure to medication safety efforts may be obtained while working in a pharmacy, it is unlikely that pharmacy students/residents will routinely gain enough experience to apply medication safety practice skills to future practice sites. In an effort to provide advanced training in this important area, a structured medication safety/ADE rotation was developed for Pharm.D. students and residents within a 1400 bed multi-hospital health network. The rotation requires data collection on all reported adverse drug reactions (ADRs). In addition, the student/resident actively participates in the pharmacy medication safety committee, and a hospital-wide, multidisciplinary medication safety committee. The student/resident presents summaries of the Institute of Safe Medication Practices (ISMP) alerts at these meetings and is involved in additional projects. The student/resident is an active member of the pharmacy review team that analyzes medication variances; recommendations from this group are forwarded to the medication safety committees for approval and action. The student/resident is involved in the preparation of the quarterly ADR report, reporting ADEs and product defects to the Food and Drug Administration, and reporting medication safety issues to ISMP and the hospital's risk management department. This poster will describe the objectives, activities and functions of a medication safety/ADE rotation. In addition, evaluative comments from approximately twenty rotation months and future directions will be shared.

Jackson TL. Application of quality assurance principles: Reducing medication errors in 30 pharmacy practice settings. *AACP Annual Meeting 2003*.

Objective: The purpose of the course was to create an instructional sequence that encourages students to acquire the knowledge, skills and abilities required to decrease medication errors in the pharmacy practice setting. Methods: A class of 157 third professional year pharmacy students was divided into 30 teams of four to seven students. Each team was then assigned to a pharmacy preceptor in a community or health-system pharmacy in the Chicago area. Teams met with their preceptor to select a medication error reduction goal for the setting. The team and preceptor mapped out a plan to achieve their chosen goal and submitted it for approval by the course coordinator. Once approval was granted, teams began to implement their plan for medication error reduction at the pharmacy practice setting by implementing concepts learned in class. Students were required to measure the impact of their plan by collecting, analyzing, and evaluating data. Each team presented their results at the Quality Assurance Poster Forum. Outcomes: Student outcomes included increased: awareness of the impact of medication errors on patient health, knowledge of methods to reduce medication errors, motivation to implement methods to decrease medication errors, and application of "real world" medication error reduction skills. Implications: This course helped to increase student awareness of the pharmacist's role in medication error reduction.

Fujisak BS, Farthing K, Marcus KB. Identifying and resolving potential medication errors in hospital admission orders. *ASHP Midyear Clinical Meeting 2002*.

Medication Review

Bultemeier NC, Yeh C, Anderson S, Bianco T. Innovative alternative to transitional clerkship rotations: Evaluation of medication discrepancies in patients enrolled in a medication assistance program. *AACP Annual Meeting 2003*. Objectives: The primary objective was to develop and evaluate an alternative program to satisfy third-year pharmacy program transitional clerkship objectives. An acute shortage of rotation sites provided the opportunity to supplement the activities of our traditional transitional clerkship. Secondary objectives included improving care for at-risk patients participating in a medication assistance program (MAP) and generating pilot data for future research in medication discrepancies. Methods: The alternative clerkship program is structured in six-week blocks, with one

half-day session per week. An instructor facilitates all sessions. There are ten students per group. Patients with a primary care provider at the university's internal medicine clinic and ongoing enrolment in the affiliated MAP were identified and then approved by their provider for involvement in the program. All students were assigned one patient. Students identified discrepancies between medication lists generated from (1) chart review, (2) MAP records, (3) patients' pharmacies, and (4) patient telephone interviews. Students identified all other drug-related problems and developed recommendations. Findings were presented during small group case presentations. Students wrote a summary of the medication review and completed a standardized recommendation form that was given to MAP and the providers. Implications: The alternative program satisfies all but one of the course educational objectives. Students completed pre- and post-course self-assessments evaluating confidence in aspects of pharmacy practice and therapeutics. Course and instructor evaluations were obtained post-course. The program will be described, an analysis of the evaluations will be presented, and a summary of the identified medication discrepancies will be provided.

Non-pharmacist preceptors

Turner CJ, Altieri R, Clark L, Dwinnell B, Barton A. PHRD 5350: Experiential practice VI. An interdisciplinary introductory pharmacy practice experience course.

OTC Medications

Plake KS, Wilhite T, Krypel L. Implementation of a nonprescription medication use service: The student experience. *AACP Annual Meeting 2003*.

Pain management

Rivey MP, Allington DR, Reinivaara-Hall T, Mathis JB, McKerna, JL. et al. Development of a Pharmacy Practice residency with a focus in pain management in a small hospital. *ASHP Midyear Clinical Meeting 2003*.

Pediatrics

Kromelis MR, Hetey SK, Tourville JF, Blanchard NR. Development of a pediatric education track and competitive scholarship program: a way to produce qualified, well-trained pediatric pharmacy practitioners for the future. *ASHP Midyear Clinical Meeting 2002*.

Pharmacogenomics

Kolesar J, Pitterle M, Hoel S, Sobotkiewicz S. Integration of pharmacogenomics into the pharmacotherapy laboratory. *AACP Annual Meeting 2002*.

Psychiatry

Anderson D. Clinical pharmacy services at state forensic hospital. *ASHP Midyear Clinical Meeting 2003*.

Rural

Kuzel MD. Securing success using overlooked resources: Establishment of a required rural experiential rotation. *AACP Annual Meeting 2003*.

In response to the needs of North Dakota and its pharmacies, the NDSU College of Pharmacy has developed a new required rotation in a rural setting effective 2003-2004 with expectations for success on many fronts. North Dakota has a population of approximately 650,000. Many rural (pop. <5,000) community pharmacies are responsible for multiple services in their communities, including provision of traditional retail pharmacy services, rural hospital services, and consultant services to nursing homes. We have rural rotation sites geographically spanning the entire state. For individuals choosing to practice in a rural community, the potential for professional and personal growth is vast. Rising enrollment in our pharmacy program and the need to continue with a high-quality experiential program brought this idea to reality. Questions and concerns regarding available housing have been answered, sometimes in surprising ways. A required activity for each student includes development of a presentation which addresses a current healthcare issue for presentation to a public audience, ie, school PTA, service group, clinic/hospital/nursing home staff. Positive outcomes that will be assessed from this experience include: increased number of students selecting this career option over the next ten years, tangible benefits realized by the pharmacy site/community, and P4 pharmacy student attitude/perception of the rural area practice.

Screening

Mangum SA, Kraenow KR, Narducci WA. Identifying at-risk patients through community pharmacy-based hypertension and stroke prevention screening projects. *J Am Pharm Assoc.* 2003;43(1):50-55.

Grace PM, Olney BT, Morse GD. Integrating pharmacy practice curriculum into ambulatory care pharmacy utilizing health screenings. *ACCP Annual Meeting 2003.*

Objective: Demonstrate successful integration of didactic education and experiential opportunities in health and wellness clinics in ambulatory care settings utilizing second (P2) and third (P3) year pharmacy students. Methods: The Pharmacy Portfolio courses require that P2 and P3 students participate in health and wellness clinics. Students received journal articles relating to the topics and participated in a 2-hour educational seminar prior to participation in these clinics. Disease states that were screened were Diabetes, Hypertension and Obesity. Blood pressure screenings, fasting glucose readings and total cholesterol fingerstick panels were also provided. Each student completed 12 contact hours in a clinic setting. Implications: These clinics enable students to interact with patients in an ambulatory practice setting in order to apply their knowledge and to practice their communication skills. The 200 students participating in the April 2002 clinics documented 1157 encounters with patients. The screening revealed that 624 patients had known medical problems, and the disease conditions were well controlled. In contrast, 247 patients had no knowledge of the potential medical problems that were revealed upon screening. Of those 247, 87 were referred to a physician for follow up. In April 2003, 200 students will be surveyed to determine their perception of the success of the clinics as an experiential opportunity to apply and enhance pharmaceutical care skills in preparation for clerkship rotations.

Service learning

Kirwin JL, Van Amburgh JA, Napoli KM. Service-learning at a camp for children with asthma as part of an advanced pharmacy practice experience. *Am J Pharm Educ.* 2005;XX

<http://www.ajpe.org/view.asp?art=aj690349&pdf=yes>

Objectives. To describe a service-learning opportunity within an advanced pharmacy practice experience and report satisfaction survey results from 2001 through present. Design. Pharmacy students volunteered to attend asthma camp during an ambulatory care rotation. Students administered and monitored medications and coordinated educational activities for campers. Students set goals for the week and completed reflective journals about the experience. A survey was administered 1 week and 6 months after the experience to assess satisfaction, changes in attitudes toward children with chronic asthma, and empathy towards patients. Assessment. Most students accomplished their goals and were satisfied with the experience. Approximately 40% of students believed the experience changed their attitudes. Students agreed that volunteering at camp increased feelings of empathy towards patients with asthma. Conclusion. Students were satisfied with the camp and perceived that the combination of service-learning and clinical rotations enhanced their professional development.

Peters SJ, MacKinnon GE. An initial assessment of introductory practice and service learning experiences in US pharmacy curricula. *ACCP Annual Meeting 2003.*

Robeson RA. Service-learning activities encourage civic responsibility. *ACCP Annual Meeting 2001.*

Brown MC, Lind PR, Sorensen TD. EPhECT - A longitudinal service learning experience. *ACCP Annual Meeting 2002.*

In EPhECT, students develop a relationship with a community teacher (CT), learn from their CT's health and life experiences, identify and meet their CT's needs, and finally gain experience providing pharmaceutical care. EPhECT is structured in teams, comprised of a CT, a first (PDI), second (PDII), and two third (PDIII) year students, and a faculty member. EPhECT has 3 main components: CommunityBased Visits, Community Outreach, and Pharmaceutical Care Clinic. The PDI and PDII students visit their CT in the CT's home twice per semester. Visits focus on meeting the first three objectives. Following each visit, students complete written reflection and orally reflect with their faculty member. PDIII students meet the fourth objective by working with their CT in the on-campus Pharmaceutical Care Clinic. With a preceptor, students complete an assessment, care plan and provider summary letter. Student reflections contain evidence of a valuable, individualized experience, with 84% describing better understanding of the patients' perspective. PDI and PDII students reported companionship (52%), provision of general health information (35%), and encouragement to use health care resources (17%) as services provided. All of the CT Clinic participants reported a positive experience and 92% of CT's reported to be more likely to utilize

pharmacists since joining EPhECT. Further assessments continue. Through EPhECT, students work in a rich, patient-centered, non-traditional learning environment that may motivate them to practice as patient-centered pharmacists in the future.

Lind PR, Brown MC, Sorensen TD. Early pharmacy education with community teachers (EPhECT): A longitudinal service learning experience. *AACP Annual Meeting 2002*.

Objectives: Students in EPhECT should: (i) Develop a relationship with a community teacher (CT), (ii) Learn from their CT's health and life experiences, (iii) Identify and meet their CT's needs, and (iv) Gain experience providing pharmaceutical care. Methods: EPhECT teams are comprised of a CT, a first (PDI), second (PDII), and two third (PDIII) year students, and a faculty member. The PDI and PDII students visit their CT in the CT's home twice per semester. Visits focus on meeting the first three objectives. Following each visit, students complete written reflection and orally reflect with their faculty member. PDIII students meet the fourth objective by working with their CT in the on-campus Pharmaceutical Care Clinic. With a preceptor, students complete an assessment, care plan and physician letter. Results: Student reflections contain evidence of a valuable, individualized experience, with 84% describing better understanding of the patients' perspective. PDI and PDII students reported companionship (52%), provision of general health information (35%), and encouragement to use health care resources (17%) as services provided. All of the CT Clinic participants reported a positive experience and 92% of CT's reported to be more likely to utilize pharmacists since joining EPhECT. Further assessments continue. Implications: Through EPhECT, students work in a rich, patient-centered, nontraditional teaching environment that may motivate them to practice as patient-centered pharmacists in the future.

Sports medicine

AACP PEP-SIG Survey and a few others with regard to this in curricula July 2004.

<http://www.aacp.org/site/tertiary.asp?TRACKID=DKHHZ89FKBCARTHX84XY8D5PGTEMLPU7&VID=2&CID=1049&DID=6217>

Urgent care

Kramer AD, Mitchell J, Epplen K. Urgent care pharmacotherapy clinic: A bridge between the emergency department and the primary care physician? *ASHP Midyear Clinical Meeting 2003*.

Veterinary medicine

Lust E. Veterinary pharmacy clerkship: A model. *J Pharm Teach*. 2002;10(2):47-62.

Pharmacy students desire education and knowledge about the use of prescription medications for the treatment of animal disease states. Information on this aspect of education within the pharmacy curriculum is lacking. While it is reasonable to expect graduates to fill some veterinary prescriptions in a community environment, the therapeutic knowledge base for this activity is absent in many curriculums. One model used to prepare graduates for practice in veterinary pharmacy is the offering of an elective veterinary pharmacy clerkship for fourth-year doctor of pharmacy students. The clerkship uses active learning strategies in veterinary-centered environments such as the Humane Society, a zoological park, an animal health distributor, and veterinary clinics to enable students to apply their human pharmacy knowledge base to diseases and conditions that are seen in animal patients.

Student Learning Support on Clerkship

Kassam, R. Lee, S. Albon, SP. Development of a Web-based resource hub to support students enrolled in a pharmaceutical care clerkship program. *Am J Pharm Educ*. 2003; 67(2). Article 52.

<http://www.ajpe.org/view.asp?art=aj670252&pdf=yes>

Hub provided students with access to course materials, various communication and evaluation tools, and links to information sources within and external to the hub.

Klockars, SJ. Blair, MM. Mazur, JN. Ragucci, KR. Fermo, J. Assessment of web-based applications for ambulatory care rotations. *Ann Pharmacother*. 2003;37(12):1785-1788.

An interactive Web site was developed to supplement ambulatory care clinical rotations, optimize collaborative efforts of ambulatory care preceptors, and standardize the educational and evaluation experience. The survey results reinforce the continued use of this teaching method and will enable preceptors to make appropriate adjustments for future learners.

Mangino, P. Adams, T. Patterson, B. Claypool, T. Enhancing pharmacy practice clerkships by use of block scheduling, patient case conferences and self taught modules. *ASHP Midyear Clinical Meeting*. 2004;39(DEC):P49D.

Six rotations were offered as a block, geared towards students interested in residency or institutional practice. Second, was the development of Self Taught Advanced Rotation Topics (START). These were modules consisting of example patient cases with questions so the student could assess his or her prior knowledge of the topic, followed by an outline of the topic and primary literature pertaining to the subject. Third, was the development of a weekly patient case conference, facilitated by a staff member, with students preparing and discussing cases. Results: During the six months of block rotations, clinical interventions performed by students increased each month from 18.5 interventions per student the first month to 80.6 per student the sixth month. Interventions for all pharmacists also increased during this time by an average of 18.6% per month over the previous year. This indicated that student interventions were in addition to the staff pharmacists' workload and that the addition of students to the rotations on a consistent basis enabled pharmacists to spend more time in clinical activities. Students' assessment of block scheduling was that less time was spent each month orienting, making them independent earlier in the rotation. Only one of six students was interested in residency training at the start of the program. This increased to three by the end. The START modules and weekly case conferences received a very positive evaluation by all the students. Conclusion: Enhancing the advanced practice rotations had a positive effect on pharmacy services with consecutive rotations having the greatest impact on increasing pharmacist clinical interventions. Self-study modules and weekly case conferences had the most effect on increasing student satisfaction with the experiential rotation.

Use of PDAs during Clerkship

AACP PEP-SIG survey on PDAs and laptops for students (posted 7/1/2004)

<http://www.aacp.org/site/tertiary.asp?TRACKID=DKHHZ89FKBCARTHX84XY8D5PGTEMLPU7&VID=2&CID=1049&DID=6216>

Nystrom, KK. Foral, PA. Christensen, CM. Hayes, MM. Davis, EM. Pharmacy student survey of views on clinical workload documentation and personal digital assistant (PDA) usage. [abstract] *ASHP Midyear Clinical Meeting* 2004.

Purpose: Clinical pharmacy workload documentation is critical to justify pharmacy services. Many practicing pharmacists do not understand the importance and are reluctant to spend time documenting workload. At our institution we document clinical workload using personal digital assistants (PDAs). We stress to our clerkship students the importance of clinical workload documentation to aid in justification of pharmacy services. We hypothesized requiring students to document their clinical activities and stressing the importance of this throughout the month would impact their views on documentation. Methods: This survey was approved by our institution's IRB and informed consent was obtained by completion of the survey. Pharmacy students participating in a four week clerkship at our institution were asked to complete a preclerkship and post-clerkship survey. Both surveys consisted of nine questions specific to the clerkship learning outcomes, including two open-ended questions. Survey questions evaluated student experience, comfort level and understanding of the importance and purpose of clinical workload documentation. Survey questions also evaluated utilization of a PDA. The post-clerkship survey also had two-specific questions concerning user-friendliness of the PDA program. The survey was conducted on-line using FrontPage Forms. The data was collected using an on-line link from Front Page Forms to a Microsoft Access Database. Responses were sorted by the student's unique network ID and matched for pre and post responses. The data was exported to Statistical Package for the Social Sciences (SPSS) for analysis. Frequency distributions were run to determine the mean, median and standard deviation for each question pre and post. An analysis to determine differences in the pre and post responses was done using the Wilcoxon Signed-Ranks test. The qualitative data from the two open-ended questions were analyzed to determine themes using NVivo. Results: Thirty-six students completed the pre-clerkship survey and 31 students completed the post-clerkship survey. The 31 students completing both surveys were included in the analysis. Results of all questions were statistically significant. No significance was seen in responses between the genders within each survey. As clinical workload documentation experience increased, student comfort level with documentation increased. With increased experience utilizing a PDA for documentation and drug information, student comfort level also increased, NVivo analysis showed a deeper understanding of the purpose of documentation in the post-clerkship survey. Conclusions: Educating students on the importance of clinical workload documentation and allowing students to gain experience significantly enhanced their impressions of utilizing PDAs and documentation.

Tice, B. PIDSware; a PDA/Web-based pharmacy intervention documentation system to collect, quantify, and evaluate student drug therapy interventions, preceptors, and practice sites.[abstract] *ACCP Annual Meeting 2003*. PIDSware is a PDA/Web-based application that enables pharmacy students and pharmacists to capture drug therapy problem interventions and collect the data into a central database. Once the data is entered into a PDA and the PDA is synced, the data can be forwarded to the school of pharmacy. Data can be forwarded from an unlimited number of locations. Reporting on student, preceptor, and/or practice sites is included, enabling evaluation of the types of drug therapy problems, disease states, and student patient care. The system will also establish a DOI Score(R), Depth of Intervention Score, to evaluate the cognitive complexity of the intervention. Implementation of the system will enable the school to evaluate rotation sites by depth and number of intervention opportunities, type of disease states on which students focus and type of disease state opportunities encountered by rotation site, while assisting in the quantification of value delivered by students and clinical faculty to the practice sites. As a teaching tool the system establishes a "process" for patient care and facilitates quality documentation through "required" fields that must be entered before the intervention is considered complete. The system will also integrate drug information and treatment guidelines, reinforcing didactic teaching at the point of care and further establishing a patient care "process." Visit the established website at www.pidsware.com, or www.rxinterventionsystems.com.

Monaghan, MS. Young, W. Chapman, TA. Price, PL. The effectiveness of formal faculty training prior to introducing PDAs on clerkships.[abstract] *ACCP Annual Meeting 2003*.

Objectives: Technology is changing pharmacy practice. One device that holds promise for practice enhancement is a personal digital assistant (PDA). Our school is interested in introducing PDAs into the experiential portion of the program. Our objective was to train faculty for PDA use on clerkships prior to introducing them to students. Methods: Six faculty were chosen to participate in this pre-post interventional design pilot study. Faculty were asked to complete a 15-question Likert-type survey with seven additional open-ended questions. The survey was designed to determine participants' knowledge and skill related to PDA use and clerkship application. The open-ended questions explored faculty ideas on how to incorporate PDAs into clerkships. Participants then completed a six-week, 12-hour seminar designed to educate the faculty on PDA use and applicability to clinical education. At the end of the seminar, faculty repeated the surveys. Pre-post comparisons were made assessing the impact of the seminar on participant PDA knowledge and skills. Results: Significant improvement was achieved in five of the 15 areas: what Internet tools can be added to the PDA for clerkship use, how to install programs for clerkship use, how to set up web resources on the PDA when the PDA is not connected to the Internet, how to set up a PDA guest station on a desktop, and how to use PDA accessories for clerkships. Faculty ideas on how to use PDAs on clerkships improved dramatically. Implications: Formal training can greatly enhance faculty knowledge, skills, and ideas regarding PDA use during clerkships.

Price, SO. Implementation of PDAs in a drug information clerkship program.[CE program] *ASHP Midyear Clinical Meeting 2003*.

Use of personal digital assistants (PDAs) is becoming widespread throughout the healthcare community. Many healthcare-related and database programs are available. Beginning in 2002, McWhorter School of Pharmacy provided PDAs for all students. Faculty members were charged with integrating PDAs into the curriculum. PDA use could benefit students in pharmacy-related tasks as well as information collecting. The first year, Drug Information clerkship students had little prior PDA experience. Thus, phase one of the PDA implementation provided information about some of free, but highly useful, programs available. Questionnaires completed the first day of each rotation assessed student PDA comfort levels, types of programs currently utilized, and specific problems experienced (i.e., downloading programs, use of expansion cards). A subsequent learning experience incorporating two free programs - ePocrates qRx and MedCalc - posed scenarios that might occur in an institutional or community setting. Solutions to the scenarios and key features of the two programs were identified. Problems mentioned on initial surveys were discussed. Follow-up questionnaires evaluated interest usefulness, and suggestions for future sessions. PDAs were required to be resources during further rotation activities. Phase two is the design of a HandBase form allowing students to enter information about learning experiences gained during the rotation. This information will sync to Microsoft Access, thereby creating a cumulative database of experiences for faculty informational and quality assurance purposes. In addition, the student can export records to the Memo Pad function and print out the required portfolio of the clerkship experiences for the Experiential Coordinator.

Pound, MW. Drew, RH. May, DB. Utilization of personal digital assistants (PDAs) as a resource for pharmacy students during experiential learning.[abstract] *ACCP Annual Meeting 2002*.

Objectives: (i) evaluate the prevalence of undergraduate PharmD students using a PDA during experiential learning programs; (ii) evaluate the students' satisfaction with a PDA-based vancomycin dosing program; and (iii) determine PDA drug information resources utilized by students. Methods: From October 2001 to March 2002, participating pharmacy students beginning adult internal medicine rotations completed a survey to determine student demographics, PDA use history and subjective level of expertise with vancomycin dosing. The students then received a PDA-based vancomycin dosing tutorial prepared by the investigators. A survey completed at the end of the two-month rotation was administered to determine their satisfaction with the tutorial and other PDA-based medical resources. Results: Preliminary findings show 23/30 (77%) students own a PDA and use this as a drug information resource. A total of 17/22 (77%) ranked themselves "Poor-Fair" regarding vancomycin dosing competency prior to the use of the tutorial. The primary medical source utilized was EpocratesO. The vancomycin module was found to be very helpful and students subsequently rated their vancomycin dosing competency :is "Good-Very Good" by 92% of respondents. Final results will be presented at the meeting. Implications: Based on preliminary data, PDA use among pharmacy students is high and appears to be a beneficial medical resource. PDA-based tutorials may also be a beneficial learning tool.

Rubio, T. Orychak, I. Lemanowicz, J. Evaluation of community acquired pneumonia treatment: utilization of pharmacy students and hand held technology.[abstract] *ASHP Midyear Clinical Meeting 2002*.

Utilization of upperclass students

AACP Student Services SIG Roundtable Session Minutes from *AACP Annual Meeting*. Alexandria, VA: July 2002.
<http://www.aacp.org/site/tertiary.asp?TRACKID=DKHHZ89FKBCARTHX84XY8D5PGTEMLPU7&VID=2&CID=790&DID=4615>