



2011 Spring Conference Program Abstracts

Entering A New Decade of Medical Education

March 17-19, 2011

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Association of American Medical Colleges Central Group on Educational Affairs
and University of Nebraska College of Medicine*



**All CGEA Conference activities will be conducted at the
University of Nebraska Medical Center
Michael F. Sorrell Center
(42nd and Emile Streets)**

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Target Audience

This program will be of interest to educators and administrators participating in undergraduate and graduate medical and professional education and training.

Educational Objectives

Upon completion of this educational activity, participants should be better able to:

- 1) Discuss the benefits associated with an integrated and more seamless approach to the continuum of health professional education.
- 2) Design and implement strategies for effectively educating healthcare professionals in alignment with overarching healthcare improvement initiatives.
- 3) Describe current research and emerging tools and techniques designed to appropriately position and advance the medical education profession.
- 4) Identify a variety of best practices in the field of medical education and seek to effectively integrate innovative solutions into your medical education setting.
- 5) Build a network of colleagues available to engage in on-going discussions and idea generation surrounding education issues and challenges.

Program Committee

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University of Nebraska Medical Center Disclosure Policy

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To help achieve that objective, all persons involved in the planning/content development are expected to disclose all relevant financial relationships with pharmaceutical companies, biomedical device manufacturers or distributors, or others whose products or services **may** be considered related to the subject matter of the educational activity. Disclosure of these relationships will be included in all written activity materials, and mentioned verbally at the activity so that participants may formulate their own judgments in interpreting content and in evaluating recommendations.

Friday, March 18, 2011

Concurrent Sessions (8:30-10:00 AM)

Workshop

The Diagnosis and Treatment of Students With Clinical Performance Deficits

Debra Klamen MD, Southern Illinois University School of Medicine

Reed Williams PhD, Southern Illinois University School of Medicine

Students demonstrate deficits in their clinical performance capabilities in a number of ways. They may be given a marginal or failing score on clinical performance observation rating scales, or fail standardized patient examinations. Faculty members are left with the dilemma of helping them. The dilemma is frustrating because we don't really have much of a guide for doing that. Remediation is often haphazard, rotely applied and/or too general. For example, a student failing a standardized patient examination will often be remediated by being required to rotate on a clinical unit for a month with an assigned faculty member. The core problem (diagnosis) behind the failure is never made clear beyond the fact that the student did not perform up to passing standards on the examination (which is the presenting finding of the problem). This misstep is akin to treating all patients who have chest pain with sublingual nitroglycerin. Certainly this would not be tolerated for patients; faculty can do better for students and residents as well. Our 'treatments' need to be much more specific and targeted, based on a clear diagnosis.

Specific Objectives: By the end of the workshop participants will:

- 1) Be able to name at least 3 reasons why students can be deficient in the clinical performance arena.
- 2) Use a diagnostic rubric (provided) to identify the nature of a clinical performance problem.
- 3) List at least 3 remediation methods for improving a clinical performance deficit.

Workshop

Student Self-reflection, Peer Review and Feedback in Small Group Learning

Devendra Pant MD, PhD, University of North Dakota School of Medicine & Health Sciences

Linda Olson EdD, University of North Dakota School of Medicine & Health Sciences

Are Holen MD, PhD, Norwegian University of Science & Technology Faculty of Medicine

Rationale: Social negotiation skills are important part of the medical profession. As a member of a patient care team one needs to have capacity for self-reflection and peer review. During formative years as a senior medical student in the clinical clerkship, or as a physician-apprentice providing care to the patients in the residency years, collaborative learning occupies a 'center stage'. From morning bed-side ward-rounds to preparing patient discharge summaries to teaching in the ambulatory or in-patient settings, a physician is engaged in team activities all the time. Giving and receiving feedback effectively as part of peer review and quality improvement process is a competence fundamental not only for the practice of medicine but also for the continuing life-long learning of a physician. The educational benefit of feedback has been noted in literature. The challenge for educators is how to create a classroom culture in which students can learn and safely practice the skills of self-reflections and peer feedback early on in the medical curriculum. Another challenge is how the 'group process behaviors' can be assessed effectively in the classrooms. This workshop will provide opportunity to share practical experiences in the training of students in giving and receiving feedback by other medical students in small group learning. It will also help workshop participants learn about the use of peer review tools.

Objectives: The overall objective of this workshop is to help participants familiarize with the concept of group dynamics and the use of tools for self-reflections, peer review and feedback in small group learning in the context of problem-based learning. At the end of the workshop, the participants will be able to: 1) explain the social dynamics involved in small group process, 2) identify the significance of self-reflections, peer review and feedback in medical education, 3) use a sociogram to make the implicit pattern of interactions explicit in a small group, 4) use the Group Process Evaluation Scale (GPES) as a tool for self-reflection and peer feedback, and 5) reflect on the possibility of using the GPES as a peer review and feedback tool in small group sessions. The participants will have an opportunity to watch an instructional video of students engaged in small group discussion, and have hands-on experience on the use of the tools. The expected outcome of the workshop is that the participants will gain skills to train students in giving and receiving feedback by other students in small groups.

Research Consultation

Development and Assessment of Strategies to Enhance Self-Regulated Learning of Anatomy Through a Virtual Platform

Darren Hoffmann PhD, University of Iowa Carver College of Medicine

Marc Pizzimenti PhD, University of Iowa Carver College of Medicine

Ryan Brydges PhD, University of Iowa Carver College of Medicine

Common to all professional-level gross anatomy courses is a significant amount of self-regulated study. Unfortunately, students often struggle to find ways to study gross anatomy effectively, using primarily 2-D images of complex 3-D structures and relationships. Recently, we have helped to create a novel 3-D virtual cadaver (Cyber-Anatomy™) that is fully dissectible, which allows students to interact with complex anatomy away from the laboratory. However, students report difficulty in learning from the program due to its complexity. An important next step is to design supportive text in the form of learning modules that help facilitate students' self-regulated study. The goal of this study is to determine how to best design these modules, by examining students learning from the software with varying types and degrees of supportive structure. The roles of contextual orientation and explicit step-by-step instruction will be evaluated. In addition, learning modules will be designed which reflect a typical "deconstructive" dissection approach, wherein the student starts with an intact body region and takes it apart, and a novel "constructive" approach wherein the student builds a body region starting with the bony elements and adding layers of soft tissue anatomy in sequence. A pilot study will be performed in which students are directly observed interacting with the software to determine student behaviors during self-guided study using the virtual model. To determine the effectiveness of the different design approaches, students in a variety of gross anatomy courses at the University of Iowa over a 4 semester period will be trained in how to use Cyber-Anatomy and assigned particular learning module approaches for a subset of topics during their coursework. Quantitative and qualitative data will be collected to describe students' experiences, and learning outcomes will be assessed quantitatively through standard anatomy examination techniques. Focus groups, participant surveys and interviews will be conducted to more precisely identify problem areas in the module designs. The results of this study will be essential in guiding the development of an array of learning materials that will impact all anatomy students at the University of Iowa, and through collaboration with Cyber-Anatomy, may be disseminated more broadly at the national and global level.

Panel

A Peer-Review Teaching Circle to Improve Medical Student Curriculum and Assessment

Craig Piquette MD, University of Nebraska College of Medicine

Joseph Sisson MD, University of Nebraska College of Medicine

Hugh Stoddard PhD, University of Nebraska College of Medicine

Susanna Von Essen MD, University of Nebraska College of Medicine & University of Nebraska College of Public Health

Rationale: Clinicians learn to teach in clinical situations by emulating mentors but do not often receive instruction on how to improve learning within a classroom setting. A teaching circle provides clinicians with peer instruction in new teaching techniques and question-writing skills.

Objectives: Participants will be able to initiate a teaching circle and define a framework for clinicians to improve their classroom instruction. They will enumerate the benefits to teaching circle participants and medical school leadership in improving teaching at all levels. Finally, participants will learn how peer-review can improve question-writing skills and student assessment.

Panel

Using Medical Humanities to Enhance Learning and Reflection: Through the Lens of Culture

Timothy Hickman MD, MEd, MPH, University of Missouri Kansas City School of Medicine

Diane Hummel MA, MILS, Spectrum Health

Monica Lypson MD, University of Michigan School of Medicine

Rationale: The U.S. is becoming an increasingly diverse society. While it is probably intuitive that current and future providers need to be proficient at cultural competence, it is also an accreditation requirement. The LCME accreditation standards include two curriculum content questions that specifically address culture and health; ED-21, which addresses health beliefs and traditional health practices, and ED-22, which focuses on self-awareness. The AAMC "Tool for Assessing Cultural Competence Training" contain specific for knowledge, skills and attitudes within a variety of Domains. Domain I C addresses Clinicians' self-assessment and reflection, may require a different approach from addressing epidemiology of health disparities and culturally appropriate history, diagnostic, and shared decision-making skills. Medical humanities may offer an appropriate educational approach to emphasizing self-reflection and impact a physicians personal beliefs on health care and the patient's satisfaction with care.

Objectives: After attending the session, participants will be able to:

- Describe the use of Medical Humanities in medical education

- Appraise the current literature on using Medical Humanities in teaching about culture and health
- Describe the segment of a Medicine and Literature course that used literature to expose students to medicine as a culture, the clinician's self-assessment and reflection, health beliefs and traditional healing practices.
- Discuss implications and strategies for using medical humanities to encourage self-assessment and reflection about culture and health.

Concurrent Sessions (10:15-11:45 AM)

Workshop

Planning an Interprofessional Collaboration Project: Tools for Success and Pitfalls to Avoid

Amy Lawson MD, Washington University School of Medicine

Monica Lypson MD, University of Michigan School of Medicine

Heather Hageman MBA, Washington University School of Medicine

Overview: Interprofessional collaborations can be powerful educational experiences for all involved, but their complexities require careful planning. Using short didactic and longer discussion sections, this workshop will address important topics in planning and implementing interprofessional projects, such as developing objectives, anticipating logistics, preparing materials and debriefing learners. Participants with similar interests will be grouped, and structured small group discussions will ensure that participants leave the session with clear ideas for designing and implementing their own projects.

Rationale: Practitioners in all health care professions must work effectively in teams to deliver high-quality and safe patient care. Because of their large scope, interprofessional collaborations can be daunting to design and implement. Those who have successfully initiated collaborations have important lessons to share that will help others avoid the need to “reinvent the wheel.”

Objectives:

- (1) Participants will identify potential collaborative opportunities at their own institutions
- (2) Participants will develop clear objectives and understand their importance for successful implementation of a collaborative project
- (3) Participants will consider project logistics including planning needs, resources, and evaluation methods
- (4) Participants will understand debriefing purpose and techniques
- (5) Participants will leave the session with a concrete plan for designing and implementing their own collaborative project

Workshop

Students Talk Back: Developing and Utilizing Effective Student Feedback for Evaluators

Nersi Nikakhtar MD, University of Minnesota School of Medicine-Twin Cities

Shobhina Chheda MD, MPH, University of Wisconsin School of Medicine & Public Health

Laura Zakowski MD, University of Wisconsin School of Medicine & Public Health

Rationale: Structured, recurrent teaching sessions are commonplace in medical education, and evaluations of such sessions by learners are critical in developing and improving these sessions and the clinician educators who provide them. Eliciting student feedback, however, is frequently done without a clear understanding of how to best obtain and utilize this information. This workshop will provide a simple, effective process to develop and implement student feedback instruments specific to the participants' needs.

Objectives: By the end of this workshop, participants will be able to:

1. Compare the different methods of obtaining student feedback.
2. Identify which methods of feedback would be most suited to a variety of education.
3. Design focused survey instruments specific to their teaching activities.
4. Translate student feedback into data for educator portfolios and program improvement.

Small Group Discussion

Developing and Implementing an Effective, Efficient, and Comprehensive Internal Review Process for GME Programs

Paola Palma Sisto MD, Medical College of Wisconsin

Kathleen Quinn-Leering PhD, Medical College of Wisconsin

Jerome Van Ruiswyk MD, Medical College of Wisconsin

Rationale: Setting the tone for a positive ACGME site visit starts with completing a comprehensive and thoughtful internal review (IR). The institution's graduate medical education committee (GMEC) is required to complete an IR of a program to assure the program's adherence to the ACGME requirements for that program and allow sufficient time to correct any deficits that are uncovered during the internal review. This mini “site-visit” is designed to uncover areas of noncompliance as a site visitor would during the true site visit. Unfortunately, not

all IRs are conducted as carefully as needed to assist the programs in this effort, whether by inadequately preparing an IR team to do its task, or by not directing the program and IR team to the appropriate documentation needed to complete a thorough and comprehensive review. This is especially needed for those programs that have been given a short review cycle. What is needed to make this process a successful one is an understudied area of graduate medical education (GME).

It is critical given time constraints we all are under to develop a streamlined, protocolized process to assist program directors in assessing their residency or fellowship programs. The process should help program directors determine their areas of compliance and areas that need focused changes to improve the program in addition to passing the scrutiny of ACGME site visitors.

Our institution has undergone an intensive review of its process for internal reviews of its programs and has redesigned the process. The redesign has included all aspects of the process, including selection of the internal review team participants, the documentation required to be submitted by the program being reviewed (including a completed PIF), as well as the final IR report. Those items have been templated so that this can be generalized over our current 70 accredited programs. 15-25% of the programs have completed this new IR process with positive reviews as to the outcomes of the process as well as valuable "lessons learned".

Small Group Discussion

Educational Processes to Promote Professional Development: You Can't Teach Patient-Centered Care in a Traditional Curriculum

Charles Christianson MD, ScM, University of North Dakota School of Medicine & Health Sciences

Rosanne B. McBride PhD, University of North Dakota School of Medicine & Health Sciences

Rationale: *Educating Physicians* (Cook, Irby and O'Brien, 2010) has identified development of professional values as one of four major challenges in current medical education, and the importance of this activity is also reflected in the attention it has received in medical education journals and conferences in the last decade. While medical educators in the past have focused on the content of our teaching (the formal curriculum), professional values are largely formed by implicit messages including institutional values and the learning environment (process). *Educating Physicians* also calls for integration of curriculum and for educational methods which develop a spirit of inquiry in learners. We will explore the ways in which pedagogical methods (process) influence the formation of professional values, describe a novel integrated preclinical curriculum which promotes a spirit of inquiry and supports development of desired professional values through the process of education, in contrast to traditional lecture-based methods, and invite the participants to reflect on the application of these concepts to their institutions. In this time of curriculum renewal, it is critical that medical educators consider the role of pedagogical methods on formation of professional values.

Cook, M., Irby D.M. and O'Brien, B. (2010). *Educating Physicians: A Call for Reform of Medical School and Residency*. San Francisco CA, Jossey-Bass.

Objectives:

1. Attendees will understand the way in which educational **processes** can express and support the development of desired professional values.
2. Attendees will understand the concept of "parallel process" in medical education.
3. Attendees will reflect on the values supported by the traditional lecture approach to medical education as well as by newer educational models.

RIME Oral Abstract Presentations Session: Attitudes and Perceptions of Medical Students

Changes in Medical Students' Perceptions Following a Summer Community Experience

Kevin Kane MD, MSPH, University of Missouri-Columbia School of Medicine

Jim Stevermer MD, MSPH, University of Missouri-Columbia School of Medicine

Background: The University of Missouri School of Medicine and MU Area Health Education Center developed a comprehensive rural track training pipeline program to prepare students for rural practice. The 4-8 week Summer Community Program offers an early opportunity for medical students to work with physicians in a smaller Missouri community. This study measured students' perceptions about rural physicians and rural practice before and after this summer experience.

Methods: From 1995 to 2010, students in the Summer Community Program were paired with physician preceptors to work in a rural setting. They completed a pre-post-experience Likert scale questionnaire to assess their perceptions about rural physicians and rural practice. The mean and modal responses before and after the experience were calculated and changes in responses were compared using the non-parametric Sign Test. We analyzed student responses to Likert scale questions on the quality of their overall experience and interest to practice in a rural community.

Results: Of the 229 students completing the pre-post survey, 52% were female and 67% were from a rural high school. Pre- and post-values are percent of students who (dis-)agree or strongly (dis-)agree with the statement. Students' agreement with the following changed significantly ($p < 0.0001$): Rural doctors are accorded

much respect from other professionals (pre (36%) post (56%)); Rural doctors have lots of opportunities to teach others (pre (62%) post (75%)). Students' disagreement with the following changed significantly ($p < 0.0001$): A problem with rural practice is the difficulty in accessing CME (pre(21%) post(64%)); Rural practice is often repetitive and boring (pre(68%) post(83%)); Rural doctors are professionally isolated (pre(37%) post(73%)); Rural doctors aren't up to date on recent medical advances (pre(72%) post(92%)); Rural doctors earn barely enough money to make ends meet (pre(77%) post(92%)); Rural practice is just overwhelming (pre(53%) post(83%)). Students' agreement with the following did not change significantly : A physician's social life in a small town is under close scrutiny (pre(73%) post(63%)); I'm likely to practice in a rural area someday (pre(55%) post(61%)); I'm likely to marry someone from a small town (pre(32%) post(32%)). Students reported they would recommend this experience enthusiastically and most found it very valuable. Over 25% strongly agreed, and 46% agreed, with the statement: "As a result of this experience, I am more interested in a rural community practice."

Conclusions: After participating in the Summer Community Program, students gained a more favorable impression of rural practice, but did not clearly change their self-reported plans for rural practice.

What and How Students Learn About Communication Skills During Clinical Rotations

Marcy Rosenbaum PhD, University of Iowa Carver College of Medicine

Rick Axelson PhD, University of Iowa Carver College of Medicine

Paetra Ruddy BA, University of Iowa Carver College of Medicine

Background: Although training in communication skills are part of the core curriculum in medical schools, research shows a deterioration of interviewing and communication skills as medical students progress through four-year medical school curriculum. This skills deterioration may be a result of students' experiences on clinical rotations and the role models they observe. Most research on this issue has focused on direct assessment of individual learners' knowledge and skills while little empirical investigation has been conducted to identify what happens during clinical rotations that has an impact on these skills. The purpose of the current research was to examine student perceptions of both what and how they learn about communication skills during their clinical rotations.

Methods: During 2008 and 2009 academic years, all rising senior (year 4) students were invited to participate in semi-structured, open-ended interviews focused on their learning of communication skills during clinical rotations. These interviews were conducted by medical student researchers. Interviews were recorded and transcribed verbatim and entered into an NVivo 8 database for systematic coding. Thematic analysis of student statements identified salient themes in their discussions of clinical learning experiences.

Results: 107 senior students (42 male, 65 female) participated, resulting in approximately 35% response rates from each graduating class. Students reported learning communication mainly by: 1) observing attending faculty and residents; 2) conducting interviews themselves; and 3) through feedback on presentations to attendings. Though they expressed a desire to be observed and given feedback on their actual interactions with patients, the majority reported this rarely happened and only on one or two rotations. What students observed tended to not reinforce what they had learned pre-clinically about interviewing. Students also reported that communication skills were rarely explicitly discussed as part of their clinical interactions with teachers. Perceived faculty expectations of student interviewing conveyed messages to students about what was important in communicating with patients. Key themes in these perceived expectations included the need for interviews to be time efficient and focus on information important for presenting to attendings during staffing. Students understanding of how to achieve these expectations had an impact on their communication styles, at times prompting them to omit use of many of the communication skills they had learned pre-clinically.

Conclusions: Interviews with senior students can provide insight into their actual learning experiences during clinical rotations and their perception of that experience. Students interpreted what they observed as well as the messages they received through presenting patients to staff as a guide for their communication behavior. Specifically this study identified how student interpretations of expectations from their teachers were perceived as having an impact on their communication with patients either by reinforcing or contradicting the skills that had been emphasized during pre-clinical training.

Student Perspectives on Preclinical Professionalism Courses

Elizabeth Smock EdD, ABD, University of Missouri-Kansas City School of Medicine

Jennifer Quaintance PhD, University of Missouri-Kansas City School of Medicine

Background. Literature and an examination of course evaluations show students often have strong opinions regarding their preclinical professionalism courses. The purpose of the study was to gain a better understanding of how students view such coursework with the hope of making recommendations for faculty.

Methods. Students (N=42) at all year levels from two medical schools in the Central Region participated in one-on-one, face-to-face interviews designed to elicit their perspectives on topics related to medical professionalism. Members of the Gold Foundation Honor Society and students identified by faculty as having exhibited a high level of professionalism were invited to participate (N=95). The semi-structured interviews took place at the students' respective institutions, were conducted by one of four trained interviewers and lasted from

approximately 20 minutes to 1 hour. Data analysis was through an open, iterative process of independent coding and resolving disagreements through discussion.

Results. The students indicated that their respective schools made professionalism a priority; however they also indicated that professionalism can take on a negative connotation if overused or used as punishment. They indicated that they learned a great deal and were exposed to ideas and concepts they wouldn't otherwise know. They discussed characteristics that made courses more valuable such as interactive experiences with patients, physicians, standardized patients and peers; time for reflection via discussion and writing; opportunities to receive constructive feedback on behavior; and contextualized, practical and real-world content. In contrast, students also expressed very negative perspectives such as the courses are a waste of time, take too much time and effort, were offered at a poor time during the curriculum, and were not as important as science and clinical courses. Students also indicated that they noticed both professional and unprofessional behavior by the course instructors and changed their opinions of the faculty members and of the courses accordingly. Students see these courses as valuable in their clinical years even if they didn't seem valuable while enrolled in the courses. Lastly, the students felt the classroom-based courses should not stand on their own; rather they should be taught in conjunction with or be closely followed by clinical experiences.

Conclusions. Students had complex perspectives on preclinical professionalism courses. A number of students indicated both strong negative and strong positive opinions about the courses they had taken. Some of the most common praise and criticism can be used by faculty as they try to improve their courses.

End-of-Life Care OSCE During the Surgery Clerkship

Kathryn M. Tchorz MD, Wright State University Boonshoft School of Medicine

Mary T. White PhD, Wright State University Boonshoft School of Medicine

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Mary C. McCarthy MD, Wright State University Boonshoft School of Medicine

Background: The Liaison Committee on Medical Education requires that medical schools provide experiential training in end-of-life care during the clinical years. To this end, we developed and implemented an Objective Structured Clinical Examination (OSCE) using standardized patients (SPs) to practice end-of-life care scenarios commonly encountered during the surgical clerkship. The purpose of this study was to compare student OSCE performance grades with standardized instrument scores to assess physician communication, trust and empathy.

Methods: During academic years 2008-09 and 2009-10, 196 third-year students completed the 8-week surgical clerkship. Students prepared for 3 end-of-life care OSCE scenarios - Conducting a Family Conference; Relaying Prognosis and Treatment; and Obtaining a Do Not Resuscitate Order - by studying best practice guidelines and using web-based educational materials. In each OSCE room, standardized patients (SPs) were well rehearsed for each 15-minute scenario. A non-acting SP was trained to grade student performance according to OSCE goals and objectives. All SPs evaluated the student's communication skills and physician trust with the Kalamazoo Communication Assessment and the Wake Forest Trust Score, respectively. During a debriefing session, students evaluated their degree of empathy by completing the Jefferson Empathy Score. Pearson correlation examined the relationship between OSCE performance grades and the Kalamazoo, Wake Forest, and Jefferson measures. The independent samples t test compared differences between genders, and analysis of variance compared differences among timing of surgical clerkship.

Results: The 196 3rd yr students (mean age 27 ± 3 years; 59% female) had OSCE performance grades which correlated with communication skills [Kalamazoo] at .49 (p < .001), physician trust [Wake Forest] at .49 (p < .001), but not with empathy [Jefferson] at .00 (p = .97). Gender was not significant to OSCE grade (p = .34), communication skills (p = .07, males higher), physician trust (p = .08, males higher), or empathy (p = .08, females higher). Time of clerkship differed on OSCE performance grade and physician trust; however, no trend suggested increased development as the academic year progressed. No differences were noted between time of clerkship and communication skills or empathy scores.

Conclusions: During this two-year surgical clerkship study, end-of-life care OSCE performance grades correlated with improved scores regarding physician communication and trust. Additional research is needed to assess the OSCE scores' lack of correlation with self-perceived empathy, the marginally significant differences between genders on psychosocial characteristics, and the directionless time of year effect on OSCE grades and physician trust.

Concurrent Sessions (2:45-4:15 PM)

Workshop

Use of a Diagnostic Justification Exercise to Assess Clinical Reasoning

Debra Klamen MD, Southern Illinois University School of Medicine

Reed Williams PhD, Southern Illinois University School of Medicine

Rationale: Medical educators are justifiably concerned about students' ability to reason clinically. The use of standardized patient clinical performance examinations has blossomed because, in part, these scenarios offer a window into the potential capacity of medical students' ability to care for real patients. It is very common that these examinations ask students to define their differential diagnoses, and to use a checklist to investigate which questions and physical examinations were used by the student with the standardized patient. However, this gives only a piecemeal ability to really understand what the student is thinking about clinically. A student might 'shotgun' findings, asking every question on a review of systems memorized checklist to get the needed points. If the differential diagnosis of the student is limited, there is no way to know why this is so – a knowledge deficit, lack of appropriate constellations of patterns of illnesses, or premature closure. The diagnostic justification question (and associated evaluation form) bring us a much clearer answer to these questions.

Panel

Before and After: How Educational Technology Improved My Curriculum

Elizabeth Ryan EdD, Northwestern University Feinberg School of Medicine

Heather Heiman MD, Northwestern University Feinberg School of Medicine

Toshiko Uchida MD, Northwestern University Feinberg School of Medicine

Cynthia Evans MD, The Ohio State University College of Medicine

Larry Hurtubise MA, The Ohio State University College of Medicine

Rationale: Many medical schools struggle to develop learner centered, competency-based curricula while incorporating educational technology into their program(s). In this session, we will share experiences using educational technology to fulfill unmet needs in teaching and assessment. The goal of this session is to share experiences and "needs fulfilled" from two medical schools highlighting the educational benefits of incorporated educational technology into their program. This panel will focus on "why" to use rather than how-to use technology tools.

Objectives: To examine diverse perspectives and approaches to the use of instructional technologies and share "lessons learned" about the introduction, training and integration of technologies into a curriculum from two different medical schools. At the end of this session the learners will be able to:

- Identify the type of technology used and why the panelist incorporated it into the course/program or rotation.
- Identify key elements of success and potential barriers to implementation of the technologies.
- Identify the potential impact of educational technologies on their faculty, students, and staff.

Small Group Discussion

Sharing Learner Data Across the Continuum in Electronic Portfolios: The Future is around the Corner

Marianne Green MD, Northwestern University Feinberg School of Medicine

Kimberly Hoffman PhD, University of Missouri-Columbia School of Medicine

Robert Galbraith MD, National Board of Medical Examiners

M. Brownell Anderson MEd, Association of American Medical Colleges

Introduction: Electronic portfolios are increasingly used for learning and assessment in medical education. They have the potential to follow the learner from medical school through residency and into practice providing the learner with opportunities for lifelong monitoring and reflection on professional competence. The potential to connect existing e-portfolios and enable free movement of data to create a continuum of reusable information offers countless applications to compile learning experiences, milestones, assessments and artifacts to produce CVs or demonstrate learning for licensure and certification in addition to other purposes useful to the individual learner. The AAMC and NBME have entered into a partnership to move the national work on an e-portfolio forward. They, along with the Federation of State Medical Boards, have sponsored a group of medical educators, the EFolio Interoperability Initiative (EII) who have been working with MedBiquitous to develop technical standards allowing for the transfer of learner data across institutions. This group was able to demonstrate interoperability among institutions in its first pilot project where a technical specification was developed for a learner's educational trajectory through medical school. This work has been shared at the AAMC annual meeting at the other regional GEA meetings as part of the National Group on Educational Affairs' Agenda for Action.

Objectives:

1. Enhance regional awareness of this GEA Agenda for Action project and the national work promoting e-portfolio interoperability
2. Engage regional participants in a discussion of the goals and progress of the EII to solicit feedback and explore future participation
3. Discuss opportunities for electronic data sharing across the continuum of medical education and practice with a focus on the next pilot for the exchange of education achievement data) across educational programs and data custodians

Small Group Discussion

Design and Implementation of a Tagged Electronic Database of Exam Questions (TEDEQ) for Medical Student Assessment.

Eric Ermie BA, The Ohio State University College of Medicine

Dale Vandre PhD, The Ohio State University College of Medicine

Rationale: Quality assessment and feedback for both students and curricula is one of the more difficult issues facing medical schools. A cohesive method to organize large question data bases, while at the same time gathering performance data and maximizing its use for curriculum refinement and student self evaluation, is an extremely important aspect of assessment that is frequently lacking. Course administrators routinely search for ways to improve their programs and individual students seek information to help gauge their studies. Application of the TEDEQ method to multiple choice examination questions used in a medical curriculum provides useful information to help address the needs of both curricular leaders and students regarding course management and performance evaluation.

Objectives: The objective of this session is to demonstrate a relatively simple yet thorough way for medical educators to record information regarding multiple choice examination questions, and to subsequently organize that information into a form that enables them to rapidly generate specific data relating to the examination structure, content, objectives, difficulty, classification of question type, and student performance. We will then describe several potential applications of utilizing the data generated by our method of categorization and data tracking within their curricula.

Small Group Discussion

Incorporating Simulation into Established Interprofessional Curriculum in Teamwork, Safety, and Quality Improvement

Carla Dyer MD, University of Missouri-Columbia School of Medicine

Gretchen Gregory MSN, University of Missouri Sinclair School of Nursing

Dena Higbee MS, University of Missouri-Columbia School of Medicine

Rationale: This session will focus on the development, implementation and evaluation of an interprofessional simulation for healthcare students, emphasizing teamwork and patient safety. It is essential for healthcare providers to work effectively as part of a team in order to provide the highest level of care for their patients. Our institution is creating a continuum of learning for medical students, residents, nursing students and faculty to produce a healthcare team committed to quality improvement and patient safety.

We have had an established interprofessional curriculum in Teamwork, QI, and patient safety since 2003. A hybrid high-fidelity simulation was introduced in 2009 to promote team building, communication skills, and patient safety awareness. In 2010, 260 students from five disciplines participated in a scenario simulating semi-urgent situations requiring interprofessional collaboration and the identification of safety concerns. Scenarios utilized a combination of high-fidelity mannequins and standardized patients (SP). Students reported increased understanding of professional roles, interprofessional communication, as well as their ability to recognize safety issues.

This session will use one institution's experience developing and implementing an interprofessional simulation in order to discuss potential benefits, challenges, and applications at other institutions.

Session Objectives:

1. Based on one institution's experience, participants will describe the preparatory steps necessary to integrate interprofessional simulation into existing safety, QI, and/or teamwork curriculum.
2. Participants will identify potential benefits and challenges to integrating interprofessional simulation into existing courses.
3. Participants will identify the resources necessary to implement similar interprofessional curricula.
4. Participants will explore a variety of tools to evaluate effectiveness of similar curricular change.

Small Group Discussion

Models for Success in Scholarly Concentration Programs

Matt Bien MD, University of South Dakota Sanford School of Medicine

Hugh Stoddard PhD, University of Nebraska College of Medicine

Deborah Simpson PhD, Medical College of Wisconsin

Rationale: The current medical education reform movement emphasizes the importance of student individualization, inquiry, and improvement. Many medical schools across the US and within CGEA have implemented or are considering programs that allow mentored scholarly activity for students in an area of interest. Whether required or elective, these Scholarly Concentration programs offer students opportunities beyond the traditional curriculum. While such programs vary in structure and content, all have goals of producing physicians with improved critical thinking and lifelong learning skills.

This session focuses on the Scholarly Concentration programs at three CGEA schools. Participants will discuss keys to successful implementation of the program and review curricular models that incorporate these concepts. The content will apply to medical schools that are considering a new program, moving an existing program from elective to required, or maintaining a program during curriculum reform.

RIME Oral Abstract Presentations Session: Learning by – and About - Residents

Resident Burnout: An Evaluation of Family Medicine Residents

CoraLynn Trewet MS, PharmD, Broadlawns Medical Center

Joseph Yankey DO, Broadlawns Medical Center

Larry Severidt MD, Broadlawns Medical Center

Carol Tershak PhD, Broadlawns Medical Center

Background: The stresses of medical residency have long been known. The consequences of many factors in medical training, such as sleep deprivation, challenges with life balance, and knowledge mastery create increased stress levels which may lead to emotional exhaustion, depersonalization, and decreased sense of personal accomplishment. This is commonly referred to as burnout. Burnout research has shown the highest rates are found among medical residents, specifically interns, and range as high as 75%. Duty hour restrictions have been instituted, though geared for patient safety not resident wellbeing. Although the issue of burnout is well established, strategies to prevent or lessen the symptoms are lacking. To help shed further light on burnout and its elusiveness in the medical training curriculum, we conducted the Maslach Burnout Inventory (MBI) to assess burnout among family medicine residents at Broadlawns Medical Center (BMC).

Methods: The MBI survey was administered to all residents in a three-year family medicine residency in Des Moines, Iowa. The MBI measures burnout with questions aimed at assessing the three subcategories of burnout; emotional exhaustion, depersonalization, and personal accomplishment. Results from the survey were assessed for statistical difference between year in training.

Results: Twenty-one (n=21) residents completed the survey (8 first year, 6 second year, 7 third year). The results of the survey at BMC indicated moderate to low burnout. Moderate burnout was seen in emotional exhaustion (mean score 24, range 6-51) and depersonalization (mean score 10, range 4-24), while low burnout was seen through high personal accomplishment scores (mean score 39, range 29-47). The year of training showed a small difference in burnout scores, however it was not statistically significant. The level of personal accomplishment was high in all three training years, a positive result for the program.

Discussion and Conclusion: As a group, the BMC residents have a moderate to low level of burnout. Family medicine residents experience a wide range of burnout throughout their residency. While survey results indicated a moderate to low level of burnout as a group, 24% (n=5) residents scores indicated a high level of burnout on at least two of the three areas. BMC residents overall scored high in the area of personal accomplishment, a positive result for the program. Efforts should be geared towards emotional exhaustion and depersonalization when addressing concerns with burnout among residents. Individual needs should also be carefully considered when addressing burnout among residents.

Assessing Communication Skills with the Objective Structured Competency Assessment of Residents (OSCAR) using senior residents as Standardized Patients

Aleece Caron PhD, The MetroHealth System

Background: Residency programs are required to assess residents' communication skills and provide training to improve these skills when necessary. Designing effective tools to meaningfully teach and assess communication skills has been challenging for program directors and educators as this competency requires creativity in defining, teaching, and evaluating. The purpose of this study was to create a standardized evaluation of communication skills for residents in all programs and to determine if additional communication skill development was necessary.

Methods: We developed the OSCAR with four clinical stations to assess intern communication skills with relationship development, establishing case goals, and organization and time management. The four stations dealt with a disruptive patient, handling a phone call for a narcotics refill, disclosing a medical mistake, and delivering bad news. Interns were evaluated in three domains critical to patient management for the scenarios described above: Case Goals, Relationship Development, and Organization and Time Management. Ten senior residents were trained as standardized patients (SPs) and evaluators by an experienced preceptor. Residents were assigned to stations so that they could become proficient in one scenario and residents were not

interchangeable between scenarios. Training took approximately two hours and included an explanation of the project, reviewing the scenarios, a demonstration by the faculty, opportunity for role playing and evaluation of their performance by the faculty, and some instruction, practice and evaluation on how to give feedback.

The project took place in an outpatient clinic at a large academic medical center.

Results: 84 interns completed the OSCAR during their first month of training. Interns were evaluated by SPs and given immediate feedback. The total possible score for each scenario was 52. Resident performance (mean, SD) was best for disclosing a medical error (44.3, 3.8), followed by handling a disruptive patient (43.3, 5.5), disclosing bad news (41.3, 6.8), and the phone call for the narcotics refill (31.2, 5.4). A repeated measures ANOVA indicated there were differences among the scenarios and this pattern was also illustrated in most of the programs, but there were no significant differences across programs. We also found that US Medical School Graduates performed better than International Medical School Graduates on every station. Inter-rater reliability was excellent for each station and ranged from 0.86 to 0.99.

Conclusions: Incorporating the OSCAR into resident assessment provides a unique opportunity to teach and assess both interpersonal and communication skills.

Long-Term Retention of Laparoscopic Skills: A Superior Training Paradigm

Melissa Brunsvold MD, University of Michigan Medical School

Rebecca M. Minter MD, University of Michigan Medical School

Paul G. Gauger MD, University of Michigan Medical School

Adam C. Frischknecht MSE, University of Michigan Medical School

Jeremy R. Jackson, University of Michigan Medical School

Linnea S. Hauge PhD, University of Michigan Medical School

Background: Motor learning literature suggests skill training maximizing retention should include distributed, blocked and random practice emphasizing quality before speed. We hypothesized a laparoscopic skills curriculum based upon these principles would result in improved retention of skill compared to unscripted practice. The purpose of our study is to compare skill retention results of a target-based, self-directed curriculum (Group A) to a similar curriculum incorporating quality goals and a distributed practice regimen (Group B).

Methods: Twenty-nine PGY-1 surgical residents (Group A n=14, Group B n=15) completed a target-based laparoscopic skills curriculum on box trainer skills. Group A completed a self-directed curriculum and was required to demonstrate proficiency (achieving time target on two consecutive trials). The curriculum for Group B was revised to include quality and speed targets, distributed blocked and random practice, and increased consistency for achievement of speed targets (five consecutive trials). Practice trials were recorded and mean times for an individual's last five practice trials were calculated, representing skill acquisition. Retention tests (5 trials per task) were conducted 7.5±2.8 months after completion of the curriculum. Retention test times, and each group's skill acquisition times and retention times were compared using a t-test and paired t-tests.

Results: Retention test times for each task were significantly better for Group B. Retention test times were significantly worse than skill acquisition times for four tasks in the Group A curriculum and for only one task in the Group B curriculum (Table).

Conclusion: Laparoscopic skill retention was significantly better in the curriculum emphasizing quality goal achievement, and distributed blocked and random practice. These findings suggest that prescribed practice patterns based on motor learning theory may influence important differences in acquisition and retention of laparoscopic skills.

Task	Skill Acquisition: Mean Time (seconds) Last 5 Practice Trials		Skill Retention: Mean Time (seconds) Retention Trials	
	Group A Mean (StDev)	Group B Mean (StDev)	Group A Mean (StDev)	Group B Mean (StDev)
Block Move	17.44 (1.89)	17.51 (5.05)	38.73 † (12.50)	20.70 *^ (4.78)
Bean Drop	25.66 (2.91)	25.41 (4.87)	49.97 † (12.12)	27.01 * (4.04)
Checkerboard	66.72 (8.10)	62.45 (14.60)	70.89 (16.51)	59.11 * (7.97)
Running String	29.66 (2.62)	30.79 (9.30)	43.19 † (11.04)	33.27 * (5.61)
Suture Foam	15.67 (2.97)	15.07 (4.46)	29.86 † (15.43)	14.27 * (4.09)

Heightening House Staff's Awareness of Hand Hygiene Guidelines

Sarah Middlemas MPH, University of Michigan Medical School

Diane RadlowskiBSN, MS, University of Michigan Medical School

Monica Lypson MD, University of Michigan Medical School

Background: Lack of hand hygiene knowledge/adherence are known problems in healthcare institutions. Making an assumption that interns arrive with sufficient knowledge about hand hygiene is unfounded and improved teaching and assessments are necessary. We administer a formative Post-graduate Orientation Assessment(POA) to incoming house staff as a part of their orientation to the health system. As a patient safety initiative, this reinforces our institution's dedication to hand hygiene policies and provides opportunity for earlier identification of these deficiencies so interventions may be implemented.

Methods: We assessed both Aseptic Technique (AT) and hand hygiene (HH) in 1 station of an orientation assessment. A hand washing True/False quiz was created based on Centers for Disease Control and Prevention (CDC) guidelines. The quiz included questions about HH agents' effectiveness against viruses and bacteria, and the length of time necessary to wash hands with soap and water. Upon completion of the AT station (where AT for bedside procedures is assessed³) the interns take an online quiz, followed by verbal feedback. Written handouts and reference materials documenting proper HH protocols are distributed upon station completion for review and remediation.

Results: The majority of incoming residents 99%, identified the importance of hand washing in the prevention of infection and patient contact. However, further online testing indicated only 48% knowing alcohol gel was the best method for killing bacteria on the hands. Additional discrepancies were found between online testing and practical application. The quiz testing hand hygiene protocol indicated 94% knowing it was necessary to wash hands upon leaving a patient room. However, this was not supported during the practical demonstration of AT for bedside procedures assessed by a Standardized Nurse Rater, resulting in only 27% completion of this same item.

Conclusions: The administration of a HH exam and AT is just the first step in identification of hand hygiene performance of incoming house staff. Further remediation and early intervention of these deficits need to be addressed and rehabilitated at this critical point in the resident's professional careers, minimizing HAI, and associated hospital costs. It is evident that basic hand washing hygiene is an important skill that must be taught to new post-graduate trainees.

Saturday, March 19, 2011

Concurrent Sessions (8:30-10:00 AM)

Panel Discussion

Crossing the Continuum of Medical Education – Common Accreditation Issues

Ginny Jacobs MEd, MLS, CMEP, University of Minnesota School of Medicine

Karla Hemesath PhD, University of Minnesota School of Medicine

Linda Perkowski PhD, University of Minnesota School of Medicine

Rationale: There are frequent references made to the continuum of medical education, however, the intensity and level of detail required by nature of the accreditation process for each phase of the continuum often leads us to become siloed in our thinking and narrowed in our data collection, management, and dissemination. This session is designed to call attention to the common threads and/or overlaps found across the entire spectrum of medical education in order to better align our shared resources and advance our common goals.

The accreditation requirements for undergraduate medical students, residents, and licensed physicians are outlined by three different certifying boards. Each board has outlined their standards or criteria (to varying degrees of detail) as well as highlighted their anticipated data points which have been designed to demonstrate and/or measure the achievement of (or progress towards achieving) each standard.

Rather than highlight the differences between each board's requirements, this session will serve to call attention to the common themes found across them. This type of collective discussion will ideally help spur ideas for more collaborative initiatives as we map out curriculum, identify learner needs, establish performance metrics, and evaluate our progress as an overall medical education office. The discussion will also briefly extend into operational areas where common issues exist such as organizational structure, span of control, and career paths.

Ultimately, all aspects of the medical education continuum align with a common pursuit – our goal is to effectively develop skilled healthcare professionals (lifelong learners) well-positioned to provide quality care to patients and improve the health of our population. In order to accomplish this, we must leverage all of our resources and expertise, avoid redundancies in our efforts, and share valuable insights gained along the way.

The information we gather at various stages of the medical continuum can serve to inform our medical education plans and decision-making (both upstream and downstream) as it relates to learner outcomes, program performance on accreditation, and program evaluation. For example,

- new medical advances and/or innovations incorporated into a medical school curriculum should be systematically rolled out to practicing physicians
- innovative instructional methods and/or inter-professional teaching can be shared among medical educators in order to apply best practices to other student groups
- feedback gathered from residency programs can provide valuable insights into effectiveness of the methods used for curriculum development and delivery
- community healthcare data captured from the community of practicing physicians will help inform the development of relevant case discussions and strategic health priorities
- staffing models and cross training opportunities may exist which will only further enhance implementation of best practices

Clearly, there are many common themes within our work across the medical education continuum especially in areas of curriculum development, student assessment, evaluation / outcomes measurement, and faculty development. We must more fully identify the areas that are common and effectively align our resources to share the arsenal of insights we gather, and mutually address our strategic goals.

Objectives: Upon completion of this small group discussion, participants will be able to:

- Describe the general categories of accreditation criteria / standards which apply to medical students, residents in training, and physicians in practice
- Highlight the common themes which exist across all three accrediting boards
- Be reminded of our need to continually identify and pursue common goals and data handoffs which could serve to better inform planning and decision-making along the continuum of medical education
- Discuss the shifts demanded of the most-recent changes in the ACCME criteria which call for a new approach to CME in the form of more thoughtful planning, interactive teaching methods, and impactful educational / performance improvement models with measurable results.
- Identify and pursue opportunities for collaboration and systematic data sharing

- Participate more actively in discussions with the community of medical education professionals who are dedicated to improving our collective ability to promote advances in a fully-functioning continuum of medical education

Workshop

Using Individualized Learning Plans to Foster Competency-Based Reflection

Paola Palma Sisto MD, Medical College of Wisconsin

Joshua Noe MD, Medical College of Wisconsin

Virginia Cleppe AM, Medical College of Wisconsin

Competency-based assessment has been gaining momentum in undergraduate medical education (UGME) as requirements for implementation of this assessment tool increases in graduate medical education (GME). Use of this assessment tool in GME has been well established. A learning portfolio (defined as a “purposeful collection of evidence used by students to document and reflect in learning outcomes”) is often used in primary schools, as well as some undergraduate schools. An integral component of the portfolios is an individualized learning plan (ILP) focusing on specific areas of competency the students self-identify for focused improvement efforts. The effectiveness of the reflective process in medical education for identifying areas of competence and areas of deficit has been studied. Having trainees find this experience valuable has been challenging with so many competing interests. Engaged trainees are critical to the success of this reflective process. We have introduced the concepts of learning portfolios and reflection into our clerkship rotation and have assisted the students in identifying key areas for development and improvement while on their pediatrics clerkship rotation through use of an ILP. The program has paired facilitators with small groups of third year medical students on the pediatrics clerkship to implement the program aims of ACGME competency- based ILP development, including developing specific action steps, reflecting on progress plans for improvement, and developing goals for self care. Students have found this experience valuable and worth their time. Using this method with other levels of learners is easily adaptable and likely as successful.

Objectives: At the end of this workshop, the participants will be able to describe our current ILP program and its rationale; create strategies to engage trainees in reflection; develop their own ILP selecting goals for their academic as well as self care development; utilize the workshop materials to implement in their own programs.

Workshop

A Workshop in Reflective Composition: Implementing Reflection and Mentorship Into Medical Education

Brittany Bettendorf BA, Medical College of Wisconsin

Elizabeth Fleming BS, Medical College of Wisconsin

Nancy Havas MD, Medical College of Wisconsin

Rationale: Medical Humanities education has been shown to positively effect empathy, professionalism, and self-care among medical trainees. Optimal patient-centered care must provide healing beyond symptomatic management, and can be facilitated by the experience of writing to understand illness. A study by Foster et al. about poetry in general practice found that discussion of poetry offered opportunity for self-reflection and a venue for empathic development. Likewise, reflective writing also grants permission to recognize and explore conflicts between personal and professional values and offers a venue in which to reconcile inconsistencies. These qualitative areas of development are often the most difficult essentials of professionalism to teach and to evaluate.

Research shows that role modeling is the way in which students learn how physicians interact with patients and demonstrate empathy. This role modeling is thought to have the greatest impact on the development of student professional standards, and may also occur between students through peer interactions. Reflective writing is one tool that has been implemented at our institution to encourage reflective practice and exploration of personal conflict. This workshop is designed to emulate the workshop series that we implemented at the Medical College of Wisconsin.

Objectives:

- Describe reflective writing and its value in patient care and medical education
- Describe the benefits of reflective writing for lifelong professional development
- Participate in group discussion and writing exercises that may be used as a model for a writing workshop at the participant’s home institution
- Modify an existing writing workshop curriculum for use at their home institution

Workshop

Criteria for Evaluating Educators: What is Needed and What will Work?

Deborah Simpson PhD, Medical College of Wisconsin

Brian Mavis PhD, Michigan State University College of Human Medicine

Rationale: Progress in the past two decades to define and defend scholarship in education has helped to guide the career development and advancement of faculty educators. Although the community of biomedical educators has been building a stronger foundation for high quality educational scholarship, educators at many academic health centers are disadvantaged in formal processes of recognition and reward. Building on the results of the AAMC GEA consensus conference on educational scholarship, the AAMC Task Force on Educator Evaluation aims to construct a toolkit to promote and support rigorous evaluation of the educational contributions of faculty. To this end, the Task Force seeks additional member input.

Objectives: Participants will:

1. Discuss evaluation criteria for the promotion and advancement of educators
2. Analyze the usefulness of proposed criteria and sources of evidence for the evaluation of educators in five domains (teaching, curriculum development, learner assessment, mentoring and advising, educational leadership and administration)
3. Critique and provide feedback about challenges to the adoption of the guidelines in their home institutions

Small Group Discussion

Survey of Service-Learning Practices at CGEA Member Institutions

Stephen Kirchhoff MHA, Indiana University School of Medicine

Ruth Margalit MD, University of Nebraska College of Public Health

Jennifer Mendez PhD, Wayne State University School of Medicine

Sharon Younkin PhD, University of Wisconsin School of Medicine & Public Health

Katherine Cauley PhD, Wright State University Boonshoft School of Medicine

Carien Williams JD, University of Illinois at Urbana-Champaign College of Medicine

Brad Hullsiek MA,, University of Nebraska College of Public Health

Rationale: Although the Liaison Committee on Medical Education (LCME 2008) approved a new service learning standard, effective July 1, 2008, requiring medical schools to “make available sufficient opportunities for medical students to participate in service-learning activities”, there is no consensus on either best practices or guidelines for implementation. Indeed, U.S. academic health centers are experimenting with implementing components of service learning pedagogy through various formats, including: required and elective courses, volunteer service with elective credit, volunteer service-learning projects, competency-based programs, and service-learning tracks or scholarly concentrations. Implementation requires leadership support and investment of resources to allow for staff positions intended to run and supervise these programs. Yet, there are still limited data shared, or evaluation information gathered, to build a consensus and recommendations for best practices and necessary resources.

To address this, the SLSIG will be developing and administering a web-based survey of consenting CGEA member institutions. Preliminary results of this survey would be presented at this small group session. This survey will draw upon previous related efforts, including:

- Survey developed by the University of Mississippi School of Pharmacy which investigated the status of Service-Learning in the Pharmaceutical education community prior to introducing SL into their curriculum (Murawski MM999).<http://depts.washington.edu/ccph/servicelearningres.html#Tools>
- Focus group and survey questions used in the 10 year follow-up study of the Health Professions Schools in Service to the Nation project (Vogel AL 2009).
- Surveys developed by CCPH addressing students, faculty, organization, and community (<http://depts.washington.edu/ccph/servicelearningres.html#Tools>)

Objectives:

- Participants will gain a working knowledge of alternative service-learning models as practiced at CGEA institutions.
- Participants will have an opportunity to inform the discussion of best practices in health professions service-learning both in CGEA institutions and nationally.

Small Group Discussion

Innovative Strategies in Medical Education

Floyd Knoop PhD, Creighton University School of Medicine

James Booth PhD, University of Nebraska College of Medicine

Thomas Pisarri PhD, Creighton University School of Medicine

Rationale: A recent study by the Carnegie Foundation for the Advancement of Teaching emphasizes several important learning outcomes, including a need for individualized training and innovative learning environments. In addition, it was pointed out that current aspects of medical education are “inflexible, excessively long and not learner-centered.” There is a serious need to move away from “cookie cutter” education. This discussion will provide presentations on several enlightening innovative concepts followed by a discussion and interaction of audience innovations at their respective institutions.

Objectives: After participating in this session, attendees will be able to:

- Describe innovations in medical education, including the use of student and faculty as preceptors, and trends in driving the development of new and innovative concepts of medical programs in medical schools
- Discuss the process of developing, introducing and evaluating innovations that have been used at several universities, including descriptions of innovative projects
- Describe the benefits and challenges involved in innovative methods and exercises that advance learning in medical education

Concurrent Sessions (10:15-11:45 AM)

Workshop

Clerkship Administrators Feeding Reform Through Thematic Analysis

Gary Beck MA, University of Nebraska College of Medicine

Beverly Vaughn, University of Nebraska College of Medicine

Wendy Grant MD, University of Nebraska College of Medicine

Sharon R. Stoolman MD, University of Nebraska College of Medicine

Rationale: Clinical rotations for undergraduate medical education are evaluated by medical students. Although some medical schools have central oversight of these evaluations, there are many more that do not. Often, the evaluations are not given attention until the end of the academic year. In order to make informed decisions about the next academic year, evaluations need to be reviewed and considered earlier in the year. Therefore, doing a thematic review of student comments with possible solutions should be done midway through the year. Due to increasing demands on clerkship directors, their administrative staff may be trained to do this to facilitate the process of curricular reforms.

Objective: This workshop is aimed at providing hands on experience to clerkship administrators. During the workshop, thematic analysis techniques will be taught and demonstrated. This will be followed by participants using actual student comments of experiences to identify common themes, pulling out strengths and areas of improvement. Time will also be devoted to writing concise reports for the clerkship director with possible recommendations for problem areas.

Workshop

An Innovative, Highly Interactive and Socratic Small Group Learning Technique for Teaching Internal Medicine Clinical Problem Solving Skills

J. Scott Neumeister MD, University of Nebraska College of Medicine

David O'Dell MD, University of Nebraska College of Medicine

Rationale: In order to build students' competence in the diagnosis and management of "high impact" medical conditions, we developed a case-based curriculum that is facilitated using a unique highly interactive Socratic method. Student teams (3-5 students) begin with a case description and then work together to develop a differential diagnosis and management plan. Expert faculty preceptors review the student generated information and provide real time feedback regarding completeness, data gathering and specific learning objectives. Skillful use of Socratic questioning leads to rich discussions to facilitate the students' synthesis of relevant clinical concepts. During the course of the 3 week curriculum, the students' confidence markedly improves along with their diagnostic and management skills. Our students then take an Objective Skills Clinical Exam (OSCE) at the end of their rotation. Two of the eight OSCE cases are "high impact". In order to pass the OSCE the students are required to demonstrate competence on both of these "high impact" cases.

This workshop will review the existing literature on case-based education and how to implement this teaching format. The workshop will feature a live demonstration of a group of students working through a case facilitated by the presenters. We will highlight our Socratic technique, review how we identified and developed the "high impact" curriculum, and review our successes and ongoing challenges. We will present student composite evaluations of this curriculum and allow our student participants to answer questions from the audience.

Objectives: Participants will know the following:

1. Familiarize the participants with the relevant literature
2. Have the opportunity to observe/participate in a sample case
3. Be familiar with suggested cases/topics to meet clinical student needs/curriculum requirements
4. Discuss student professionalism
5. Understand the pros and cons of this educational format including versatility, vibrancy, fun, probing questions and time requirement
6. Discuss the practical issues for the educator on meeting job requirements while teaching in this format
7. Discuss student perception of this teaching method

Small Group Discussion

Linking the Basic and Clinical Sciences with Standardized Patient Encounters

Carla Dyer MD, University of Missouri-Columbia School of Medicine

Dena Higbee MS, University of Missouri-Columbia School of Medicine

Rationale: This discussion group will walk medical educator through the process of introducing standardized patient (SP) encounters into an established basic science curriculum. An overview of the effectiveness of these simulations will be discussed. The overall goal of integrating SP encounters into the curriculum process is to strengthen the link between basic and clinical sciences, while improving clinical skills.

In our preclinical curriculum, Problem Based Learning (PBL) is one of the primary methods of delivery. The integration of PBL and SP encounters provides an opportunity to reinforce history taking, physical exams, documentation, and oral presentation skills while bridging basic and clinical sciences. By integrating SP experiences into the established PBL curriculum, we create immersive, active learning opportunities. Bringing these cases “to life”, the students are responsible for collecting data on their patient in order to provide an accurate “report out” to their lab group. Students take more ownership and responsibility for the patient, which is more consistent with the clinical years.

Objectives:

- 1) Participants will understand how simulation was integrated into selected curriculum cases and the advantages that it provided at our institution.
- 2) Participants will understand the process for adapting traditional curriculum cases, training standardized patients and view a sample integrated simulation case.
- 3) Participants will understand the resources needed to integrate SP encounters into a basic/clinical science curriculum.
- 4) Participants will explore options for evaluating this intervention.

Small Group Discussion

Identifying Successful Strategies for Addressing “Change Angst”

Deborah Simpson PhD, Medical College of Wisconsin

Dawn Bragg PhD, Medical College of Wisconsin

Karen Marcdante MD, Medical College of Wisconsin

Louise Arnold PhD, University of Missouri Kansas City School of Medicine

Rationale: Medical education is at the vortex of internal and external forces driving change. These forces extend from the new Carnegie Report *Educating Physicians* and technology/team based instructional and assessment strategies to duty hour changes and maintenance of certification, all while health care systems/delivery models change as well. “Change angst” can be exhibited or expressed in multiple ways from silence to “yes, but...” to asserting one was “never involved or told”. Recently this “change angst” was best captured by a faculty member participating in our pilot integrated curriculum, who said “I am master teacher, TBL doesn’t let me teach “. Looking more deeply at this “change angst” in medical education requires us to consider its impact on our human resources –faculty, staff, trainees – who must learn new skills, accept the loss of old/new roles, and/or reframe their identities as teachers/educators/scientists/clinicians. It may also require changes in the alignment of the organization’s culture and symbols, political and structural frames.

As we deal with changes at our own institutions, we searched for successful strategies to address the “angst” associated with change in medical education. The literature provides strategies including Kotter’s change model. One of Kotter’s 8 change steps is to “celebrate small successes”. Building on this positive approach, organizations are now addressing change from an “asset perspective”, seeking to identify, analyze and publicize what is working that is associated with the change effort - the successes to date. The methodology often used to elicit these assets is appreciative inquiry (AI). AI can illuminate the key features associated with a success—a forward looking culture focused on effectiveness and interdependency.

Objectives: This small group discussion will use appreciative inquiry (AI) to identify the best strategies associated with addressing “change angst”. The objectives include:

1. Describe the role that “change angst” can play in impeding/advancing change.
2. Identify key features associated with successfully managing “change angst”.
3. Test the applicability of just in time AI as a structure for small group work within a brief time period/in varied settings (e.g., professional meeting like CGEA).

Small Group Discussion

The Co-Curricular Program at Wayne State University School of Medicine: Creating Better Doctors Through Service Learning

Bruce Kaczmarek BS, Wayne State University School of Medicine

Paul Thomas BS, Wayne State University School of Medicine

Brian Pierce BS, Wayne State University School of Medicine
Brittany Cronin BS, Wayne State University School of Medicine
Lakisha Burton Willis BS, MBA, Wayne State University School of Medicine
Sharmin Kalam BS, Wayne State University School of Medicine
Nadia Grando BSc, Wayne State University School of Medicine
Esmaeel Dadashzadeh BSc, Wayne State University School of Medicine
Jennifer Mendez PhD, Wayne State University School of Medicine

Wayne State University is located in the heart of Detroit. Students at the School of Medicine see the needs of the community, which are often not met, and strive to use their education and determination to positively influence the surrounding areas. The co-curricular program, started in 1998, has led this vision by encouraging and enabling students to reach out and participate in local events and organizations focused on community service. It has fostered the growth of great student organizations that provide community support, tutoring, rebuilding, and health care. This year, the co-curricular program redesigned its curriculum with the communities of Detroit in mind. Students, in order to complete requirements and receive credit, must focus their efforts into mentoring, clinical and outreach categories. The faculty at the Wayne State University School of Medicine, along with student representatives, feel that diverse exercises in community involvement will best prepare students for their future lives as physicians as well as spread the prosperity of hard work to all who need it. Through mentoring, students reach out to citizens, both young and old, to educate them so their basic needs are met. Through clinical involvement, students identify community members in poor health and work to treat them. Through outreach, students work alongside community members to improve the natural beauty of Detroit, its urban appeal and the charitable work provided to the less fortunate. At the heart of this service, students identify health and socioeconomic disparities within the surrounding areas, helping them to better treat underserved populations as future doctors. During group discussion, the presenter will spend time explaining the benefits and successes of the program, discuss its specifics, and give examples to generate discussion among faculty and students who are interested in creating a program similar to the Wayne State University co-curricular program at the UGME level.

Small Group Discussion

Academic Development SIG: Learning Disability Screening Tools and Other Related Issues

Gina Paul PhD, Southern Illinois University School of Medicine
Susan Kies EdD, University of Illinois College of Medicine at Urbana-Champaign
Linda Pappas MS, LMHP, Creighton University School of Medicine

RIME Oral Abstract Presentations Session: Performance in Preclinical and Clinical Settings

Is It Lecture or Is It Podcast? Impact on Medical School Performance

Anthony Paolo PhD, University of Kansas School of Medicine
Emma Ngyuen MS, University of Kansas School of Medicine
Giulia Bonaminio PhD, University of Kansas School of Medicine
John Delzell MD, University of Kansas School of Medicine
Jim Fishback MD, University of Kansas School of Medicine
Heidi Chumley MD, University of Kansas School of Medicine
Benito Berardo BA, University of Kansas School of Medicine

Purpose: We began lecture podcasts four years ago and their use quickly increased. However, the impact of using podcasts on academic performance is unclear. This project compared medical school performance of students who typically viewed podcasts to those who typically attended lecture.

Methods: We began gathering data on frequency of podcast use three years ago through surveys collected at the end of each module. At the end of each module, 2nd year students estimated the percentage of lectures attended and podcasts viewed. We used 2nd year students because they had more complete data and we reasoned that by their second year, students would have settled in on a lecture or podcast preference. Students were assigned to the lecture group if they indicated attending 80% or more lectures and viewed 20% or fewer podcasts. Assignment to the podcast group consisted of those that viewed at least 80% of the podcasts and attended 20% or fewer lectures. Students that could not be categorized were excluded for the individual module comparisons. For the overall comparison using year 2 GPA and initial Step 1 performance, students had to use the same learning method (i.e., lecture or podcast) for 50% or more of the modules, all others were excluded. Performance measures consisted of MCAT scores, module exams and GPAs, and initial USMLE Step 1 performance. Because of relatively small sample sizes, effect sizes (ES) were computed with values >.49 considered meaningful.

Results: 97 of 348 (28%) 2nd year students met the overall criteria. Participants and non-participants did not differ on any academic measure (all ES < .34). Overall, 38 and 59 students comprised the lecture and podcast groups, respectively. For 2 out of the 6 modules, podcast students had lower MCAT verbal reasoning scores

then lecture students (Means of 9.01 and 10.06, ES = .58). No other significant differences emerged between the groups on any academic measure (all ES < .50).

Conclusions: Overall, there were no differences in academic performance between students that typically attended lecture and those that usually viewed podcasts. These findings are preliminary due to small sample size and self-selected sample. The direct impact on academic performance of only viewing podcasts could not be clearly addressed with our design due to lack of random assignment to groups and no restriction on the use of podcasts or lecture attendance. We choose to evaluate students' typical use of these information delivery methods.

An Exploratory Study of Student Retention of Basic Science Information: A Multi-Institution Study

Edward Simanton PhD, University of South Dakota Sanford School of Medicine

Thomas M Hill PhD, University of North Dakota School of Medicine & Health Sciences

Kurt E. Borg PhD, University of North Dakota School of Medicine & Health Sciences

Background: Long-term retention of information has always been a goal of educators. In recent years, various studies have shown relatively poor retention of much of the basic science content taught in medical school. As medical schools work to update curriculum and educational methods, issues of retention should be a factor in making curricular decisions. For this reason, two schools with very different curricula tested retention of basic science information. One school uses a traditional, discipline-based curriculum, which utilizes the lecture format as the primary teaching method. The other school uses a Problem Based Learning Hybrid curriculum where much of the learning is student-centered, using clinical cases in a small group format.

Purpose: The purpose of the study was to examine student retention of basic science information in a variety of disciplines and between curricular models.

Methods: Fourth-year medical students, at two institutions, were tested using questions from examinations they had taken during years one and two. Test questions were randomly selected from each discipline using test items that performed well, based on item statistics. Testing took place after mid-year (at least 18 months after completing the basic sciences). Pre- and post-test mean scores were calculated by discipline, using student performance on the selected items for the pre-test means. Retention rates were calculated by comparing pre- and post-test performance on each item. Comparisons were made between retention rates of each discipline and between the two institutions.

Results: There were significant differences in retention rates between the basic science disciplines. Student retention of pathology content was near 100% while anatomy, biochemistry, and microbiology were all less than 80%. There were no significant differences between the two institutions. In three of the four basic science disciplines examined, retention was slightly better among students in the traditional, lecture-based curriculum (non-significant).

Conclusions: It appears that applicability of content to the clinical setting, where students continue to utilize information taught in the preclinical years, is more important for long-term retention than educational methods.

Lecture Capture, Learning Resources and Academic Performance in Undergraduate Medical Education

Edward Finnerty PhD, Des Moines University

Matthew K. Henry PhD, Des Moines University

Purpose: While the traditional lecture format is still the primary instructional strategy, student learning styles suggest a more varied approach may be useful. A recent trend has been to promote the use of lecture capture technology. The aim of this study was to examine the use of available learning resources, including lecture capture, and their influence on academic performance.

Methods: A survey was offered to the students in the Yr 1 Physiology course (2007, 2008, 2010) to assess the student use of learning resources and academic performance. Participation was voluntary and anonymous. Assessment of the lecture capture files (Camtasia) was monitored through the course management system and the survey for the Yr 1 Physiology course in 2010.

Results: Average class attendance was 50% yet dropped to 36% with the addition of the lecture capture resource. Lecture capture file use was split with 30% of the students using them for > 90% of the lecture topics and 30% of the students using them for < 25% of the lecture topics. The remaining students used them to varying degrees. Tracking data revealed a significant relationship between lecture attendance and Camtasia file use ($r = -0.61$). MP3 audio recordings were used by 37% of the students for > 75% of the classes. Instructor handouts, PowerPoint slides and Notepool were the three key resources used by the students. Lecture capture file use did not have a significant influence on student performance. MP3 audio file use did have a significant influence on class attendance and performance with stronger students attending class more and using the audio files less. A significant influence of lecture attendance and academic performance was noted with students who attended class regularly performing better. Those students who regularly attended class were strongest in

opposition to self-study modules replacing selected live lectures. Overall, 50% of the students were NOT supportive of self-study modules with only 19% favoring this format.

Conclusions: Medical students do not regularly attend lectures, but they are strongly opposed to replacing them with self-study modules. Lecture capture and audio recording of lectures are a resource valued by students, but used routinely by only about 40% of the class. Use of lecture capture as a resource will impact attendance but not performance. Students who use the audio files extensively tend to have weaker academic performance. Lecture attendance does significantly influence academic performance with those regularly attending class performing better.

Predicting Medical Student Performance: Cognitive and Non-Cognitive Variables Independently Predict Performance at Different Stages of Medical Education

Scott Haight BS, Saint Louis University School of Medicine

John Chibnall PhD, Saint Louis University School of Medicine

Stuart Slavin MD, Saint Louis University School of Medicine

Debra Schindler MD, Saint Louis University School of Medicine

Introduction: Past research has shown that cognitive performance measures traditionally used to evaluate medical school applicants (MCAT, undergraduate GPA) predict subsequent performance on similar measures during medical school (Preclinical exams, USMLE Steps I-III, and NBME Shelf Exams), but not clinical clerkship and residency performance. Recent work has begun to show that non-cognitive factors (personality) are more important predictors of clinical clerkship and residency performance. Applicability of this body of work is limited by the fact that most studies examined individual predictors and performance measures and no studies examined the role of psychosocial or lifestyle data. This is the first study to present a comprehensive analysis of cognitive and non-cognitive factors, including psychosocial and lifestyle factors, and their associations with medical school performance across three years of medical education.

Methods: 152/175 (87%) 3rd year medical students completed questionnaires pertaining to Personality, Empathy, Stress, Anxiety, Depression, Social Support, Community Cohesion, Alcohol, and Exercise. This data was compared with the following measures of student performance: MCAT, preclinical exams, USMLE Step I, NBME Shelf Exams, Clinical Evaluations, and nominations for the Humanism in Medicine Honor Society.

Results: Table 1 compares multivariate regression coefficients for MCAT and personality characteristics as predictors of medical student performance. MCAT scores predicted preclinical performance (0.20), USMLE Step I (0.34), and NBME Shelf Exams (0.20), but none of the clerkship or humanism outcomes. The personality characteristic Extraversion predicted Clinical Evaluations of interpersonal skills (0.17) and Humanism in Medicine Honor Society nominations (0.19). Conscientiousness predicted Clinical Evaluations of both interpersonal skills (0.22) and diagnostic & planning skills (0.30).

Multiple linear regression was used to predict each of the performance variables from the Personality and Health/Wellness indicators. None correlated with MCAT or Step I performance. Depression scores were associated with NBME Shelf Exam performance (negatively), and Stress scores were associated with preclinical performance (negatively). Depression (negatively), Conscientiousness (positively), Extraversion (positively), and Empathy (positively) were associated with clinical clerkship evaluations.

Multiple logistic regression showed that Extraversion and Empathy were associated with nominations for the Humanism in Medicine Honor Society.

Conclusion: This study identified two separate sets of skills that are utilized and tested for during medical school, and each set is independently associated with different performance measures. Cognitive/Test-Taking skills are correlated with performance on the MCAT, preclinical exams, USMLE Step I, and NBME Shelf Exams). Non-cognitive/Interpersonal skills such as Extraversion, Conscientiousness, and Empathy are predictive of Clinical Clerkship performance and humanistic care.

Concurrent Sessions (1:45-3:15 PM)

Workshop

The Fine Art of Feedback

Jeffrey Pettit PhD, University of Iowa Carver College of Medicine

Rationale: The process of giving and receiving feedback is probably the most important dimension of medical education. It is through feedback that we can learn to “see ourselves as others see us.” This, of course, is not an easy task. Effectively giving and receiving feedback implies certain key ingredients: caring, trusting, acceptance, openness, and a concern for the needs of others. Thus, how evaluative, judgmental, or helpful the feedback is may finally depend on the personal philosophy of the individuals involved. Nevertheless, giving feedback is a skill that can be learned and developed. While a great deal of medical education focuses on teaching how to give feedback, very little time is spent teaching people how to solicit feedback from others and how to receive and evaluate the information. This workshop will focus on the triad of feedback: soliciting, receiving, and giving.

Objectives:

1. Describe giving, receiving, and soliciting feedback in more detail
2. Explain the interactions between giving, receiving, and soliciting feedback
3. Identify barriers that prevent effective feedback
4. Learn advanced techniques for giving, receiving, and soliciting feedback
5. Describe components of a feedback rich environment

Workshop

Tackling Supervision within Our Institutions: A Working Workshop

Steve Kasten MD, University of Michigan Medical School

Monica Lypson MD, University of Michigan Medical School

Mark C. Wilson MD, University of Iowa Carver College of Medicine

Rationale & Methods: In July 2011, there will be new common program requirements for all ACGME accredited programs. Those new requirements not only include issues related to changes in duty hours for interns but also the need for improved documentation and processes in regards to supervision.

These requirements and the recent report from the Institute of Medicine calls for us to look beyond duty hour limitations to address other key factors that influence patient safety and resident education; particularly, we are challenged to enhance supervisory practices within our clinical education environments. This session is an invigorating approach to tap into the insights, wisdom, and creativity of CGEA's membership. We will use our 90minutes together to establish a common background for participants regarding perceptions of supervisory practices, emerging models of supervision, and other key forces leading to our current challenge.

Subsequently we will identify a few questions about changing supervisory cultures that participants would like to address. Small workgroups will then brainstorm potential solutions to effect change within residency or fellowship programs. For example - depending on interests of the participants - small groups will select a topic to address from a list such as:

§ How can we integrate emerging models of supervision into faculty development?

§ How can we engage Program Directors to tie various types of supervision to PGY-specific goals & objectives?

§ How can we engage residents to help us reshape our cultures of supervision?

§ What are "measurable standards of supervision" as called for by the ACGME?

Key findings from each small group will be reported back, and more complete notes from each workgroup will be compiled afterwards for distribution to participants.

Session Learning Objectives:

1. Refine knowledge about forces affecting our concept of supervision.
2. Provide opportunity for educators focused on GME to brainstorm & network regarding this crucial but poorly illuminated aspect of clinical education.
3. Identify and share practical next steps to precipitate change within our cultures of supervision.

Panel Discussion

Effective Leadership Skills for Curriculum Reform

Janet Lindemann MD, MBA, University of South Dakota Sanford School of Medicine

Karen Marcdante MD, Medical College of Wisconsin

John Thomas, Jr. PhD, Northwestern University Feinberg School of Medicine

Rationale: It has been said, "Changing a curriculum is as difficult as moving a cemetery." Yet nearly every medical school is involved in the curriculum improvement process, either as incremental or transformational change. While everyone knows that changing the structure of curriculum, the learning environment, and faculty and student roles is very difficult, key leadership characteristics have been found to be effective in facilitating successful change. Identifying the skills that leaders of these efforts need to possess and develop can help address the many issues that challenge our schools during the change process.

Objectives: At the conclusion of this session, participants will be able to:

1. List effective leadership skills that apply to medical school curriculum reform,
2. Anticipate challenges likely to be encountered during curriculum reform,
3. Apply communication and change strategies that will enhance their leadership or participation in curriculum reform or similar transformational change at their institutions.

Small Group Discussion

Promoting Professional Development in an Integrated First-Year Medical Curriculum

Rosanne McBride PhD, LP, University of North Dakota School of Medicine & Health Sciences

Charles Christianson, MD, ScM, University of North Dakota School of Medicine & Health Sciences

Rationale: *Educating Physicians: A Call for Reform of Medical School and Residency* (Cook, Irby, and O'Brien, 2010) identifies development of professional identity and values as one of four major challenges in current medical education, and specifically notes that this element emerges as the most important of the four.

Its importance is also reflected in the increased attention it has received in medical education journals and conferences in the last decade. *Educating Physicians* (Cook et al., 2010) also calls for an integration of curriculum and educational methods that foster a spirit of inquiry in learners.

In 1998, the University of North Dakota School of Medicine and Health Sciences (UNDSMHS) adopted an innovative integrated preclinical curriculum, which we call Patient Centered Learning (PCL). Two key elements of PCL are: (a) extensive use of small groups devoted to case focused problem-based learning with a corresponding reduction in lecture and laboratory time, and (b) an integrated approach organized around organ systems and patient care themes with no departmental courses, which brings together the basic and applied clinical sciences within the first two years of medical school.

Over the last several years, we have developed a thread that is woven throughout the first year of our clinical sciences curriculum that specifically addresses professional development. The focus of activities includes: the language and values of professionalism; identifying, observing and naming professional behavior; development of professional identity and writing a personal medical oath; the principles of bioethics and bioethics case analysis; patient-centered care and communication skills; caring for culturally diverse and disadvantaged populations; the ethics of self-care; professional boundaries; reflection on the cadaveric experience; and end-of-life care. Teaching methods primarily utilize experiential and reflective activities that involve small group discussion around cases and personal experience as well as active involvement in several projects. Lecture and demonstration are also used, but are focused almost exclusively on introductory and background preparation for the other activities.

The overriding goal for this presentation/small group discussion is to stimulate discussion and share experiences about implementing professional development curricula—an important but difficult topic to “teach.” We will describe our curricular thread for promoting professional development and how it can be woven into a novel, integrated preclinical curriculum that promotes a spirit of inquiry and self-reflection. This will include a description of the elements and delivery of our professional development thread within our integrated curriculum as well as our initial observations, outcomes, student and faculty feedback, and some samples of student projects and work. We will then invite discussion and information sharing among participants about curricula and implementation of professional development activities and their institutions.

Cook, M., Irby D.M. and O'Brien, B. (2010). *Educating Physicians: A Call for Reform of Medical School and Residency*. San Francisco CA, Jossey-Bass.

Objectives:

1. Participants will gain awareness of why professional development is an important focus in medical education and how this topic can be integrated into existing curricula.
2. Participants will be able to identify and discuss the elements and success of their current professional development curricula.
3. Participants will gain awareness of how others' are teaching about professional development—sharing key successes, barriers, and ideas and goals for curricula in this area.

Small Group Discussion

Bringing Vitality to Mentoring: Exploring Benefits and Challenges of a Mentoring Program

Michele Millard MS, Creighton University School of Medicine

Description of the Topic: Mentoring has become a critical component in medical education for several reasons. For accreditation purposes, the LCME requires evidence of formal mechanisms for student mentoring and advocacy, structured advising and career development and emotional support during the medical education experience, all of which may be fulfilled with an inclusive mentoring program. Beyond requirements for accreditation, literature has described mentoring as essential for the development of professionalism, personal growth and increased satisfaction in choices of specialty and in the field of medicine as a whole. Creating opportunities for the formation of mentoring relationships needs to be integrated into the fabric of medical education as students move from the classroom into the clinical setting.

While mentoring offers a number of benefits for the development of students, there are a variety of challenges when integrating a mentoring component into medical education. This discussion session will begin with an introduction of essential components of mentoring and exploration of several models of existing programs (10 minutes) with the remainder of the session devoted to sharing and discussion among the participants concerning best practices and lessons learned through experience (35 minutes). Attendees will have the opportunity to learn from each other as they explore ways to integrate, improve and sustain mentoring programs within their own educational environments

Session Objectives: At the end of the session, participants will be able to:

- Identify critical components of mentoring programs
- Compare and contrast a variety of models of mentoring
- List benefits of effective mentoring programs
- Assess the challenges and obstacles of implementing mentoring programs

- Apply principles and ideas to improve or expand mentoring programs at their own institution

RIME Oral Abstract Presentations Session: Hot Topics in the Curriculum

Teaching Your Research: A Novel Approach for Teaching Curriculum Design to Research-Focused Graduate Students in the Biomedical Sciences

Darren Hoffmann PhD, University of Iowa Carver College of Medicine

Christine Blaumueller PhD, University of Iowa Carver College of Medicine

Susan Lenoach MA, University of Iowa Carver College of Medicine

A common concern in the training of PhD students in biomedical sciences is lack of preparation for the teaching roles they will take on in academic faculty positions. Single-semester TA-ships often do not provide opportunities for creativity or leadership in teaching, and new graduates typically start their teaching careers underprepared in areas of instructional planning, assessment and course design. While graduate students are often undertrained as teachers, they have very high expertise in their research areas, making them uniquely qualified to teach the science behind their research. We hypothesized that graduate students could learn and apply curriculum design concepts in a relatively short time frame if they were put into the context of their research area. To test this hypothesis, we designed a workshop series (9 weekly 1-hr sessions) that would lead 8 senior graduate students through the process of designing a course based on their research topic. Each weekly session focused on a different aspect of curriculum design and led students to apply the concept to their courses. Departmental faculty were integrated as facilitators of small-group discussion, and one-on-one feedback was provided during the workshop. All 8 students finished the workshop and submitted full syllabi for their courses, complete with a course schedule, learning objectives and instructional and assessment plans. Syllabi were evaluated for quality by two independent reviewers. Students self-assessed their skill levels in each of the 8 main course objectives, and significant increases in all parameters were detected ($p < 0.05$), with the most pronounced changes noted in writing learning objectives and designing assessments ($p < 0.0005$). Students also completed pre- and post-course surveys to assess changes in attitudes about teaching (1-5 Likert agreement scale). Students reported a greater comfort level teaching at the graduate level (3.00 ± 0.33 pre, 4.00 ± 0.19 post, $p < 0.05$), and a greater comfort level designing a course or creating course content (1.88 ± 0.23 pre, 4.38 ± 0.18 post, $p < 0.05$). A useful side effect of this course was that students gained additional perspective on the context of their research area. Students tended to agree that the work they did designing their course would be useful in preparing the introduction chapter of their thesis (4.00 ± 0.38). In summary, this course represents an easily implementable workshop approach to providing a practical teaching experience for research-focused graduate students.

Assessing Medical Student Perceptions of Graded vs. Ungraded Group Application Exercises in Team Based Learning™

Adam Deardorff MS, Wright State University Boonshoft School of Medicine

Jeremy Moore MS, Wright State University Boonshoft School of Medicine

Colleen McCormick BS, Wright State University Boonshoft School of Medicine

Paul Koles MD, Wright State University Boonshoft School of Medicine

Nicole Borges PhD, Wright State University Boonshoft School of Medicine

Background: Team-Based Learning (TBL) is a well-defined instructional strategy increasingly employed in medical education. It requires small groups to work together answering questions in an instructor-led, but learner-centered, environment that promotes the attainment of factual knowledge and higher-order problem solving skills.

While graded Individual and Group Readiness Assurance Tests promote advanced preparation, the cornerstone of each TBL module is the Group Application (GAP) exercise, in which teams reach consensus on multiple-choice questions through the integration and application of course material to novel clinical scenarios. In the 2009-2010 academic year, our school moved from a graded GAP exercise to an ungraded GAP exercise in the MS2 curriculum, eliminating team and individual grades as a motivator for students to actively participate in group problem solving. The current study attempts to determine the impact of graded vs. ungraded GAP exercises on the student TBL experience as well as to identify specific factors that contribute to students preferring graded or ungraded application exercises.

Methods: With Institutional Review Board approval, the 2009-2010 second year class ($n=86$; 96.6% response rate) at a midwestern medical school was administered a 22-item Likert questionnaire, with each question classified into one of four domains (general assessment, perceived effort, teamwork skills, group discussion), followed by 3 "write-in" questions. Study participants were unaware of item classifications and individual items were randomly distributed in the questionnaire. The population selected for this study is the first class to participate in a TBL-supplemented preclinical curriculum with graded GAP exercises during year 1 and ungraded GAP exercises during year 2, placing them in a unique position to comment on student experiences in graded vs. ungraded GAP exercises.

Results: While our descriptive data indicate the perceived effectiveness of GAP exercises in generating knowledge outcomes and developing teamwork skills is mostly independent of grade weight, 82.7% of students polled prefer ungraded GAP exercises with only 6.2% preferring graded. Furthermore, 54% of students perceived that ungraded GAP exercises create a lower-stress learning environment, in which they are more apt to listen to classmates and participate in discussion, without compromising the effectiveness of the team-based model. Correspondingly, greater than 50% of those students preferring ungraded GAP exercises perceive an improvement in the quality of inter-team discussion with ungraded GAP exercises.

Conclusions: Medical students perceive a reduction in stress and an improved quality of group discussion without sacrificing outcomes in quality of learning or professional development when GAP exercises are ungraded.

Using Fall Prevention for Interprofessional Patient Safety Training at the Bedside

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Kyle Moylan MD, University of Missouri-Columbia School of Medicine

Myra Aud PhD, University of Missouri School of Nursing

Sherri Ulbrich PhD, University of Missouri-Columbia School of Medicine

Background: Sustainable interprofessional learning experiences were sought to creatively reinforce concepts of patient safety, effective teamwork, and quality improvement (QI) principles for health care students. A focus area of fall risk assessment and prevention in the hospital setting provided an opportunity for a “hands-on” interprofessional learning experience. The purpose of the study was to: 1) Increase student knowledge about fall risk factors and prevention. 2) Determine if this interprofessional learning experience improves knowledge/attitudes about patient safety and interprofessional experiences. 3) Increase patient awareness of fall prevention methods.

Methods: Internal Medicine clerkship students (N=66) and clinical nursing students (N=81) participated in an interprofessional learning experience focused on patient safety and QI, with an emphasis on fall risk reduction in hospitalized patients. After completing online self-study materials, an interprofessional student dyad performed a bedside fall risk assessment, identifying risk factors and providing the patient with a customized plan to reduce fall risk. An interactive debrief promoted interprofessional discussion and reinforced course themes. Students completed 5 Likert-style questions focusing on fall safety and 32 Likert-style questions related to knowledge/attitudes about patient safety, QI, and interprofessional collaboration pre/post experience. At mid-year, patients capable of responding were surveyed about perceived effectiveness of the encounter (N=27/35).

Results: Analysis of matched medical student (N=54, 82%) and nursing student data (N=39, 48%) using the Wilcoxon Signed-Rank test revealed statistically significant change in the desired direction on all five questions related to fall safety. Mean scores on items related to fall safety increased from 8-28%. Of the 32 Likert-style questions related to general knowledge/attitudes about safety, QI, and interprofessional collaboration, there were statistically significant changes in the desired direction for 10/32 items for medical students and 8/32 for nursing students with significant improvement in attitudes and knowledge about healthcare errors and interdisciplinary/interprofessional teamwork. One and two items were statistically significant in the undesired direction for medical and nursing students, respectively. Ninety-three percent of patients completing a post encounter interview reported value from the student encounter (25/27 patients).

Conclusion: Students reported significant increases in confidence in their abilities to identify fall risks, implement risk reduction education, and promote fall safety. Smaller improvements in general knowledge and attitudes related to patient safety and interprofessional collaboration/communication were noted. Students contributed to patient safety while learning. Fall prevention engages multiple disciplines and can be a vehicle for interprofessional curriculum on patient safety. Results encourage future interprofessional educational innovations which not only focus on acquisition of knowledge but also improve patient care.

The Influence of a Diagnostic Reminder System on Clinical Reasoning During Simulated Encounters

James Carlson MS, PA-C, Rosalind Franklin University of Medicine & Science

John Tomkowiak MD, Rosalind Franklin University of Medicine & Science

Barbara Eulenberg BA, Rosalind Franklin University of Medicine & Science

Thad Anzur BA, Rosalind Franklin University of Medicine & Science

Diane Bridges MSN, Rosalind Franklin University of Medicine & Science

Marc Abel PhD, Rosalind Franklin University of Medicine & Science

Background: One suggested strategy to minimize diagnostic error is to integrate a diagnostic reminder system (DRS) at the point of care. Specifically, a DRS is an informatics tool that allows a clinician to efficiently search a medical database and use the data gathered to inform diagnostic decisions. Incorporating a DRS into simulated training encounters offers the potential to help students improve their diagnostic accuracy and learn how to effectively use informatics tools that will be available to them in practice. However, it is unclear if students’ possess the clinical judgment to use sophisticated informatics tools due to their clinical inexperience. This study

explored the influence of Isabel PRO, a web-based DRS, on student diagnostic accuracy during simulated training encounters.

Methods: Diagnostic accuracy was assessed in 20 fourth-year medical students during four simulated case scenarios. After seeing each case, students were asked to submit a list of diagnostic hypotheses *prior* to using the Isabel PRO software (Pre-Isabel DDx). Students then were given access to Isabel PRO and asked to submit a final list of diagnostic hypotheses (Post Isabel DDx). The accuracy of Pre and Post Isabel DDx were independently scored and compared using paired t-testing. A follow up survey and focus group identified student perception toward the use of a DRS in educational settings.

Results: Diagnostic accuracy significantly improved in three of the four cases and for the combined four case exercise after using Isabel PRO ($p < 0.05$). The fourth case demonstrated improvement, but it was not significant. Students found the software relatively simple to learn, felt that it helped them reflect on diagnostic options that they had not originally considered, and valued to opportunity to use the software in conjunction with simulated cases.

Conclusions: Despite limited experience, students were able to effectively use a DRS to improve their diagnostic accuracy during simulated case studies. Use of a DRS within the context of a patient case appear to represent a distinct clinical skill set requiring appropriate training. Providing learners with gold standard examples of how to best use a specific informatics tool within specific clinical situations is an essential learning component. Simulated case scenarios offer an appropriate platform for introducing diagnostic support tools to learners within a clinical context.

Appendix A

Innovations in Medical Education Posters

1. **An Evidence-Based Physical Diagnosis Curriculum for Third Year Medical Students**

Kimberly Tartaglia MD, The Ohio State University Medical Center

Cynthia Ledford MD, The Ohio State University Medical Center

Background: Although most physicians agree the physical examination is an essential part of medical decision-making, formal teaching on physical diagnosis skills is uncommon and sporadic during the clinical years of medical school.

Objective: To determine if the use of an multimedia-focused evidence-based physical diagnosis curriculum during the Internal Medicine inpatient clerkship results in improved self-reported physical exam skills and an improved score on an observed structured clinical encounter (OSCE).

Instructional Methods and Materials: Our physical diagnosis curriculum was based on Steven McGee's Evidence-Based Physical Diagnosis text. Students receive a 30-minute orientation on physical diagnosis and one 2-hour workshop that uses multimedia and expert faculty demonstration to practice detecting abnormal findings in the cardiac, pulmonary, and thyroid examinations. Because of the inadequate ability to simulate the findings of cirrhosis, we developed a 1-hour Professor's Rounds on patients with end-stage liver disease. Students are encouraged to get daily feedback on their exam skills and use web-based resources for independent study.

Educational Outcomes: At the end of the clerkship, students are asked to estimate their examination ability of four organ systems prior to and at the end of the clerkship. They rate the usefulness of the physical diagnosis workshop and rank which exercises are most helpful in physical diagnosis skills. Additionally, a 5-station modified OSCE that requires them to detect abnormal findings on standardized patients was developed but has not yet been implemented due to slow patient recruitment. To date, 68 students have completed the clerkship with the new physical diagnosis curriculum. For all organ systems assessed, students reported improved abilities at the end of the clerkship (mean improvement 0.93-1.54, $p < 0.01$). On a 5-point scale, students reported considerable improvement of their physical exam skills (mean 4.2, SD 0.739) and rated the workshop as useful (mean 3.76, SD 1.01). Students ranked daily patient rounds and Professor's Rounds to be more useful than the physical diagnosis workshop.

Strengths and Areas for Improvement: The use of multimedia to expand students' physical diagnosis skills is feasible and easily transferable to different institutions. With the exception of cardiac auscultation, the use of multimedia in this way has not been rigorously tested. Preliminary data from our program show that students perceive the physical diagnosis workshop to be a useful exercise. The modified OSCE will determine if this new curriculum results in improved abilities to detect abnormal findings during standardized patient encounters.

2. **Longitudinal Quality Improvement Curriculum for Medical Students: A Pilot Project**

Kimberly Tartaglia MD, The Ohio State University Medical Center

Background: As the expectation for teaching quality improvement (QI) principles to undergraduate medical students increases, schools may be struggling to determine the best way to accomplish this curriculum addition.

Objective/Purpose of Innovation: Our purpose was to use Fink's Taxonomy of Significant Learning (Foundational Knowledge, Application, Integration, Human Dimension, Caring, and Learning How to Learn) to develop a longitudinal QI curriculum that was piloted on fourth year medical students.

Instructional Methods and Materials: To introduce the human dimension and caring aspect of QI, students are required to read Atul Gawande's Better and The Checklist Manifesto. The foundational knowledge is accomplished through completion of the Institute for Healthcare Improvement (IHI) Open School as well as 2 discussion sessions on QI concepts and The Model for Improvement. The integration and application skills are addressed through the completion of a QI project that focuses on identification of a faculty mentor, creation of a multidisciplinary team, and identification of well-defined aims and measures for the project. As part of their QI project and to fulfill the "learning how to learn" domain, students are expected to complete a literature search and summarize "best practices" in regards to their project.

Educational Outcomes: Currently six students are completing the curriculum as part of a longitudinal Honor's in Internal Medicine elective. In regards to the required reading, students complete a 1-page reflection paper that discusses the scope of quality improvement in their everyday clinical experiences. To test their foundational knowledge, the students will complete the Quality Improvement Knowledge Assessment Tool (QIKAT) at the end of the clerkship. Additionally, we are in the process of developing a scoring tool for their QI project worksheets as well as an evaluation tool to be completed by the faculty project advisors. Curriculum assessment will occur through student evaluation of the curriculum as well as

comparing this cohort's QIKAT scores with historical controls.

Strengths and Feasibility: Strengths of the program include the experiential component for learning QI as well as focusing on high-yield class time that requires outside preparation and serves to reinforce QI principles and encourage discussion. Based on our curriculum assessment, we plan to expand this pilot to create a longitudinal curriculum for the entire medical student body. Although this will require extensive faculty development to create a larger cadre of QI project advisors, previous studies suggest significant improvements in patient care and safety which should overcome any costs of time and resources.

3. **Gathering Consensus on Curriculum Reform Using Posters and Audience Response**

Janet Lindemann MD, MBA, University of South Dakota Sanford School of Medicine

Edward Simanton PhD, University of South Dakota Sanford School of Medicine

Matt Bien MD, University of South Dakota Sanford School of Medicine

Objective: Successful curriculum reform presents challenges in developing consensus and creating momentum.

Need for Innovation: In preparing for a school-wide planning retreat on curriculum reform, we needed to create a forum that would:

- Lead to agreement about the need for change based upon an understanding of internal and external factors,
- Inform about curriculum models proposed by our own faculty, and
- Allow dissenters to air objections in an atmosphere of trust and shared commitment.

Instructional methods and materials used: Following considerable pre-work by faculty groups, nine curriculum reform proposals were developed. The retreat utilized the following instructional methods:

- **Poster** – Using a predetermined format, posters were created and disseminated prior to the retreat. Following a description and lists of strengths and challenges, each poster addressed a set of ten evaluation questions which were based on our curriculum goals and new recommendations from *Educating Physicians: A Call for Reform of Medical School and Residency* (Cooke, Irby, and O'Brien).
- **Formal poster presentation** – Each poster was featured in a 15-minute presentation followed by a typical poster session.
- **Audience response system (ARS)** – Attendees used the ARS to answer the ten evaluation questions about each curriculum proposal. Immediate consensus results were briefly available between each question.

Educational outcomes: A survey before and after the retreat asked how effectively: 1. the posters communicate curriculum ideas, 2. poster discussion builds consensus, and 3. the audience response system measures consensus. Results demonstrate agreement with the effectiveness of the methods and slight increase in ratings at the end of the retreat. Basic science faculty viewed the methods less favorably than other groups.

Innovation's strengths and areas for improvement:

- Strengths of using posters and ARS:
 - Visually communicates salient points.
 - Facilitates large group formal presentation and one-on-one discussions.
 - ARS engages everyone and allows anonymity.
- Areas for improvement:
 - Even though innovative, these methods had limited ability to engage faculty who remained reticent about curriculum reform.

Transferability to other schools: Posters, poster sessions, and the audience response system are methods in use throughout medical education. Other schools are encouraged to use these strategies in developing a faculty consensus for curriculum reform or other complex planning efforts.

4. **Integration of Population Health Concepts into a High-Stakes Year-End Professional Skills Exam**

Jacob Prunuske MD, MSPH, University of Wisconsin School of Medicine & Public Health

Shobhina Chheda MD, MPH, University of Wisconsin School of Medicine & Public Health

Amy Becker MA, University of Wisconsin School of Medicine & Public Health

Roberta Rusch MPH, University of Wisconsin School of Medicine & Public Health

Julie Foertsch PhD, University of Wisconsin School of Medicine & Public Health

Renie Schapiro MPH, University of Wisconsin School of Medicine & Public Health

John Brill MD, MPH, University of Wisconsin School of Medicine & Public Health

Christine Seibert MD, University of Wisconsin School of Medicine & Public Health

Background: The University of Wisconsin School of Medicine and Public Health (UWSMPH) is transforming its curricula to integrate education in public health, biomedical sciences, and clinical medicine. UWSMPH students are required to pass a high-stakes Year-End Professional Skills Exam (YEPSA) at the end of their third year of medical school. We sought to assess the impact of our curricular innovations by 1)

integrating key public health concepts into the YEPSA cases and then assessing students' ability to address public health issues in a clinical setting, and 2) implementing a written exercise designed to assess student achievement of public health competencies.

Methods: We modified three 2010 YEPSA stations to include key public health concepts. Evaluators assessed students on their ability to address key public health issues in a clinical context, using a scale of 'pass', 'marginal', or 'fail' for specific student actions. In a separate written exercise, students were asked to 1) describe the relevant social, behavioral, and environmental determinants of health related to the patient's condition in one of the YEPSA stations, and 2) describe a specific action or actions a physician could take to lower the incidence of the identified health condition in the community by addressing one of these health determinants. Students participating in the 2010 YEPSA were not instructed using the new public health curriculum; therefore 2010 outcomes will serve as baseline data as we evaluate the impact of our curricular innovations.

Results: 143 students completed the June 2010 YEPSA. Students' mean scores were predictably worse on the public health items than the standard items for all three modified stations: Cough (56% sd 17.1% vs 83% sd 8.1%, $p < 0.0001$) Healthy Adult (39% sd 33.7% vs 82% sd 13.2%, $p < 0.0001$) and Psychiatry (64% sd 29.5% vs 83% sd 8.9%, $p < 0.0001$). For the public health essay, the students' responses are being used to develop and test the inter-rater reliability of a scoring rubric, which will be presented along with the results of the pilot essay at the conference.

Conclusions: A high-stakes skills exam can be successfully modified to incorporate key public health concepts and skills and it can be used to assess core public health competencies achieved by medical students. As expected, students in our pre-intervention cohort performed worse on public health items than on traditional items. We anticipate improvements over this baseline as we add more public health content to our curriculum.

5. **550 Health Sciences Students and Henrietta Lacks: An Interprofessional Book Club**

Christie Seibert MD, University of Wisconsin School of Medicine & Public Health

Jeanine Mount PhD, RPH, University of Wisconsin School of Pharmacy

Nadine Nehls PhD, RN, University of Wisconsin School of Nursing

Michela Sullivan-Fowler MS, MA, University of Wisconsin Madison

Christopher Olsen DVM, PhD, University of Wisconsin School of Veterinary Medicine

Julie Foertsch PhD, University of Wisconsin School of Medicine & Public Health

Lynette Regouby BA, University of Wisconsin Madison

Background: There are widespread recommendations for increased interprofessional education opportunities for health sciences students. Challenges include lack of curricular time and schedule coordination.

Objective: We piloted book discussion sessions to determine if a common reading program is an effective way to learn about public health issues and interprofessional practice.

Instructional Methods and Materials Used: During three weeks in fall 2010, 552 students from University of Wisconsin's Schools of Pharmacy, Medicine & Public Health, Nursing and Veterinary Medicine attended one of 50 discussion sessions regarding Rebecca Skloot's 2010 non-fiction book The Immortal Life of Henrietta Lacks. In each session, an interprofessional mix of 15-20 students from the four schools gathered for one-hour discussions with a facilitator from one of the four schools who used a common facilitator's guide. The aim was to engage in spirited dialog on complex topics like informed consent, bioethical aspects of research, racial equity in research protocols, health literacy, compensation for bodily tissue, body ownership, spirituality in health care, and the science of the HeLa cell.

Educational Outcomes: The event's effectiveness was evaluated using student and facilitator survey that were emailed to all participants after the last session. 369 (67%) of the 552 students and 24 (77%) of the 31 facilitators responded. Respondents included students and facilitators from all 4 schools. Students felt the book discussions were largely successful in comfortably engaging interprofessional groups of students in beneficial discussions about a book regarding controversial topics in the health sciences. 65% of respondents stated without condition that they would attend an event like this again next year. Only 5% said they wouldn't attend unless required. Overall, 61% of respondents felt similar events should be required for students in their profession. Nursing students were significantly more likely to have found the interprofessional mix of students helpful and to feel comfortable speaking in front of the group. 83% of facilitators felt the book discussion was an effective means of stimulating a worthwhile discussion of topics in the health sciences with 92% feeling that the Skloot book was a particularly good choice.

Strengths and Areas for Improvement: Book discussions can encourage productive, interprofessional interactions but need to be part of a longitudinal program of opportunities.

Feasibility of maintaining program and transfer to other schools: This program was not costly and could be easily duplicated by other schools using the facilitator guides that were developed.

6. **The Saint Louis University Internal Medicine Boards by Active Learning (SIMBAL): A Pilot Program of a Novel Board Preparation Curriculum for Residents**

Michael J. Sanley MD, Saint Louis University School of Medicine

Sonia Chacko MD, Saint Louis University School of Medicine

Miguel A. Paniagua MD, Saint Louis University School of Medicine

Objective: To provide an effective novel board review curriculum for Internal Medicine Residents that incorporates active learning techniques and simultaneously provides unique scholarship opportunities.

Methods: PGY-1 through PGY-3 residents are divided into groups based on the content outline of the ABIM board certification exam. The authoring housestaff are placed in groups by subject (specialty) interest and areas of deficiency identified during the annual in-service exam. After a structured training session on multiple choice question item writing, each resident in these groups are responsible for writing 5 board-style questions in the area of their subject, with answer explanations and citations. Each group is led by an upper level resident (PGY-2, PGY-3) associate editor who is responsible for reviewing and editing submitted questions. These questions are then placed in a question bank for utilization during board review sessions held weekly.

Discussion: During these sessions, 15-20 board style questions in a pre-determined subject area are presented, and participant responses are recorded using an audience response system (ARS). This allows for real time assessment of areas of knowledge and simulated experience in answering board-type questions. A content expert in the subject matter of the day is also on hand to help facilitate discussions about each question to further enhance the learning experience. By incorporating active learning in the review process, residents should demonstrate an increase in retention of subject matter, which should correlate with an increase in performance in the Internal Medicine boards, both on an individual and program wide level.

7. **Chief Resident for Quality and Patient Safety: an Innovative Approach to Teaching Quality Improvement and Patient Safety to Residents**

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Venkata Andukuri MD, MPH, Omaha VAMC/University of Nebraska Medical Center

Ann Polich MD, MPH, Omaha VAMC/Creighton University School of Medicine

Purpose: Medical errors and poor quality of care continue to be major causes of morbidity and mortality in health care. Despite ACGME requirement that quality improvement and patient safety be taught to all residents, many residents still lack teaching about these topics. Residents have significant time pressures and competing educational and personal demands that make teaching these concepts difficult. Furthermore, not every resident would have the opportunity to take a rotation specifically designed to teach and participate in quality improvement and patient safety. To ensure all residents are introduced to these concepts, a Chief Resident for Quality and Patient Safety at the Omaha VA Medical Center was created to teach a clinically based curriculum as well as increase the reporting of events through incident reports and a physician hotline.

Method: Through monthly resident orientation for medicine and surgery, the Chief Resident would educate residents about National Patient Safety Goals, effective event disclosure, risk management, using the event reporting system, and how RCAs and event reporting can lead to system-wide changes. Residents on an ambulatory rotation were given more in-depth review of quality and patient safety topics through lectures about human factors engineering, CQI/PDSA, and RCAs. These residents had an opportunity to participate in hospital committees to provide practical experience. At the end of each month, a multi-disciplinary conference required each medical team to present a case where patient safety or quality was compromised, possible reasons for the system vulnerability, and proposed action plans that could be implemented to prevent reoccurrence. The Chief Resident would also report on implementation of action plans identified at the previous conferences, and, in so doing, show how residents could positively impact the entire system by recognizing system deficiencies.

Results: Since instituting the Chief Resident position, incident reporting throughout the hospital has increased, and the number of physicians using the hotline has increased substantially. Other benefits have included successful implementation of system changes as a result of resident incident reporting.

Conclusion: While, ideally, residents should have formal training in concepts related to quality improvement and patient safety, residency structure may not be amenable to dedicated rotations in quality improvement and patient safety. A Chief Resident for Quality and Patient Safety can be an innovative way to not only teach concepts related to quality improvement and patient safety, but also to better engage the residents in process improvement and recognition of system deficiencies.

8. **Teaching Skills for Medical Students: A Four Week Elective Course**

Jeff Pettit PhD, University of Iowa Carver College of Medicine

Kristi Ferguson PhD, University of Iowa Carver College of Medicine

Objective or purpose of innovation: Fourth year medical students enrolled in the four-week teaching skills for medical students' elective course at the Carver College of Medicine, The University of Iowa are surveyed before and after taking the elective to measure their teaching confidence in 14 different teaching techniques. After completing the elective, confidence levels are significantly higher than before the course.

Need for innovation: The authors are interested in whether the students feel the course has allowed them to gain more experience in multiple teaching methods thus improving their level of confidence in using these methods. This also provides feedback to the authors that students are gaining the skills they feel are important to become effective teachers.

Instructional methods and materials used: On the first and last days of the teaching elective, students are given the Teaching Confidence Scale instrument to measure levels of confidence regarding fourteen teaching techniques/methods. Some of the techniques include facilitating a small group, giving feedback to learners, dealing with challenging learners, and clearly conveying expectations. The instrument is a 5 point Likert scale with 1 = not at all confident to 5 = very confident.

Educational outcomes: Every one of the fourteen techniques/methods measured by this instrument is statistically more significant after the students have completed the elective. This indicates that students feel the course is providing them with the knowledge and skills to be more effective teachers.

Innovation's strengths and areas for improvement: Strengths include:

- a. Areas of focus during the elective are important to the learners
- b. Students feel they are receiving the necessary knowledge in each of the techniques/methods
- c. The course allows students to gain confidence in the teaching abilities

Areas for improvement include:

1. More opportunities to try various teaching techniques/methods
2. Offering an advanced elective for more focused learning

Feasibility of maintaining program and transfer to other schools or programs: The teaching elective is offered 6 times during the academic year. The course is a foundational component of the Teaching Distinct Track. Students report that this is one of the best electives they have taken during their medical school training.

9. **Teaching Confidence of Fourth Year Medical Students**

Jeff Pettit PhD, University of Iowa Carver College of Medicine

Kristi Ferguson PhD, University of Iowa Carver College of Medicine

Objective or purpose of innovation: Fourth year medical students enrolled in the four-week teaching skills for medical students' elective course at the Carver College of Medicine, The University of Iowa are surveyed before and after taking the elective to measure their teaching confidence in 14 different teaching techniques. After completing the elective, confidence levels are significantly higher than before the course.

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Feasibility of maintaining program and transfer to other schools or programs: The teaching elective is offered 6 times during the academic year. The course is a foundational component of the Teaching Distinct Track. Students report that this is one of the best electives they have taken during their medical school training.

10. **Assessing Residency Training Coordinators' Perceptions of Potential Psychiatry Residents Demeanor and Presentation: A Pilot Study**

Stephen, W. Robinson MD, Southern Illinois University School of Medicine

Nicole Roberts PhD, Southern Illinois University School of Medicine

Kristina Dzara PhD, Southern Illinois University School of Medicine

No empirical research exists regarding the role of support staff in the interview process of medical students applying to postgraduate residency programs. Residency Training Coordinators provide a critical role in obtaining, disseminating, and organizing necessary application materials from potential applicants to assist in scheduling selection interviews. Through this process they are afforded the opportunity to potentially see aspects of the applicants that faculty involved in the selection process may not. We assume that the Residency Training Coordinator's perceptions of applicant's behaviors (based on their interactions with applicants), may prove important in the selection process and may foretell how successfully selected applicants perform in the future.

In this poster, we review existing literature, suggesting that there may be a relationship between residency training coordinators' perceptions of applicant behaviors and their likelihood of being accepted in a residency. We also present the educational evaluation tool utilized to collect information from residency coordinators about their perception of residents. Finally, we will present preliminary findings from the initial data collection. The results of this pilot study may be utilized to expand the scope of the study to other residency training programs.

11. Teaching Quality Improvement in Graduate Medical Education: A Novel Approach

William Yost MD, Iowa Health-Des Moines

Steven R. Craig MD, Iowa Health-Des Moines

Mark Purtle MD, Iowa Health-Des Moines

Maya Johnston MD, Iowa Health-Des Moines

Teaching and incorporating the principles of quality improvement (QI) in graduate medical education is essential and yet challenging. We have developed a unique approach to teaching the principles of quality improvement to residents and incorporated that approach into our curriculum. The approach that we have developed includes both a didactic and practical component, and also ensures that the principles are repeatedly reinforced throughout the academic year.

Residents in our program are required to complete a series of three on-line modules in Quality Improvement available on the IHI website. There is no cost for residents to enroll. Each module requires approximately one hour to complete, including satisfactory completion of an examination at the end of the module. The resident is asked to print a document certifying satisfactory completion of the three modules; this document is included in each resident's portfolio.

At the beginning of each academic year, each resident is assigned to a QI team. There are six residents assigned to each team, and each team elects a second year resident as team leader. Each team has a faculty facilitator who has been trained in the principles of QI. The faculty facilitator's role is to provide oversight and counsel, and serve as an essential resource. Each team selects a QI project. Projects may be directed toward improvement of a process or toward measurement and improvement of performance related to a quality indicator. Data are collected and analyzed by the team, and using the PDSA cycle (Plan, Do, Study, Act), small tests of change are implemented and reviewed by the team. At the end of the academic year, data are again collected and analyzed to determine whether meaningful improvement has resulted from the QI team project. The team leader presents the results of his or her project at a Grand Rounds dedicated to demonstrating the results of QI team projects.

There have been several benefits for us as a result of implementing this curriculum. First, residents have learned the principles of QI, and more importantly, have had those principles reinforced through practical application and repeated discussion throughout the academic year. Second, projects have resulted in meaningful improvement in the care our institution provides for patients. Third, and finally, this has proven to be an opportunity for scholarly activity in our community-based residency program, as residents complete projects suitable for publication in peer-reviewed journals and posters for regional and national meetings.

12. Widening the Scope of a Required Senior OSCE by Incorporating Simulated Procedures

Patricia Carstens MS, University of Nebraska College of Medicine

Hugh Stoddard Ph.D., University of Nebraska College of Medicine

Devin Nickol M.D., University of Nebraska College of Medicine

Paul Paulman M.D., University of Nebraska College of Medicine

Since 1995, the University of Nebraska College of Medicine (UNCOM) has required MS4 students to complete 4-station OSCE in which they performed a history and physical exam and wrote a patient note. Students were scored based on their interpersonal skills and the patient note that they composed and submitted. With the advent of the USMLE Step 2 Clinical Skills Exam and with the expansion of medical simulation, UNCOM has reformed the Senior OSCE to include procedural skills that can be tested using manikin simulators or task trainers.

In 2006, UNCOM began a process to redefine the clinical procedural skills that are required for graduation. In the course of this investigation, we discovered that history-taking skills, physical exam

maneuvers, and diagnostic reasoning were taught and assessed multiple times during the 4-year curriculum. As a result, the Senior OSCE did not provide additional formative or summative information about our students than what was available through other internal OSCEs or USMLE Step 2CS. Therefore, we began developing procedure stations using 'task trainers' to replace some of the H&P stations in the Senior OSCE.

Students were notified that in the Senior OSCE they were responsible for knowing how to perform any of the clinical or procedural skills from the list of required skills. At the outset of their required clerkships, students were notified that they should be learning and practicing these skills during their time in the various clinical rotations. Students were also provided with access to Procedures Consult, a commercial website through which students study and observe various common procedures.

The Senior OSCE was conducted in the UNCOM Clinical Skills Laboratory and all of the procedure stations were videotaped. Each student's performance was observed and graded by the Assistant Dean for Clinical Skills and Quality. Several students had substandard performance on the procedural stations and were advised to review Procedures Consult and practice on the task trainers before re-testing.

The incorporation of procedures into the Senior OSCE has been satisfactory and holds promise for expansion. Future issues to be addressed include: expanding the number of procedures tested, ensuring consistency of grading students, and integrating Standardized Patients into a hybrid simulation scenario.

13. Using Simulated Patients to Enhance Health Literacy Communication and Patient Understanding

Stanton Hudson MA, University of Missouri Center for Health Policy

Karen Edison MD, University of Missouri-Columbia School of Medicine

James Campbell PhD, University of Missouri School of Medicine

David Fleming MD, University of Missouri School of Medicine

Kim Hoffman PhD, University of Missouri-Columbia School of Medicine

Diane Smith PhD, University of Missouri Occupational Health

Dena Higbee MS, University of Missouri-Columbia School of Medicine

Ioana Staiculescu MPH, University of Missouri Center for Health Policy

The average American reads and understands information at a 7th to 8th grade level while communication provided by health professionals is, on average, at a 11th to 12th grade level. Programs designed to enhance health literacy often target patients; however, more recent efforts have begun to focus on health professionals, providing techniques to ensure patient understanding..

Objective: To develop a simulation workshop for practicing physicians, to address health literacy in the clinic setting using simulated patients.

Design: Three Health Literacy Simulation (HLS) workshop targeted practicing community physicians/health providers were conducted (N=12).

Intervention: The HLS workshop included a series of simulated patient encounters coupled with interactive didactic sessions and individualized mentored feedback. In addition, we developed a simulation workshop aimed to empower patients. The patient workshop used simulated physician encounters displaying poor provider communication, allowing participants to practice using techniques to improve communication. The patient workshop was further developed as a service learning project, which could be implemented by medical students.

Results: Participants were assessed pre and post using a self-administered survey. Paired t-tests were performed. HLS workshop results suggest participants improved their knowledge of health literacy issues ($p=0.00$) and improved their knowledge of strategies and techniques ($p=0.00$) such as the "teach back" and "flip it" methods.

Participants identified the main barriers to implementing health literacy techniques in routine practice. Sixty-six percent identified a lack of time as being the biggest obstacle, while difficulty in engaging and training office staff came in close second. When asked about what resources would be helpful in their clinic to improve health literacy, 50% of participants mentioned the need for health literacy training for nursing and front office staff and 25% of them talked about easier ways to contact and utilize interpreter services. Most participants also agree that it is best to take a universal approach by assuming that all patients have some degree of low health literacy. Several participants also stated in exit surveys that health literacy assessment should be as important and routine as other routine screening activities, such as the assessments of blood pressure and weight during clinic visits.

Conclusions: Physicians who learn to use good health literacy techniques become more effective in communicating with their patients. Teaching patients to communicate more effectively with their physician can have complementary results, empowering them to ask questions and becoming a more active partner.

14. Exploring the Benefits of Simulator Technology

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Eric Peters MD, Creighton University School of Medicine

Thomas Hansen MD, Creighton University School of Medicine

Jan Stawniak RN, BSN, Creighton University School of Medicine

Background: Research demonstrates many medical students are not taught important clinical and procedural skills leaving them deficient at performing certain procedures. Limited patient availability is a confining factor. Simulation is an alternative to assist in this dilemma. It is not to function as a replacement to bedside teaching but shows useful opportunity as an adjunct. In fact, simulation has some advantages in that controlled scenarios can be created and altered for diversity, the environment is safe for learning and problem solving errors, and immediate feedback is available.

Purpose: To evaluate effectiveness of simulator instruction for medical students regarding disease process, performance of skills, and effects on their personal confidence levels.

Methods: Various modalities including Power point, hands on performance of skills, immediate feedback, problem solving questions and answers, and reflection. The learners involve 3rd year medical students during their Ambulatory Care Clerkship.

Objective:

- Each student will perform a simulated Paracentesis and Thoracentesis
- Each student will have an opportunity for feedback and Q&A
- Each student will have a reflective opportunity and consider the value of the session.

Program evaluation: Pre and post tests were done to evaluate medical knowledge. A hands on facilitator was present to provide immediate feedback involving reinforcement of correct demonstration of skills and/or remediation as necessary. Student evaluation was gathered in order to obtain a level of student satisfaction.

Results: Participation rate – 13 students

Findings: Results indicate that students increased their level of confidence in performance of procedures, desired to have additional simulation opportunities, and enhanced their knowledge of disease states pertaining to Paracentesis and Thoracentesis.

15. **A Virtual Self-Study Histology Laboratory**

JD Lowrie, Jr PhD, University of Cincinnati College of Medicine

Anne Gunderson EdD, GNP, University of Cincinnati College of Medicine

Bruce Giffin PhD, University of Cincinnati College of Medicine

To take advantage of technological advances, histology laboratories at the University of Cincinnati have recently undergone dramatic changes. Traditionally, students used our laboratory manual, a set of glass slides with a microscope, and an atlas during scheduled laboratory sessions in which rooms of 24 students were assisted by one or two faculty. Several years ago, we converted our print laboratory manual into a digital version, allowing us to incorporate links to annotated images taken from our slide set. More recently, we have made available digitized versions of our glass slides through use of the Olympus software (formerly Bacus). These improvements have created students that are more independent, able to progress through the laboratory material with less faculty assistance.

The University of Cincinnati is undergoing curriculum revision. One of the major goals of this revision is to encourage students to become independent learners. In an attempt to see whether our students can learn at least some portion of the Histology laboratories on their own, we have created Self-Study Virtual Laboratories to replace several of our scheduled laboratory sessions. These PowerPoint-based modules include labeled images with descriptions, videos featuring faculty-guided tours through our slides captured with screen-recording software, links to our digital images so that students can find structures on their own, and quizzes to allow self-testing. Although many students were skeptical of these modules when we first announced our experiment, most have found that they are either as good as, or better than, a traditional laboratory session with a live instructor.

16. **Keeping It Real: Introduction of Hybrid Simulation to a High Stakes Objective Structured Clinical Exam**

Janet Stawniak BSN, Creighton University School of Medicine

Eric Peters MD, Creighton University School of Medicine

Eugene Barone MD, Creighton University School of Medicine

Objective of Innovation: To introduce standardized patients (SP) in combination with simulators or task trainers to improve the clinical competency assessment of third-year medical students in an Objective Structured Clinical Examination (OSCE) and prepare them for other case formats used in the USMLE Step 2 CS.

Need for Innovation: Medical educators face the extraordinary task of preparing medical students to become future physicians. Multiple teaching modalities are used to develop and assess the competencies students are expected to achieve prior to graduation. Opportunities for students to perform tasks and have particular experiences are often limited. Dr. Roger Kneebone pioneered the use of a combination of standardized patients with simulators in safe, realistic clinical scenarios known as “hybrid simulation.” To date, there is limited evidence for the validity and reliability of hybrid simulation in OSCEs. There is also a dearth of published information to guide effective implementation.

Instructional methods/materials used: Upon completion of their third year, 119 students participated in the Junior Clinical Competency Exam (JCX). Students encountered cases in seven different medical areas. Pediatrics, Surgery, and Obstetrics utilized hybrid simulation for patient care, medical knowledge, communication, and professionalism competencies. Patient safety, age appropriate care, and health counseling were also incorporated in the hybrid cases. Discussion with students, faculty, SPs, and staff contributed to feedback. Students viewed a video discussing the OSCE including the simulators at the start of the day.

Educational outcomes: The hybrid simulations were successfully implemented and enhanced the traditional OSCE experience. Use of the models in conjunction with SPs permitted assessment of skills and knowledge that would have been difficult to assess with SPs alone.

Innovation's strengths/areas for improvement: The use of hybrid simulation expanded the range of assessment options but presented a number of logistical and conceptual challenges. Students were often uncertain how to transition between tasks involving the SP and model, and looked to the faculty evaluator for guidance. Also, students were distracted when the models lacked sufficient realism (e.g., jaundice on a pediatric mannequin) or performed differently than programmed (e.g., different rates of eye blinking). These unanticipated events interfered with students' perception of case severity and diagnosis.

Feasibility of maintaining program, and transfer to other schools: Hybrid simulation offers challenges but can be effective and easily altered. As an initial attempt, this process was as valuable as the results. Future assessment will improve clinical assessment and prepare students for Step 2 CS.

17. **Wiki Use for Evaluation of Medical Student Case-Based Learning in Complex Internal Medicine Problems**

Camilla Curren MD, The Ohio State University College of Medicine

Larry Hurtubise MA, The Ohio State University College of Medicine

Rollin Nagel PhD, The Ohio State University College of Medicine

Holly Cronau MD, The Ohio State University College of Medicine

The objective of this study is to quantitatively compare scores obtained by students answering case-based internal medicine essay questions individually with those obtained by students working in wiki response groups.

The hypothesis is that wiki format will allow students to self-correct before submission resulting in higher group scores .

The need for this type of innovation is driven by use of technologic assessments in education.

Limited qualitative data exists regarding wiki use to compile evaluated documents in graduate education; this data is obtained primarily by survey use to measure collaborative opinion of students. Wikis provide user-friendly technology and wiki users have been shown to have increasing quantifiable ability over an academic semester to collaborate, to peer-review each other's work, and to use technology in generating documents for use in public health graduate courses.

Instructional methods used were to randomize all consenting senior Ambulatory Internal Medicine students to wiki groups of 3-5 participants; groups were initially familiarized with online wiki secure testing environment through a suggested exercise. Individual and wiki essay responses were graded by a blinded grader according to a stable rubric and were compared with scores of regraded individual essay testers from the prior year. Test takers were surveyed on their satisfaction with testing format.

Results of test scores comparing wiki and non-wiki participants initially show no significant score difference between groups by Mann Whitney U test; repeated measures analysis shows that wiki scores are significantly higher than non-wiki scores for individual students.

Conclusions at this point in the study are that meaningful quantitative data will require completion of several more months of testing; the large 'n' of several hundred students/ year will help validate or disprove usefulness of wiki evaluative products in medical education . A strength of this method is that most students surveyed find that they use data differently and gain insights into complicated evaluative processes using this method. Changes in optimal open times or in formats of wiki use (open over days vs. hours, formative use before summative use) are suggested as improvements or extrapolations.

The feasibility of maintaining this testing method and its transferability to other institutions is an advantage of wiki use; it is easily set up and maintained via preexisting OSUMC academic internet site, allows collaboration by students at different physical locations, and is exportable for use in distance learning when complex learning applications and peer interactions are desirable.

18. **Clinical Students Self Reported Challenges Associated with Care Transitions**

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Purpose of Innovation: To understand the challenges to effective care transitions, as perceived by clinical students to inform instruction.

Need for Innovation: The Joint Commission has identified that 70% of errors leading to significant patient harm arises from poor communication, often at the time of a hand off. Lack of quality communication during care transitions has been associated with medical errors, patient dissatisfaction, and inefficiencies. Despite this, there are limited published medical student targeted curricula focusing on care transitions with no published literature identifying the issues that challenge associated with care transitions.

Instructional Methods & Materials Used: Third year medical students, as part of a required intercession on patient safety/handovers, identified a recent patient for whom a care transition had occurred. Each student provided a written brief narrative description of the situation including the process(es), types of information exchanged during the transitions, the impact of that information exchange on the patient care, and their affective reaction. Narratives were analyzed by the project team using standard qualitative methods (e.g., memo technique to identify features associated with these encounters). Categories and themes were identified using constant comparative methodology

Educational Outcomes: 193 scenarios were analyzed. Preliminary analysis reveals major themes around lack of communication and/or documentation, accepting responsibility for patient care and “frustration” about ineffective transitions. Students’ emotions ranged from annoyance and frustration to bewilderment and anger. Various factors appeared to contribute to ineffective transitions including a lack of clarity re: (1) Who is the sender/receiver (People); (2) Why the transition is occurring (reason); (3) verification of receiver’s prior knowledge of patient (Inquiry); (4) specific details of the medical course; (5) current health status and care priorities (Assessment); (6) who is responsible for carrying which aspects of patient’s care plan post transition (Role/Responsibilities); (7) confirmation that sender/receiver have mutual understanding.

Innovation’s Strengths and Areas for Improvement: Analysis of students’ challenging care transitions experiences enables educators to identify student care transition roles and inform instructional design on patient safety. The opportunity to extend the process to additional topics /training years is limited by time/resources needed to systematically analyze narrative data.

Feasibility of maintain Program/Generalizability to Others: The thematic results obtained can be used by other educators to guide patient safety/transition instruction for medical students with the acknowledged limitation that results were from a single institution and class year.

19. **Using Stakeholder Perspectives to Identify Evaluation Outcomes**

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Purpose of Innovation: To obtain key stakeholders perspectives on the outcomes and associated evidence that would demonstrate whether a new curriculum model was successful.

Need for Innovation: Curriculum change is endemic in medical schools, along with expectations for “evaluation” of change. While evaluation is intended to provide data to inform decisions about the value, merit or worth of the change, a systematic approach to ascertaining key stakeholders perspectives on the intended outcomes is rarely described in the literature on medical education reform.

Instructional Methods & Materials Used: An Evaluation Council identified key stakeholders associated with our new curriculum. Students, faculty, and alumni along with education, hospital and college leaders were contacted and asked to answer two questions. Q1: What impact/outcomes would you look for if we were to say the new curriculum was a success? (Be specific – what impact; on whom). Q2: What evidence would convince you (and others) that we have achieved and/or are on target to achieve this

impact(s)/outcome(s)? Analysis of the resultant narratives was conducted using standard qualitative methods.

Educational Outcomes: Input was received from >150 individuals who identified 873 impacts/outcomes (e.g., Administrative/Hospital Leaders = 15; Course/Clerkship Directors = 18; Residency Program/Fellowship Directors = 8; Faculty Council Committees = 30; Students = 77). Fourteen themes emerged including "reputation"; enhanced clinical skills; performance/ratings on USMLE/GQ; lifelong learning; and "pride and engagement" of faculty, staff and students. Stakeholder results are now being used to create an evaluation blueprint with specification of specific tools and existing data sets associated with the themes.

Innovation's Strengths and Areas for Improvement: Different audiences bring unique perspectives to the process of evaluating a new curriculum's merit or worth. By engaging a broad base of stakeholders and making the themes public, the Evaluation Council is positioned to design an evaluation that will answer stakeholders' questions. However, as our curriculum model evolves, stakeholder "perspectives" may change requiring updating of evaluation plan and tools.

Feasibility of maintain Program/Generalizability to Others: The use of stakeholder input in program evaluation provides essential data for any evaluation activity and can be accomplished efficiently and effectively through a combination of face-to-face, paper, and e-based methods making it easily transferable to other settings and programs.

20. **The Effectiveness of Video Prosections and Practice Practicals: An Investigation in the Gross Anatomy Laboratory**

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Background: While many medical schools defend the relevance of dissection in gross anatomy, some programs have reduced their anatomy curriculum to computerized models. Sanford School of Medicine of the University of South Dakota (SSOM) continues to provide full dissections in their anatomy course. While here dissection remains integral to learning the three-dimensional structures of the human body, the laboratory experience can be improved. This study explores the effectiveness of video prosections and practice practicals in the gross anatomy laboratory.

Methods: To complement current practices in the anatomy laboratory at SSOM, 'pre-laboratory' video recordings (4-6 minutes in length) of a prosection were produced. Before each session, students watch the recording of that day's dissection. Students were also offered optional reviews of each unit. In addition, 2nd year medical students (MSII) set up practicals before each exam to provide students practice in visualizing structures. Participants completed a post-course survey to evaluate these teaching methods.

Preliminary Results: Surveys from the 2009 class have been collected, with 70 students (more than half the class) responding. 56% agreed/strongly agreed the dissection was easier to accomplish after watching the pre-lab videos, and 62% agreed/strongly agreed use of the videos should continue. While only one third of the class used the optional review recordings, almost 90% noted increased confidence in identifying structures and highly recommended use to other students. The practicals were highly regarded, 96% utilized, benefited, and recommended them for future use.

Overall, 86% agreed/strongly agreed the materials were beneficial to their learning, with 82% citing an improvement in exam scores as a result.

Strengths/Weaknesses: Given this resounding positive response, the practicals have continued, organized by Student Coordinators of Anatomy Lab Practical (SCALP). With MSII's arranging the practicals, there is an additional camaraderie between the classes, fortifying the viability of the program. Students rate their experience as exceptional and believe they benefit academically from this project.

Nonetheless, weaknesses are apparent. The optional review videos were not easily accessible. Improving accessibility with multiple CD copies or uploading to the university website is an ongoing process.

Conclusions: The SSOM gross anatomy laboratory continues to use full body dissections in anatomy. The techniques outlined in this study further enhance the laboratory experience and facilitate an active learning environment.

21. **The SITE Program Turns Five: The Impact of a Program to Promote Teaching and Scholarship**

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Objective of innovation: This year marked the 5th anniversary of the Summer Initiative for Teaching Excellence (SITE) at Creighton University. SITE is a collaborative, intensive, and interprofessional program designed to offer faculty an opportunity to engage in study, conversation, work, and reflection about teaching and learning. Faculty from all health professions programs may participate.

Need for innovation: Many faculty members in health professions schools lack formal training in teaching methods. Recognizing this, Creighton University Schools of Medicine, Nursing, and Pharmacy and Health Professions introduced the Summer Initiative for Teaching Excellence (SITE program) in 2006. The School

of Dentistry participated in subsequent years. The program objectives are to: improve teaching and learning by providing opportunities for faculty to develop skills for effective teaching and assessment; promote the scholarship of teaching and learning and the dissemination of educational innovations; recognize achievement and excellence in teaching and develop educational leadership.

Instructional methods used: Program topics include teaching philosophies, instructional design, assessment, strategies for teaching small and large groups, and the scholarship of teaching and learning. Learning modalities include group presentations, small group discussions, and individual project time. An important component is the initiation of an individual project, such as a new assessment method. Participants are assigned project mentors, and complete their project by the end of the academic year. Additional meetings are scheduled throughout the year to review projects, discuss teaching concerns, and learn about educational scholarship opportunities.

Educational outcomes: Since the program's inception, 45 faculty members have completed the program. Deans and department chairs now recommend the program to new faculty. A survey of scholarly activity is administered annually; past participants have shared examples of curricular innovations, assessment methods, journal articles, book chapters and conference presentations resulting from participation in the program. Some participants listed participation in the SITE program in their dossier for tenure and promotion.

Innovation's strengths and areas for improvement: Program evaluation data collected at the conclusion of each program and focus groups confirm the need for the program and foundational teaching skills content. The program draws faculty from all health professions programs and participants cited this as a program strength.

Feasibility of maintaining program, and transfer to other schools or programs: The intensive, two-day format is an effective model and we will continue to offer the program. We encourage other schools to consider this approach for improving teaching skills and developing a community of health science educators.

22. **Introducing the ACGME Competencies Into an Interclerkship Course**

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Objective: The required interclerkship course Dimensions of Clinical Medicine (DCM) was re-designed in 2010 so that each one-day session addresses one of the ACGME General Competencies.

Need: Creighton University School of Medicine initiated DCM in 2002-2003 to address topics that are not uniformly emphasized in clerkships but are relevant to clinical learners. The course has proven to be an effective way to present clinically-relevant content to third-year students. Consistent with adult learning principles, the course offers students knowledge and skills at the time they are most likely to be in need, i.e., during their first clinical year. Topics have been added and deleted to reflect changes in medical education and society. In 2010, the course was revised to introduce students to the ACGME competencies and enhance curricular coverage of learning outcomes for each competency. This innovation also promotes coverage of curricular topics identified as potential gaps in a recent LCME self-study.

Methods: The first session in the series is Clinical Skills Day. Six additional sessions are scheduled throughout the year at the midpoint of clerkships. The 2010-2011 course includes continuing topics such as diversity, EBM, and palliative care, and new topics such as geriatric care and substance use disorders among physicians. DCM meets on Fridays and students are released from clerkship responsibilities. Sessions typically address two major curricular topics, one in the morning and one in the afternoon. Lunch is provided. Faculty use multiple teaching and learning strategies such as panel presentations, small group activities, live demonstrations, mock trial, patient cases, videos, speed-dating style mini-discussions, and online reflections.

Educational outcomes: The revised course ensures students learn the ACGME competencies and important curricular content not covered uniformly in clerkships. DCM also provides a "breather" during clerkships; activities and assignments offer opportunities for reflection and student engagement with peers and faculty. Student evaluations are positive.

Strengths/areas for improvement: The course is easily adapted for new topics, ensures annual review of curricular coverage of "hot" topics and other important content, and promotes reflection on how the competency discussed in each session is applied to the clerkship students are completing at the time. Future work will address assessment of educational outcomes, especially the transfer of learning to clerkship performance.

Feasibility of maintaining program/transfer to other schools: The DCM format is a unique curricular structure to introduce the ACGME competencies. This innovation could be easily adapted by other schools, especially those with existing interclerkship curricula.

23. **Is There a Reliable Way of Evaluating Personal Statements as Indicators of Potential for Patient Centeredness in Medical School Applications?**

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Objective: Applicants to US medical schools submit a personal statement that provides admission committee members a means of looking at the personal characteristics which will make an applicant successful in a career in medicine. Even though many hours are spent writing, reading and discussing applicants' personal statements, very little research has been done into their potential usefulness in the selection of students.

Need for innovation: The most tested and reliable tool for predicting medical school performance, the MCAT, is in the prediction of performance on academic scores in the first two years of medical school. The mission statement for our admissions process requires the committee to select students who "will excel as patient centered physicians." In the absence of a readily available tool that would enable us to select such students, our faculty turned to the personal statement as one such available tool.

Instructional methods and materials used: A faculty/administration working group met and considered behaviors that indicate patient centeredness as developed through a series of focus groups. The group read personal statements written by medical school applicants. The group then developed a numerical scale anchored with descriptive statements. Through an iterative process a scale was developed.

Educational outcomes: The Patient Centered Personal Statement Scale (PCPSS) was used as part of the admission process for the EC of 2009. One rater assigned a value on the PCPSS to the personal statement. Three raters have piloted data on 2010 personal statements. The PCPSS has been found to be a useful tool for evaluating an applicant's potential as a patient centered physician.

Innovation's Strengths and areas for improvement: The PCPSS requires minimal investment as applicants are already required to submit a personal statement. This is a new tool to use for holistic review efforts, with a goal of validating this tool against later tests of clinical aptitude. Areas for improvement include continuing to test the scale for inter rater reliability, determining if there are other areas of the application/interview process which would better determine patient centeredness, and validating the rating with later correlations of patient centeredness (3rd year Objective Structured Clinical Examination)

Feasibility of maintaining program, and transfer to other schools or programs: The scale is easy to use. It could efficiently be incorporated into the admission's process.

24. **Upstream from the Emergency Department: An Early Public Health Experience for First Year Medical Students**

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Background: The Liaison Committee on Medical Education has established public health, including recognition of determinants of health and opportunities for health promotion, as a specific educational objective for medical education.

Objective: We piloted an innovative program using the emergency department to launch teaching of public health concepts to first-year medical students.

Instructional Methods and Materials Used: During the first four weeks of medical school, all 175 first-year students rotated through the University of Wisconsin Emergency Department (ED) in two-hour blocks. Each student followed an attending physician, observed patient encounters, and chose one encounter that fit into one of five predetermined categories (intentional or unintentional injury, mental or chronic medical illness, or infectious disease). Students then participated in structured discussion groups and completed worksheets in which they explored how various determinants of health contribute to such ED visits and could be modified to prevent future visits. The determinants examined were: biology and genetics; individual behavior; individual social and economic factors; health care and public health systems; physical environment; and societal/policy context.

Educational Outcomes: Post-experience survey showed 87% of students agreed that the experience helped their understanding of the intersection between public health and clinical medicine. 93% found this learning activity effective in helping understand the various determinants of health and how they contribute to common medical conditions, as observed in the ED. Further, 92% of students felt they could better identify possible "upstream" interventions that might have prevented an unnecessary ED visit. Student

comments revealed broad enthusiasm for the entire experience and stimulation of interest in further integrating public health during medical school and beyond.

Strengths and Areas for Improvement: These results support an early learning experience for all first year medical students that uses the emergency department to introduce public health concepts. Outcomes measures demonstrating achievement of public health competencies are needed.

Feasibility of maintaining program and transfer to other schools: This program was not costly and could be easily duplicated by other schools using the materials that were developed.

25. Today You Made a Difference: An Innovative Interprofessional Patient Safety Day

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Objective of innovation: The Interprofessional Patient Safety Day was developed to provide an intensive, highly-interactive curriculum to introduce safety theory to students in medicine, nursing, pharmacy, social work, occupational therapy and physical therapy.

Need for innovation: Following the publication of the Institute of Medicine report *To Err is Human* in 1991, health sciences faculty have sought ways to teach safety theory and develop students' competence in working in interprofessional teams. Creighton University introduced numerous initiatives, including a patient safety course. More recently, curriculum leaders identified a need for an educational experience for students from multiple health professions programs.

Instructional methods: The Interprofessional Patient Safety Day is designed to promote team behaviors, acknowledging that individual health professionals cannot provide safe, high quality care unless they engage in interprofessional care with others. Students are challenged to recognize that patient care is not in the hands of one particular professional. Students in pharmacy, social work, medicine, nursing, OT and PT (n=181) participated in the Interprofessional Patient Safety Day on October 29, 2010. The session theme was "Today you made a difference." The session included speakers, panelists, and facilitators from Creighton University, Omaha VA Medical Center, state government, and the community. The session focused on patients' personal and often tragic stories of harm and injury. The keynote speaker, Evelyn McKnight, Au.D., co-founder of HonoReform, presented the story of the Hepatitis C outbreak in Fremont, Nebraska. Students were assigned to groups to ensure representation of the health professions for an interprofessional case activity. Prior to the session, facilitators completed a faculty development session to orient them to the session and review key safety concepts.

Educational outcomes: Students who completed the session were able to define key terms and concepts of safety science, list types of errors, describe real cases where errors resulted in adverse events, apply concepts to a case study, and describe safety considerations from the perspectives of the multiple professions represented.

Innovation's strengths and areas for improvement: Student evaluations commented positively on the panelists, keynote speaker, and the small group case study. Students and faculty both recommended providing additional examples from OT and PT.

Feasibility of maintaining program, and transfer to other schools: This curricular innovation requires significant planning and faculty participation, but offers a unique opportunity to engage learners from multiple health professions programs. The format can be adapted by other schools and tailored to address local issues and curricular needs.

26. Developing an ELITE Chief Resident: A Curricular Innovation Project

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Within residency training, chief residents are perceived as the leaders of their fellow house officers and are the connection between residents and faculty. However, previous research has found that chief residents feel their roles are poorly defined and they don't receive training necessary to deal with the competing interests of the position. The objective of this curriculum was to develop an interdisciplinary chief resident curriculum on leadership, teaching, and resident support to train chief residents at the University of Nebraska Medical Center (UNMC) to be effective in their roles.

We designed a curriculum for rising chief residents in all specialties with both didactic as well as experiential components. Prior to developing the curriculum, we performed a survey of department chairs at UNMC to identify key elements important to include in chief resident training. Though there is a wide range of responsibilities of chiefs, we sought to develop a curriculum to reach a majority of overarching themes including teaching, resident support and leadership skills. A secondary goal was to complete this curriculum in an interdisciplinary fashion. Our curriculum included sessions on leadership skills, mentoring, dealing with

problem learners and giving feedback, teaching skills and working in interdisciplinary teams. We distributed a survey to participants immediately prior to the training and after the final session that assessed their attitudes toward and comfort with the skills mentioned above. This survey utilized a 5-point Likert scale (1 lowest, 5 highest). After the surveys were complete we also debriefed the participants to discuss how to improve the curriculum for successive classes.

All 14 participants were from a single institution. The participants showed an improvement of at least 0.5 on the Likert scale in identifying a problem learner, developing a remediation plan, teaching residents how to teach, and teaching about interdisciplinary teamwork. They felt likely (3.5) to use the skills learned in the remainder of their chief year and very likely that they could improve in using the skills learned (4). Participants felt they had previously received adequate training on some topics, but valued the interdisciplinary interactions and wanted more interdepartmental exercises. While this curriculum requires one day free of responsibilities for senior level residents, it is feasible for all specialties if buy-in by leadership is achieved. Chief residents often feel ill-prepared for their roles, and we report an innovative, interdisciplinary curriculum designed to prepare our chiefs for success and help meet expectations of institutional leadership.

27. **Learning By Doing: Developing a Patient Centered Medical Home in a Resident Clinic**

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It is well recognized that practicing medicine in the ambulatory setting is increasingly challenged by patient volume, greater time constraints, and more intense patient needs within an increasingly complex medical system. Also well recognized is the fact that training programs must adapt to meet these challenges and to equip trainees with the skills necessary to practice excellent medicine within this milieu. New program requirements by the Residency Review Committee (RRC) for Internal Medicine (IM) reflect these challenges with an increased focus on ambulatory education. With this in mind, the IM residency program at the University of Nebraska Medical Center looked toward a Patient Centered Medical Home (PCMH) model as an experiential training tool for our residents to learn both patient care principles as well as utilization of them. We have since implemented a PCMH at our resident continuity clinic as a feasibility pilot project.

Our IM continuity clinic is resident run with a resident board of directors overseeing decisions impacting the clinic site. The resident board, comprised of residents from all levels of training, in conjunction with faculty and ancillary staff created and implemented the PCMH. The residents receive training on components of a PCMH and have coordinated a multi-disciplinary approach to patient care encompassing a number of innovations including: integrated services of psychology, social work, pharmacy, nursing, case management, and physicians; expanded clinical space with patient education conference rooms and resident-designed educational classes for patients; a restructured hospital discharge process that aims to improve patient education, follow-up, and readmission rates. Additionally, residents are also utilizing the PCMH to institute quality improvement and research projects examining the effects of the innovations on patient compliance and understanding of their disease, patient hospital follow up and readmission rates, and objectives measures of disease control such as hemoglobin A1c and blood pressure.

Thus far our outcomes include clinical measures such as improvement in A1c and decrease in hospital readmissions, though future directions include assessing resident knowledge and attitudes regarding the PCMH principles. We have shown that developing a PCMH within a resident continuity clinic is feasible. Instituting a PCMH in a resident continuity clinic meets multiple educational goals including interdisciplinary teamwork, systems based practice and practice based learning. By establishing a PCMH in a resident continuity clinic, residents are learning the principles of the PCMH by performing them, incorporating them into regular practice, thereby better preparing them for a future in primary care.

28. **Ophthalmoscopy Using an Eye Simulator Model**

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Background: Ophthalmoscopy is an important skill for the medical student to master. Challenges include developing eye-hand coordination, using the non-dominant eye, discomfort for the student and the patient when practicing the skill, and difficulty assessing whether the student actually sees the important structures of the retina.

Purpose: The project provided second year medical students with an ophthalmoscopy session in which they examined an eye simulator model. The student used a hand held ophthalmoscope and the model provided an optical system with 2 sizes of pupil with kodachromes viewed through the pupil of normal and pathological retinas.

Design: This study was approved by the IRB and student participation was voluntary. During the ophthalmology course, students were invited to sign up for a 30 minute session. Students were observed

and instructed (by a neurologist or ophthalmologist) on correct use of the ophthalmoscope. Normal and 6 pathological retinas were used in the simulator. The students matched what they observed using the simulator with printed photographs to verify that they had seen the retina well enough to match with the corresponding photograph. The retinal findings and their clinical implications were then discussed. The students completed a pre and post session questionnaire in which they self-rated: hand-eye coordination, non-dominant eye use, confidence identifying important structures, and confidence identifying four important retinal pathologies. They were also asked to make comments on their experience. The study was conducted over 4 years. Years 1, 2 and 4 were structured as outlined above. Year 3, the students were invited to use the simulator and schedule it whenever they wanted but without an instructor present. As a follow up, students that participated in the 2nd year of the study were asked in a survey as senior students to rate the value of the simulator experience after using the ophthalmoscope with real patient

Results: With the average class size of 118, the following number of students attended each respective year: 66, 77, 12, 88. The self-rating results from pre to post questionnaire showed statistically significant improvement for all items. Student comments reflected that they strongly felt that the experience was valuable to them.

Conclusions: By students self report, ophthalmoscopy using the eye examination simulator was a valuable experience for increasing confidence and skill. Students see the most value in this experience when an instructor is present and personal instruction is given in conjunction with the simulator use. The students report that the use of the simulator was valuable to them as they applied their ophthalmoscopy skills for examination of patients.

29. A Simulation-Based Curriculum for Critical Procedural Skills in the Final-Year Medical Student

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It is rare to see a curriculum that teaches medical students the knowledge and skills needed to perform high-risk procedures. Our goal is to teach task training along with decision-making so that students have deliberate practice to achieve competence. We present a multi-session, interactive procedural curriculum to teach two procedures, central line and lumbar puncture, to senior medical students during their Emergency Medicine clerkship. This curriculum utilizes procedural assessment checklists to guide learning, evaluate performance and to measure skill retention.

During the first session, students take a pretest covering the procedures. Then they receive a one-hour PowerPoint presentation about both procedures. A checklist for each procedure is introduced at this time. For the final part of this session, using low-fidelity simulators, the students observe the performance by faculty of each procedure with step-by-step instruction on the skills checklist. The students then perform each procedure and observe one another, while two faculty members provide instruction and feedback.

In the second week the students are given a case-based, online tutorial outlining procedural complications. They also view a video of each procedure and review the skills checklists. In the third week students work through two interactive, computerized cases and make decisions regarding management of critical patients and the indications of the procedures. The curriculum capstone occurs in the final week when students manage one of two critical patients programmed into a high-fidelity simulator. While managing this patient, the student must perform one of the procedures and is evaluated by faculty using the skills checklist. Students take a post-test at this time. Students evaluate all components of the curriculum.

Currently, 61 students have completed the curriculum. The pre-test mean is 64% and the post-test mean is 84%. Students have achieved 87% and 90% on the central line and lumbar puncture checklists, respectively. Student evaluations have been overwhelmingly positive. For the next phase of the curriculum we will have students demonstrate their procedural skill retention by returning within five months to be retested on the procedure using the skills checklist.

It is our goal that these final-year medical students will acquire the knowledge and skills to begin transitioning from the cognitive to the integrative phase of performance for these procedures. The pretest and posttest performance and a comparison in procedural performance are our measures of knowledge and skill acquisition, respectively. This curriculum can be used by other clerkships and residency programs.

30. Computer-Assisted Patient Simulations for Teaching and Assessment of the Diagnosis of Disease by Laboratory, Radiological and Patient Procedure Methods

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Purpose: We have developed and implemented web-based computer-assisted patient simulations (LabCAPS) for medical students and house staff designed to enhance understanding of the diagnostic workup of hematologic and other diseases.

Need: Efficient, reliable and valid computer assisted patient simulations for teaching and assessment of diagnostic clinical decision making are needed. In pre-clinical training, LabCAPS brings clinical relevance to students' study of the pathophysiology of disease. For more advanced learners, LabCAPS will effectively increase their exposure to the diagnostic workup and initial treatment of a broad spectrum of disease, with a high degree of fidelity to clinical practice.

Methods: LabCAPS cases are dynamically generated from a Perl-scripted MySQL database. The trainee is first provided a clinical scenario. Then working from searchable nested lists of more than 315 tests and procedures, trainees sequentially prioritize diagnostic hypotheses, order diagnostic tests and patient procedures, reprioritize hypotheses, and do further ordering. Trainees use as many ordering encounters as needed to make a diagnosis and manage the patient. After their diagnosis and management are finalized, a summary of their workup is displayed and compared with that of a consensus of experts. To develop this "expert" feedback, up to four experts engage the simulation, and their results are recorded. For scoring purposes points are awarded for ordering a test or procedure that at least 50% of experts also ordered, and a penalty is imposed for orders that no expert ordered. Finally, an interpretation is provided.

Outcomes: 41 LabCAPS cases are used for teaching in second-year pathology small group discussion where they are the highest rated learning resource in the course (4.3 where 5=excellent 4=very good...). Cronbach's alpha calculated across case total scores was $\alpha=0.70$ in a pilot assessment of 14 volunteer medical students accessing 8 anemia cases.

Areas for Expansion/Improvement: We have now designed a comprehensive set of 31 hematology simulations including anemia, hemostasis-thrombosis and heme-proliferative cases for teaching clinical-year students and house staff; and formative evaluations are positive. We plan to measure trainee satisfaction in preparation for in-service examinations. Reliability will be further evaluated to validate LabCAPS for use in test-enhanced learning. In addition to hematology, LabCAPS can be readily used for other organ systems and specialties.

Maintenance and Transfer to Other Programs: LabCAPS is maintained at the University of Iowa Carver College of Medicine, and access is freely available to institutions via confidential passwords. We are interested in sharing and collaborating with other institutions.

31. **Improving Basic Medical Science Education Through Computer-Assisted Case-Based Pathway Diagramming**

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Objective: We have created, implemented and evaluated a novel web-based computer-assisted, case-based diagramming instrument that is aimed at integrating basic medical science (BMS) mechanistic pathways into a clinical context, while improving effectiveness, efficiency and accessibility of teaching and learning.

Need: Decrease in time in medical school curricula for BMS, and in faculty time and/or faculty background to teach BMS in a clinically integrated manner, underscores the need for integrative computer-assisted education.

Methods: The pathway diagramming interface is generated by a SWF file using action script within Adobe Flash that accesses a FileMaker database. After studying a patient scenario, students drag items and events from an instructor generated list on to a stage and then connect them with arrows to create a mechanistic flow diagram (pathway diagram) that depicts a sequence of etiologic, environmental, pathogenic and pathophysiological events leading to the signs, symptoms, and laboratory and radiological findings present in the clinical scenario.

Implementation & Outcomes: Implementation has been piloted in the pre-clinical curriculum with physiology, pathology and biochemistry diagramming exercises. In medical pathology 145 students prepared 35 diagrams before class and presented and discussed their diagrams in small group. Satisfaction questionnaire showed a mean rating for effectiveness in facilitating learning of 3.5 (4=excellent; 3=good...). Efficiency of time spent learning was rated 3.25 (4=very efficient; 3=efficient; 2=acceptable...). Students commented that pathway diagramming exercises help them visualize how cause and effect relationships, predisposing factors, and signs and symptoms are connected; while providing a concise format for describing the pathogenesis and pathophysiology operating in a case. End of course measurement of increase in learning is underway.

Areas for Improvement and Expansion: To integrate pharmacology, we plan to add a list of treatment items that can be dragged over the segment of the pathway that will be affected by that treatment. To facilitate self-directed and test-enhanced learning, we are adding options for automated scoring and feedback.

Strengths: Case-based pathway diagramming exercises are suitable for use in a variety of integrated curricular structures, and in problem-based learning and team-based learning. A novel venue for case-based pathway diagramming would be revisiting BMS in the clinical years with self-paced test-enhanced learning exercises.

Maintenance and Transfer to Other Programs: The software is maintained at the University of Iowa and can be freely shared with groups of trainees at other institutions via confidential login passwords. We are interested in collaborating with other institutions in evaluating new exercises and venues.

32. Four Brief Faculty Development Workshops Improved Written Feedback on End-of-Rotation Evaluations for Anesthesiology Residents

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Background and Purpose: For optimal learning from clinical rotations, residents need to receive effective feedback with suggestions on improving performance. In response to the poor quality written feedback on end-of-rotation evaluations, we developed a series of brief faculty development workshops intended to improve the quality of written feedback. Specific objectives were to create a common definition of “quality feedback” among anesthesiology faculty and to more fully engage faculty in the feedback process.

Instructional Methods: Four 30-minute workshops structured on Kolb’s Experiential Learning Model were held at monthly intervals. In the first workshop, faculty discussed an educational vignette in which they developed a learning plan for a hypothetical resident based upon actual written feedback from resident evaluations. From the discussion and subsequent presentation, faculty learned a model for effective feedback. In the second workshop, the characteristics of effective feedback were explored. Specific examples of modifying the feedback to make it more specific and descriptive and to include suggestions that would allow residents to make positive behavioral changes were discussed. In the third workshop, faculty brought up critical incidents based upon interactions with residents in which they would have liked to improve their feedback. In the final workshop, faculty drafted end-of-rotation feedback for residents they were currently working with and revised that feedback with a peer.

Educational Outcomes: Typical written feedback prior to the workshops included statements such as “works hard”, “nice to work with”, “needs to read more”, and “performed at the level appropriate for training”. After completion of the series of workshops, written feedback by the faculty participants was more descriptive and specific, and included more recommendations for improvement.

Lessons Learned: Faculty participants may have been highly motivated to improve the feedback they provide. Nevertheless, strengths of this brief intervention were the opportunity for faculty to learn from their experiences of providing written feedback and to learn in a collaborative and supportive environment. We have not yet explored the long term effects of these workshops.

33. Utilizing an Interprofessional Aging Simulation to Promote Patient Safety

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Objective: A collaborative interprofessional Aging Simulation was developed for healthcare students to reinforce concepts of teamwork and patient safety, with an emphasis on fall risk reduction.

Need for innovation: Reducing morbidity associated with falls was a National Patient Safety Goal in 2009. Hospitals commonly focus on fall prevention efforts to reduce falls and their resulting morbidity. An opportunity existed to expand medical and nursing student education regarding fall risk assessment and reduction.

Instructional Methods and material used: During 2009-2010, third year medical students (N=81) and nursing students (N=81) participated in a multifaceted interprofessional learning experience focused on fall risk reduction, as well as concepts of patient safety and QI. After completing online self-study materials, an interprofessional dyad performed a bedside fall risk assessment and customized a plan to reduce fall risk for a hospitalized patient. An interactive debrief session followed. In efforts to reinforce course themes and engage students, faculty developed an interprofessional Aging Simulation during early-2010. Students completed 4-5 scenarios, playing both patient and caregiver roles to reinforce effects of aging. Faculty

highlighted pre/post encounter learning points, including recognition of fall risk factors, appropriate use of assistive devices, and interprofessional roles. Students completed a post-simulation evaluation. All students completed 5 Likert-style questions focusing on fall safety pre/post learning experiences. After piloting and refining scenarios with 30 students, the simulation was integrated into the 2010-2011 experience.

Educational Outcomes: Analysis of matched medical student (N=54, 82%) and nursing student (N=39, 48%) data from 2009-2010, using the Wilcoxon Signed-Rank test, revealed statistically significant changes in the desired direction on five fall-related questions. Mean scores increased by 8-28%. Students reported significant increases in confidence in their abilities to identify fall risks, implement risk reduction education, and promote fall safety after these multifaceted learning experiences. Student perceptions of simulation in pilot experience were positive, particularly with respect to interprofessional collaboration. Data collection/analysis is ongoing.

Innovation's Strengths and Areas for Improvement: This Aging simulation reinforced course themes and promoted interprofessional communication. Strengths included a "hands-on" experience that focused on acquisition of knowledge while addressing a common patient safety issue. It filled a void for medical students and enhanced education on selected geriatric principles for both disciplines. Areas for improvement include: expanded use of standardized patients and incorporation of other professional groups.

Feasibility of maintaining program and transfer to other schools or programs: Results encourage development of future interprofessional simulation projects which focus on both acquisition of student knowledge and incorporation of safety issues relevant to patients.

34. **PROTECT: Improving Immunization Rates Through an Integrated CME Collaboration**

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Sarah Cunningham PhD, Central Nebraska AHEC

Theodore Bruno MD, The France Foundation

In 2009, the University of Nebraska Medical Center, Center for Continuing Education (UNMC-CCE) launched PROTECT (SuPporting AppROpriate ImmunizaTions Across the AgE SpeCTrum) as a longitudinal, curriculum based initiative designed to address clinical gaps in the area of vaccine-preventable diseases (VPDs) by focusing on improving immunization rates across pediatric, adolescent, and adult patient populations. Currently, a series of interconnected learning modules of varying formats address specific gaps, achieve corresponding learning objectives, and yield measurable outcomes from predetermined metrics. Moving forward, UNMC-CCE will build upon this foundation by engaging and expanding the regionalized learner base with a new, sequenced series of regionally based learning formats. Through new collaborations, practice oriented delivery channels, and outcome measurement platforms and processes, PROTECT should reach its ultimate goal of improving immunization rates, ultimately leading to improvements in both patient and community health.

In addition to a steering committee comprised of clinical experts in immunization, PROTECT collaborators include:

- The Nebraska AHEC (Area Health Education Centers) Network
- University of Nebraska College of Medicine, Department of Family Medicine
- Oklahoma AHEC
- University of Texas Health Science Center San Antonio Office of CME
- The National Committee for Quality Assurance (NCQA)
- The American Osteopathic Association (AOA)
- CECity
- CE Outcomes, LLC
- The France Foundation

PROTECT will deliver:

- Educational outcomes aligned to established quality assurance and healthcare effectiveness measures, such as HEDIS
- Integration with existing clinical assessment, practice improvement, and maintenance of certification programs of professional medical societies
- Patient chart review at point of care within various clinical settings administered by UNMC medical students in their M3 rural Family Medicine Clerkship and staff of the Nebraska AHEC Network
- A fully integrated PI-CME platform and technical framework will automate quality and performance improvement on a continuous basis and provide access to measurement data and analysis through an established interface

By engaging collaborators that directly impact patient care, medical students integrated in quality improvement as a formal aspect of their training, and other service providers with unique skill sets in continuing education, UNMC-CCE intends to deliver educational outcomes that demonstrate improvements

for clinician performance and patient health. Our efforts will also align with current expectations from various Boards of Medicine, in the hopes of formally supporting physician requirements for Maintenance of Certification.

35. Using Maps to Assess and Align Medical Student Education with Community-Based Research

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Evaluation is a key function in medical student education. A crucial evaluator skill is the ability to align stakeholder interests with program initiatives and outcomes. Our medical school and family medicine department are implementing electives and pathways that have linked family medicine education with several urban and underserved community sites (generally these are un-funded initiatives). This is happening at a time when our department's researchers are forming partnerships with new community-based organizations (generally, these are funded initiatives). There have been no readily accessible ways to show these new initiatives in their new locations, an interest of our key organizational stakeholders.

This poster illustrates map-based methods for displaying medical school initiatives across the region. We demonstrate steps to graphically display medical education and research initiatives. We chart locations and densities of various types of initiatives using GIS (global information systems) software (see www.arcgis.com). We then use interviews with several departmental leaders to appraise their reactions to the maps, and to determine how these maps might influence their perceptions, decisions and actions. Preliminary data shows that the maps are perceived as visually powerful and that the maps provoked critical discussion of geographical gaps and overlap. Also offered were suggestions for improving the maps and their layouts for greatest impact.

We conclude with a discussion about the alignment of these displays with our school's mission. We also discuss maps as politically and symbolically powerful. For example, funded research locations are more frequently mapped than are unfunded teaching activities. While map displays may contribute to a revitalization of efforts to effectively partner with community locations, they also shed light on the challenges involved in community-based education and research.

Research in Medical Education Posters

1. Assessing Students' Ability to Deliver Patient Centered Care Through a Third Year OSCE

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Background: Ability to deliver patient centered care (PCC) is a desired School outcome and an important competency for practice. We previously developed PCC behavioral descriptors and used these to create a third year PCC-OSCE. Four cases assessed communication, shared decision-making, collaboration with family members and other healthcare providers. Time allotted to each case varied with the complexity of the case. Students returned to the same patient in one case.

Methods: Faculty groups developed patient scenarios and assessment forms through: role plays first by case authors, then fourth year students, then by community actors with selected fourth year students. Authors made refinements to both the case and assessments after each cycle. In April 2009 the PCC-OSCE was piloted with 13 third year medical students. Each student participated in a de-briefing immediately following the examination and these data were used to refine the PCC-OSCE. In April 2010, 89 third year students participated and received formative feedback with the PCC-OSCE. We analyzed the following information from the 2010 examination : 1) student feedback on the overall experience, student perception of the ability of each case to assess their ability to deliver PCC, examination logistics, and time allocated within the examination. 2) faculty feedback on the ability of the case to assess PCC, logistics, suggested changes to the case and/or assessment form, 3) faculty ratings of student performance within a case and across the OSCE. We also reviewed videos to identify questions asked by students during the encounter that were not a part of the SP script.

Results: Students from the 2009 pilot appreciated the authenticity and agreed the exam assessed their ability to provide PCC. 2010 formative assessment data identified: 79% of students felt this was a good assessment of their ability to deliver patient centered care; 96% felt they had sufficient time to write the required note; 58% felt rushed within the examination. The exam held face validity for the faculty. Faculty used all parts of the assessment and provided comments to improve student performance. 45 of 356 student evaluations were rated as exemplary by faculty. 32 students earned exemplary ratings on one case,

5 on two cases and one student was rated as exemplary across 3 cases. Video review of student questions prompted enhancements to the standardized patient training materials.

Conclusions: These data will guide further enhancements to the examination. The PCC-OSCE will be a graduation requirement for the 2012 graduating class.

2. **The Impact of a Multidisciplinary, Student-Run, Free Clinic on Health Professional Students' Attitudes Towards the Underserved and Interprofessionalism**

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Background: Previous research shows that health professional students' attitudes towards the indigent and towards interprofessionalism decline as their education progresses. A multidisciplinary, student-run, free clinic, such as the Phillips Neighborhood Clinic (PNC) in Minneapolis, Minnesota, provides an ideal setting to study the hypothesis that providing direct care to underserved patients as part a multidisciplinary team will improve health professional students' attitudes towards the underserved and towards interprofessionalism.

Methods: First year students applying for a position in the PNC at the beginning of the school year from the schools or programs of medicine, nursing, pharmacy, physical therapy, public health and social work were given a survey assessing their attitudes towards the underserved and towards interprofessionalism prior to finding out if they were accepted to the clinic (AAA). The two control groups were from the group of students who applied but were not accepted (ANA) and from surveys sent to all first year students who did not apply (DNA). The follow-up survey was sent at the end of the school year to students who completed the first survey.

Results: The first survey of 269 students showed better attitudes towards the underserved and towards interprofessionalism for the two groups that applied (AAA and ANA) versus the DNA group. Additionally, social work students had better attitudes towards the underserved than medical and physical therapy students, and pharmacy students had better attitudes towards interprofessionalism than medical and public health students. After one year, 176 students completed the second survey, which showed the attitudes towards the underserved and towards interprofessionalism *decreased* for all students. There were no differences in attitudes towards the underserved regardless of applications status or school and no differences across the schools in attitudes towards interprofessionalism, however, the ANA group decreased in attitudes towards interprofessionalism more than the DNA group.

Conclusion: Despite being done in the ideal setting of a multidisciplinary, student-run clinic serving an underserved population, this study confirms the findings in the literature that health professional students attitudes towards the underserved and towards interprofessionalism decline over time. The leading etiology of the decline is that idealism met reality and attitudes were adjusted for the worse, but it needs to be repeated in other similar settings. Focus groups will be done to help determine if there are other reasons for the decline.

3. **Lightly Embalmed Cadavers Promote Confidence and Competency for Performing Clinical Skills**

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Background: Health profession students have a limited amount of time in which to learn and master a variety of clinical skills. Time constraints, the variability of clinical rotations, and the types of patients seen on rotation may or may not expose students to all of the clinical skills they should be trained in. The purpose of this study is to determine if hands-on clinical skills training using lightly embalmed cadavers increases student competence and confidence when performing specific clinical skills. The significance of this study is that it validates a life-like model for training students to perform two clinical skills which may be rarely experienced during a clinical rotation.

Methods: The Lachman test and knee joint aspirations/injections where chosen as the two clinical skills to be performed on the lightly embalmed cadavers. Developing a training module for performing the Lachman test was chosen because a torn anterior cruciate ligament may not be encountered during a clinical rotation. It is also advantageous to experience a normal knee and an abnormal knee for a better appreciation of the Lachman test. Knee joint aspirations/injections where chosen due to the high frequency preformed in clinical practice, yet students rarely have the opportunity to perform one during clinical rotations. A total of 75 first year medical, physician assistant (PA) and physical therapy (PT) students participated in the Lachman test study and 37 PA students participated in the knee injection study. Students in both studies were randomly allocated to receive hands-on training using lightly-embalmed cadavers (Group A) or serve as controls (Group B) and received only training through lecture. Students in the Lachman test study were tested one week after training and students in the knee aspiration/injection study were tested four months after training. All students completed a checklist, post-test and survey.

Results: Students in the knee aspiration/injection study who had the hands-on training (Group A) performed significantly better (p -value <0.01) than students with lecture training (Group B) by correctly performing more steps on the checklist. Students in the Lachman test study who had hands-on training (Group A) also

performed significantly better (p-value <0.05) than students with lecture training (Group B). In addition, student self-assessed confidence after training on the cadavers was much higher for students in both studies.

Conclusions: Preliminary results suggest hands-on training using lightly embalmed cadavers for the Lachman test and knee aspirations/injections increases competence and confidence in health profession students.

4. **Tell me your IDEAs: Development of a Clinical Reasoning Assessment Tool**

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Background: The IDEA Assessment Tool was developed to assess students' diagnostic reasoning and decision making skills. The 17 item tool has its theoretical basis in structural semantics and the RIME (Reporter-Interpreter-Manager-Educator) construct for assessing global medical student performance. While clinical reasoning is an important competence for physicians, measuring medical student acquisition of this skill has been challenging. In this preliminary study, we evaluated the content validity and inter-item reliability of the instrument. A further analysis of inter-rater reliability was conducted, followed by qualitative review to improve rater consistency.

Methods: 1. Alpha Factor Analysis was performed on a sample of IDEA Assessments (N=80). Cronbach's alpha was used to assess inter-item reliabilities of the resulting factors. 2. Two independent raters assessed a sampling of written patient encounters (N=23) and inter-rater reliabilities for the 17 rating items were calculated. These were followed by a qualitative review.

Result: 1. The Alpha Factor Analysis yielded a three factor solution. Four items loaded on Scale 1 and had an alpha of 0.85. Three items loaded on Scale 2 and had an alpha of 0.90. Six items loaded on Scale 3 and had an alpha of 0.90. Factor scores were generated and correlated with three other measures from the IDEA Assessment tool: which included ratings of overall reporting (R), diagnostic reasoning (DR) and decision making (DM). Reporting scores (R) correlated highest with Scale 1 (Pearson $r=0.814$, $p < 0.01$). Both diagnostic reasoning and decision making skills correlated highest with Scale 2 (Pearson $r=0.850$ for DR skills, Pearson $r=0.744$ for DM skills, $p < 0.01$).

2. Initial inter-rater reliability for items on the rating sheet ranged from 0.48 to 0.791. Two problems, completeness and pertinence, emerged as the cause of discrepancies. Disagreement on level of stringency was common and four items were reworded for clarity.

Conclusions:

1. Overall, the tool demonstrated content validity with the RIME language.

2. Completeness and pertinence were important concepts leading to disagreements in ratings.

3. Differences in rating often reflected a difference in stringency. We hypothesize that standard setting and rater training will improve the reliability of future ratings.

Information from these analyses was used to improve clarity of the tool; further testing of the modified form is planned. The overall goal is to establish the IDEA Assessment Tool as a valid and reliable tool for measuring students' reporting, diagnostic reasoning and decision making skills reflected in written documentation of patient encounters.

5. **Improving Prediction of End-of-Year Benchmark OSCE Scores from M-3 Clerkship OSCEs**

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Introduction: In order to accurately inform faculty about minimal requirements in competency-based assessment of a high-stakes end-of-year Benchmark OSCE (BOSCE), it is necessary to assess the quality of data and relations between BOSCE and M-3 clerkship OSCE.

Methods: OSCE checklists were used to collect dichotomous-scaled clinical skills items in 30 cases drawn from seven sets of clerkship OSCEs and a high-stakes Benchmark OSCE (BOSCE) over two academic years: 2008/09 - 2009/10. Pearson correlations and linear regressions of M-3 OSCE percentage scores with BOSCE percentage scores (split into quartiles), and reliability analysis via Cronbach alpha of all checklist items were analyzed with SPSS 15.0. Statistical significance in the difference of correlations was determined through online calculators.

Results: Statistically significant ($p < .050$) correlations and stepwise linear regression models of 433 student BOSCE and M-3 OSCE scores from 2008/09 and 2009/10 indicated that the correlations and regressions significantly ($p < .050$) improved between M-3 OSCE and BOSCE as student scores decreased. All OSCE/BOSCE cases yielded checklist item data with internal consistencies (reliabilities) ranging from $\alpha = 0.50$ to 0.80 .

Conclusions: Splitting the student BOSCE and M-3 OSCE scores by quartiles indicated that the relationships between the two scores improved significantly for the lowest quartiles giving faculty a stronger set of tools for predictive measures for marginal students. Evidence acquired makes stronger arguments for competency-based assessment in a high-stakes end-of-year BOSCE.

6. **Survey of Medical Student and Resident Technology Use**

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Background: The purpose of this study was to survey medical students about technology access and preferences for education. Student use of computing resources has changed dramatically in the past two decades. Medical students' use of computers in the care of patients and to access clinical information has expanded. Medical students have adopted computer technology for all aspects of their training, from M1 through M4 years. We wish to investigate what electronic resources they utilize. We also are interested in their use of social media.

Methods: Participants were members of the Creighton University School of Medicine graduating classes of 2011, 2012, 2013 and 2014. Email invitations with a secured link to the online survey were sent to the class listservs. Reminder emails were sent as needed. Data were analyzed using PASW 18.

Results: Response rate was 54% across all classes. Virtually all students reported computer and internet access at home with 95% utilizing a high-speed internet service. Approximately half of the students reported use of Macintosh computers. Seventy-three percent of students through all 4 years accessed medical educational materials from home (higher in the M1 and M2 years compared to M3 and M4). 75% to 100% (M1 vs M3) reported owning a hand held computing device (e.g., "smartphone") and virtually all M3 and M4 students report using it on at least a weekly basis for clinical information. Finally, over 90% of all students have a Facebook page.

Conclusions: Medical education and practice has evolved to require use of computer and internet technology. As medical educators we need to be aware of the resources our students are utilizing and make efforts to assist them in appropriate use. Furthermore we should develop materials to enhance their education. The potential for hand held computing devices and delivery of educational content in this format could be developed to a greater degree.

7. **Factors Affecting the Graduates' Decision to Practice in Indiana**

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Background: In June 2010, 388 individuals completing graduate medical education (GME) programs at Indiana University School of Medicine were surveyed to identify the factors affecting the graduates' decision to practice in Indiana.

Methods:

A cross-sectional survey to gather information on demographic characteristics, assessment of the training, plans after graduation, where they intended to practice and why they chose that location. The survey was administered at the time of the exit interview process. A total of 238 graduates completed the survey, yielding a 61% response rate. Only those planning to start their clinical practice were included in this analysis ($n=141$).

Results:

- Three-fifths (62%) of the graduates who indicated Indiana to be their home state prior to their training were planning to practice in Indiana compared to those leaving the state (23%).
- Female graduates were more likely to practice in Indiana (57%) compared to those leaving the state (44%).
- 56% of the graduates who had an educational debt of over \$150,000 were planning to practice in Indiana compared to those leaving the state (34%).
- 69% of the respondents who expected to see a substantial proportion of patients from the underserved populations were planning to practice in Indiana compared to those leaving the state (47%).
- 67% of the graduates who expected a gross income of over \$200,000 in their first year were planning to leave the state compared to those practicing in Indiana (51%).
- Respondents who had at least two or more job offers were planning to practice in Indiana (67%) compared to those leaving the state (27%).

- Main reasons to practice at this location:
 - 66% of the graduates practicing in Indiana 'liked the people' in comparison to those leaving the state (49%).
 - 18% of the graduates were leaving the state because of 'proximity to recreation' in comparison to those practicing in Indiana (3%).
 - 11% of the graduates were leaving the state because of the 'climate' in comparison to those practicing in Indiana (1%).

Conclusions: Three-fifths (61%) of the Indiana University residency and fellowship graduates settle in Indiana to practice. Having a better understanding of the factors that affect the decision for graduates to stay within the state to practice would help recruit and retain more professionals.

8. **The Impact of a One-Day Intensive Simulation-Based Educational Program on Bedside Procedural Skills**

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Background: Studies show that internal medicine residents often lack the ability to perform bedside procedures capably. However, procedures such lumbar puncture (LP) and paracentesis are frequently performed by internal medicine residents in actual patient care. Our aim was to measure the baseline proficiency of internal medicine interns in bedside procedures during their first 3 months of training and determine whether an intensive one-day simulation training program boosts trainee skill and comfort.

Methods: This was a pretest-posttest design without a control group. Using observational checklists for each procedure, all internal medicine PGY1 residents (n=58) underwent baseline skills assessments on LP and paracentesis simulators. After baseline testing, subjects received a 3-hour educational session featuring a videotaped lecture, live demonstration and deliberate practice on both simulators with feedback. Residents were retested after the intervention. Confidence was measured before the training using a 100 point scale (0 = not confident and 100 =very confident).

Results: Baseline performance and confidence regarding the two procedures were low. Mean performance scores improved from 46.7% (SD=17.6%) to 94.5% (SD=8.5%) [p<.001] for LP skills and from 33.0% (SD=15.2%) to 92.7% (SD=5.4%) [p<.001] for paracentesis. Trainee confidence increased from 42.0 (SD=27.2) for LP and 40.9 (SD=24.8) for paracentesis before the training program to 78.6 (SD=14.4) for LP and 79.8 (SD=12.2) for paracentesis after the intervention [p<.001]. The training program was well received and highly rated by learners.

Conclusions: Incoming first year residents are not confident or skilled to perform the common bedside procedures of LP and paracentesis. Skills and confidence were significantly higher after an intensive one-day training program featuring deliberate skills practice and feedback. Residents enjoyed training and receiving evaluation and feedback in a simulated clinical environment. This study demonstrates a feasible method for incoming residents to improve skills in bedside procedures.

9. **Closing the Loop: Clinical Evaluation Quality Improvement Feedback Database**

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Clinical Evaluation is a major component in the assessment of health professional students' performance. Yet, accurately measuring clinical performance with adequate reliability, validity, and precision is challenging. Data analysis comparing clerkships at the University of Iowa Carver College of Medicine (UICCOM) indicates significantly elevated scores on clinical evaluations for 2 week rotations when compared to 4 and 6 week rotations. Furthermore, there is substantial variability in scores across the individual clerkships. This can be due to a number of factors including length of clerkship time, level of interaction, and vested interest of the evaluator. UICCOM currently uses a 5-point scale with "3" representing "meeting expectations;" the vast majority of scores are in the 3 – 5 range. A new system has been developed to provide evaluators with an opportunity to reflect on their grading and evaluation of students. Evaluators will receive annual reports comparing their score distributions with the overall distribution of scores for the clerkship. Additionally, there will be development activities to enhance evaluators' skills with scoring, evaluating, and providing feedback to students. In time, we aim to increase the accuracy and precision of evaluations for clinical performance and increase the reliability and validity of such measurements within the clerkships. And we seek to provide students with the feedback they need to continue to progress in their skills.

10. **A Call For Freedom: Medical Students' Plea to Limit Required Contact Hours**

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The purpose of the study was to determine the relationship between time spent in required curricular activities and student performance on National Board of Medical Examiners (NBME) shelf exams in select disciplines. Data for required contact hours and student performance on NBME shelf exams from seven campuses of Indiana University School of Medicine for the academic years 2003-2007 were collected. ANOVA was conducted to compare mean percentiles from each campus. ANOVA indicated no statistically significant relationship, positive or negative, between performance on the NBME shelf exam and contact hours in the course. The results of this longitudinal study suggest that student performance on NBME Shelf exams is independent of required contact hours in the course. For this reason it is logical to deduce that decreased required student contact hours could potentially be beneficial for three main reasons: less required class time could improve the emotional well-being and balance of lifestyle for medical students, it could allow struggling students to receive a greater proportion of limited faculty time resources, and it could provide sufficient time for academic and personal enrichment to be added to current medical curricula. While the authors do not advocate reducing required hours to zero, the authors implore that schools and accrediting bodies limit contact hours.