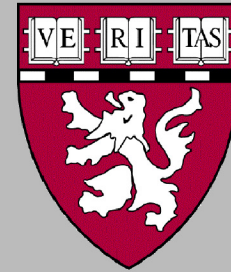


HARVARD MEDICAL SCHOOL

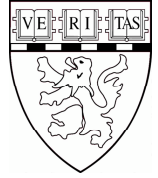


9th
MEDICAL EDUCATION DAY
BOOK OF ABSTRACTS

TUESDAY OCTOBER 26, 2010
12:00 PM TO 5:30 PM
TOSTESON MEDICAL EDUCATION CENTER



HMS ACADEMY
NINTH ANNUAL
Medical Education Day
HMS PROGRAM IN MEDICAL EDUCATION



October 26, 2010 Tosteson Medical Education Center Harvard Medical School

INTRODUCTORY KEYNOTE • 12 TO 1:30 PM • TMEC AMPHITHEATER

Keynote: The Hidden Curriculum, Professionalism, Social Networks and Organizational Change: A Challenge and Road Map

Frederic W. Hafferty, PhD. Professor and Associate Director, Program in Professionalism & Ethics, Mayo Clinic

CONCURRENT WORKSHOPS • 1:45 PM TO 3:15 PM

Patient Safety and the Hidden Curriculum – TMEC 334

Sigall Bell, MD & David Browning, MSW

What is Professionalism? From Etiquette to Action – TMEC 209

Michael Kahn, MD & Jennifer Kesselheim, MD, EdM

Physician Identity Formation and Medical Culture – TMEC 250

Katharine Treadway, MD, Frederic W. Hafferty, PhD & Elizabeth Gaufrberg, MD, MPH

The Pre-clinical Hidden Curriculum: Assumptions, Expectations & Messages – TMEC 333

Toni Peters, PhD, Ed Krupat, PhD, & Alex McAdam, MD, PhD

Organizational Change and Accountability in the Hidden Curriculum – TMEC 309

Richard Schwartzstein MD & Jo Shapiro, MD

Power and Hierarchy in Medical Culture: Effect on Trainees – TMEC 126

Alan Woolf, MD, MPH & Elizabeth Breen, MD

CLOSING PLENARY AND ABSTRACT AWARD CEREMONY • 3:30 TO 4:30 PM • TMEC AMPHITHEATER

Presentation of HMS Medical Education Day Abstract Award 2010

Plenary: Next Steps Forward: A Roadmap for Institutional Commitment and Change at HMS – Moderated by Sigall Bell, MD, Elizabeth Gaufrberg, MD, MPH & Richard Schwartzstein, MD

POSTER & TECHNOLOGY SESSION / RECEPTION • 4:30 TO 5:30 PM • TMEC ATRIUM

HMS Faculty and affiliates' poster and technology demonstrations of research projects related to medical education

October 26, 2010

Dear Colleagues:

Welcome to Harvard Medical School's ninth annual Medical Education Day, sponsored by the Academy and the Program in Medical Education. Medical Education Day, which began in 2002, strives to provide a forum for showcasing the important work of our faculty in the realm of medical education. The day is designed to enable faculty and staff to share ideas across disciplines, departments and institutions; to catalogue the initiatives and educational innovations in which Harvard faculty have been engaged; to recognize the many faculty members who are conducting important educational work; to help foster connections with colleagues; and to broaden the educational skills of faculty through participation in workshops and lectures.

As Medical Education Day has evolved, we have endeavored to insure that the program also promotes an opportunity to reflect together as a faculty on a topic of significant importance to the education of Harvard medical students and trainees and to bring a variety of perspectives into focus. This year's program will revolve around the theme of "The Hidden Curriculum at Harvard Medical School." We are very excited to welcome Dr. Fred Hafferty, a nationally recognized expert on professionalism and the process by which students and residents are acculturated into their new roles, as the introductory keynote speaker. Dr. Hafferty, who is a professor at the University of Minnesota, has been involved in the teaching and assessing of professionalism in relation to medical students for many years. He has conducted research into what medical students know about professionalism and the impact of the hidden curriculum and role modeling upon the development of professional behavior. Dr. Hafferty will provide us with key insights into the positive and negative effects of the hidden curriculum and outline some of the areas of controversy in this field. Following his talk, we will offer a series of concurrent workshops, which will focus on aspects of professionalism and the hidden curriculum; we believe the discussions will be relevant for faculty teaching medical students, residents, and fellows. At the conclusion of the workshops, faculty will reconvene in a plenary session during which we will share highlights of our discussions and craft priorities for "next steps" that we can take at HMS to improve the learning environment. The afternoon will conclude with a poster session and reception, during which we will acknowledge four outstanding abstracts with awards for excellence in medical education scholarship.

Medical Education Day is a celebration of the important and creative work in medical education that occurs every day in our institutions. We would like to thank all of the abstract authors and workshop presenters for their contributions to this event, for it is the sharing of this work that makes this day truly special.

Sincerely yours,

A handwritten signature in black ink, reading "Richard M. Schwartzstein". The signature is written in a cursive, flowing style.

Richard Schwartzstein, MD
Director, Academy at Harvard Medical School

Faculty Chairs of Medical Education Day

Sigall Bell, MD

Elizabeth Gaufberg, MD, MPH

Medical Education Day Planning and Review Committee

Lisa Frontado, MS, EdM

Charles Hatem, MD

Jane Neill

Toni Peters, PhD

Richard Schwartzstein, MD

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NINTH ANNUAL
Medical Education Day



October 26, 2010 Tosteson Medical Education Center Harvard Medical School

AWARD RECIPIENTS

HMS MEDICAL EDUCATION DAY ABSTRACT AWARD 2010

EFFECT OF FILMED OR WRITTEN CASES ON THE CRITICAL THINKING OF MEDICAL STUDENTS IN TUTORIAL

Robindra Basu Roy MD MEd¹, Graham T. McMahon MD MMSc²

¹Harvard School of Public Health, and ²Department of Medicine, Brigham and Women's Hospital – UNDERGRADUATE MEDICAL EDUCATION POSTER

MEDICAL STUDENT HOME VISIT PROGRAM: IMPROVING CARE TRANSITIONS FOR COMPLEX PATIENTS

Angela Botts, MD

Department of Medicine, Division of Gerontology, Beth Israel Deaconess Medical Center – UNDERGRADUATE MEDICAL EDUCATION POSTER

STATISTICAL ANALYSIS SOFTWARE AS A TEACHING TOOL: DEVELOPMENT OF A COLLABORATIVE WEB-BASED CURRICULUM

Emma M. Eggleston MD MPH, Dept of Population Medicine, Harvard Medical School and Harvard Pilgrim Health Care Institute; *Amy Cohen, EdM*, Dept of Information Technology, Harvard School of Public Health[§]; *Fred Sheahan EdM[§]*, Rima Habre, Doctor of Science candidate[§].

CURIOSITY AND NEED FOR COGNITION IN THIRD YEAR MEDICAL STUDENTS: UNDERSTANDING MOTIVATIONS FOR LEARNING BEYOND THE STRICT “NEED-TO-KNOW”

Jeremy Richards^{1,2}, M.D., M.A.; *Julie Irish², Ph.D.*; *Jacqueline M. Almeida, B.A.²*, *David H. Roberts^{1,2} M.D.*

1) Division of Pulmonary, Critical Care and Sleep Medicine, BIDMC. 2) Carl J. Shapiro Institute for Education & Research, BIDMC. – UNDERGRADUATE MEDICAL EDUCATION POSTER

AWARD RECIPIENT ABSTRACTS FOLLOW

EFFECT OF FILMED OR WRITTEN CASES ON THE CRITICAL THINKING OF MEDICAL STUDENTS IN TUTORIAL

Robindra Basu Roy MD MEd¹, Graham T. McMahon MD MMSc²

¹Harvard School of Public Health, and ²Department of Medicine, Brigham and Women's Hospital

Correspondence to: gcmahon@partners.org; 617-732 5429

Background:

Problem-based learning facilitates the development of critical thinking among medical students. Film and written materials have distinct provocative properties for learners, but their influence on the engagement of students in critical thinking activities is unknown.

Methods:

We developed two filmed cases using patient vignettes that evolved in sections over time. We created matched written cases from the transcripts of these cases. Four tutorial groups (each with 7 students) in a second-year endocrine and reproductive pathophysiology course were enrolled and were randomly assigned in a cross-over design between a video case or a written case. Tutorials were facilitated by the same experienced tutors. Twenty-four hours of tutorial discussions were recorded, transcribed and analyzed according to Kamin's coding metrics of group discussions. The ratio of deep to superficial phrases was used to calculate the critical thinking ratio (CTR). A generalized estimating equation with repeated measures was used to determine differences.

Results:

10,619 phrases were analyzed and categorized among 35 categories. Problem identification, description and exploration accounted for 4%, 32% and 56% of the phrases respectively, while integration and applicability discussions accounted for 8% of the phrases; modality did not affect the distribution of activity. Female students contributed proportionately more to discussions than male students (64% vs 36% of contributions, $P=0.04$). Compared to written cases, use of filmed cases was associated with a significantly higher CTR in problem identification (-0.25 for video, -0.35 for text, $P<0.001$), but a significantly lower ratios for problem description (0.53 vs. 0.61 respectively, $P<0.001$) and exploration (0.78 vs. 0.87 respectively, $P<0.001$). Qualitative analysis demonstrated greater engagement of students in the video cases. Surveys data showed students (79%) and tutors (100%) each expressed a significant preference for video cases over use of text-based cases.

Conclusions:

Filmed cases were more popular and more engaging than cases presented in writing but significantly reduced the amount of critical thinking that occurred in problem-based learning tutorials.

MEDICAL STUDENT HOME VISIT PROGRAM: IMPROVING CARE TRANSITIONS FOR COMPLEX PATIENTS

Angela Botts, MD

Department of Medicine, Division of Gerontology, Beth Israel Deaconess Medical Center

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Poster Presentation, Undergraduate Medical Education

Purpose: Systems-based practice, including understanding the components of successful care transitions, is an undergraduate medical education competency. The importance of optimizing education in this area to improve student knowledge and enhance patient outcomes is highlighted by the high hospital readmission rate in Massachusetts. However, students currently receive little specific education regarding successful care transitions. They often lack a clear understanding of the patient's post discharge environment and the resources necessary to support a successful care transition. This project provides students with an opportunity to learn about successful care transitions including recognizing how understanding a patient's post discharge environment, drafting a clear discharge summary, and optimizing resources prior to hospital discharge can result in improved patient outcomes and reduced readmission rates.

Methods: During their internal medicine clerkship at the Beth Israel Deaconess Medical Center, third year medical students participate in an educational experience and home visit focused on successful care transitions in medically complex patients. Students identify and receive permission from a patient they cared for in the hospital to visit them at home following discharge. On the day of the visit, students meet with a geriatric or hospitalist preceptor to discuss basic tenants of home visits, review the discharge summary, and identify specific care transition issues they wish to address during the visit. The preceptor and two paired students then make the home visits lasting 45-60 minutes each depending on patient complexity. At the conclusion of the visits, the preceptor reviews learning issues which were identified during the visit and discusses what modifications to the discharge summary might have improved the transitions of care experience. A multi-component assessment of the program is being conducted:

1. Students edit the discharge summary following the visit to include information that may have been helpful in optimizing the care transitions experience for the patient. Although these edits do not become part of the official medical record, preceptors communicate with the house officer who completed the discharge summary regarding suggested edits to expand the educational impact of the program and improve future discharge summaries.
2. Students complete a confidential pre and post survey evaluating their attitudes and knowledge regarding home visits and transitions of care.
3. Patients or, if they are unable, their caregiver complete a survey regarding the utility of the home visit.

Conclusions and Future Goals:

Despite being identified as an educational competency, medical students currently receive little formal training around successful care transitions. Through educational sessions and a home visit, students participating in the program gain an increased appreciation for the components of successful care transitions including a concise but thorough discharge summary and arranging for the appropriate home resources prior to discharge. Future goals include dissemination of the project to other medical schools and expansion to the Harvard geriatric medicine fellowship.

STATISTICAL ANALYSIS SOFTWARE AS A TEACHING TOOL: DEVELOPMENT OF A COLLABORATIVE WEB-BASED CURRICULUM

Emma M. Eggleston MD MPH, Dept of Population Medicine, Harvard Medical School and Harvard Pilgrim Health Care Institute; Amy Cohen, EdM, Dept of Information Technology, Harvard School of Public Health[§]; Fred Sheahan EdM[§], Rima Habre, Doctor of Science candidate[§].

Contact: Emma M. Eggleston; tel (617)-509-9925; emortoneggleston@partners.org.
Technology Presentation

Background: As detailed in the recent Association of American Medical Colleges report, *Scientific Foundations for Future Physicians*, there is a growing emphasis on student ability to: “Apply quantitative knowledge and reasoning, including integration of data, modeling, computation and analysis--and informatics tools to diagnostic and therapeutic decision making” (HHMI and AAMC; 2009). At Harvard Medical School this emphasis coincides with 1) an institutional focus on independent scholarly work; and 2) feedback in the HMS first year Clinical Epidemiology course, in which students expressed a desire to learn a statistical analysis program for their own research and project work. In response to this need for competency in data management and analysis, an interdisciplinary group of educators from HMS and the Harvard School of Public Health (HSPH) are developing an interactive web-based curriculum based upon SAS JMP, a statistical analysis program provided by Harvard to all students and faculty.

Project Goals: The primary goal of the project is to provide students with an introduction to data management and analysis and to do so in a manner that lays the foundation for self-directed competency in their own research, project work, and clinical decision-making. Additional goals are to:

- 1) Increase student’s ability to understand, integrate and expand upon the fundamental concepts of the graphical display of data; and
- 2) Augment the teaching of biostatistical concepts and population health perspectives in the HMS Clinical Epidemiology and Population Health course.

Curricular development: Curricular development is guided by the commonalities between the way in which JMP is designed and the innovative dimensions of web-based social media. These commonalities include a philosophy of exploration, visualization, and discovery. Therefore we are designing the curriculum to emphasize experiential, self-directed learning that incorporates visualization of quantitative data to re-enforce concepts and is adaptable by students to their level of experience. We are also striving to incorporate the unique capacity of on-line educational technologies to foster collaborative learning. Specific curricular components include:

- 1) A set of interactive modules divided into mutually reinforcing “How To” (Introduction to the use of JMP; fundamentals of data organization) and “Exploring Concepts” (data visualization, interpretation of graphical display, and inferential statistics) sections;
- 2) Tailored datasets used throughout both the “How To” and “Exploring Concepts” modules to encourage hands-on experience. The data sets are population- health specific, contain both medical and dental health-related variables, and are designed specifically to contain “stories” (potential hypotheses) for exploration with the biostatistical concepts being learned;
- 3) Development of a discussion board, curriculum Wiki, “Ask the professor”, and other forums to foster collaborative learning.

We have pre-tested several of these approaches in JMP-based workshops for HMS and HSPH students as well as in the HSPH *Quality Improvement in Healthcare* course, and are using these experiences and student feedback to inform and refine further curriculum development.

CURIOSITY AND NEED FOR COGNITION IN THIRD YEAR MEDICAL STUDENTS: UNDERSTANDING MOTIVATIONS FOR LEARNING BEYOND THE STRICT “NEED-TO-KNOW”

Jeremy Richards^{1,2}, M.D., M.A.; Julie Irish², Ph.D.; Jacqueline M. Almeida, B.A.², David H. Roberts^{1,2} M.D.

1) Division of Pulmonary, Critical Care and Sleep Medicine, BIDMC.

2) Carl J. Shapiro Institute for Education & Research, BIDMC.

Contact Jeremy Richards (617-667-5864 or jbrichar@bidmc.harvard.edu)

Category of submission: Poster presentation (Undergraduate Medical Education)

Background: Curiosity can be described as both a general interest in learning and acquiring knowledge (“interest-type” or I-type curiosity) and as a drive to answer a specific question or fill a knowledge void (“deprivation-type” or D-type curiosity.) Need for Cognition (NFC) describes one’s enjoyment of and tendency to engage in effortful cognitive activities. Motives for and Strategies of learning can be determined by the Study Process Questionnaire (SPQ) as Deep or Surface in nature. Deep Motives and Strategies (Deep-SPQ) describe an intrinsic interest in learning with a goal of maximizing understanding, while Surface Motives and Strategies (Surface-SPQ) describe a fear of failure and task-specific, focused learning efforts. To our knowledge, NFC, SPQ, and curiosity types have not been studied in undergraduate medical education. NFC, SPQ and curiosity scores may correlate with an individual’s interest in and responsiveness to specific educational interventions. One specific educational opportunity within the BIDMC Principal Clinical Experience (PCE) course for third year medical students is an optional “Challenge Track” – a high-intensity elective with integrated learning in basic-clinical science correlation conferences, in the simulation center and at the bedside.

Objective: We hypothesized that PCE students demonstrate a range of NFC and curiosity scores, and those who self-selected to participate in the “Challenge Track” (CT) would have higher NFC and I-type curiosity scores as compared to “non-Challenge Track” students (non-CT.) **Design:** Using previously described survey tools, we measured NFC, Deep-SPQ, Surface-SPQ, I-type and D-type curiosity scores in PCE students. Scores for the CT group were compared to the non-CT group. **Results:** Data from fifty-four students were analyzed, nine of whom had self-selected into the CT group. Among all students (CT and non-CT), NFC was positively correlated with Deep-SPQ ($r = 0.40$, $p < 0.01$), and both I-type ($r = 0.72$, $p < 0.01$) and D-type curiosity ($r = 0.67$, $p < 0.01$.) NFC was negatively correlated with Surface-SPQ ($r = -0.50$, $p < 0.01$.) Deep-SPQ scores for the CT group were higher than the non-CT group (mean scores 39.22 [CT] versus 31.7 [non-CT], $p < 0.01$.) Surface-SPQ were lower in the CT versus the non-CT group (mean scores 16.00 [CT] versus 19.98 [non-CT], $p = 0.01$.) **Conclusion:** Intrinsic interest and a desire to maximize meaning are important motivators for learning in this cohort, but their importance was greater for students in the CT group as demonstrated by higher Deep-SPQ scores. Measuring NFC, SPQ and curiosity scores could allow educators to prospectively identify students who may be more responsive to specific methods of learning, and thereby tailor interventions to a student’s curiosity type and intrinsic desire to learn. Some students with low NFC, high Surface-SPQ and D-type curiosity scores may respond better to (and learn more effectively from) conventional modes of education, while students with high NFC, high Deep-SPQ and I-type curiosity scores may prefer creative, unconventional educational interventions. Further work will assess whether NFC, SPQ and curiosity scores can be used to better individualize curricula in undergraduate medical education.

NINTH ANNUAL

HMS Medical Education Day

Poster and Technology Demonstration
Abstracts (grouped by category)

STATISTICAL ANALYSIS SOFTWARE AS A TEACHING TOOL: DEVELOPMENT OF A COLLABORATIVE WEB-BASED CURRICULUM

Emma M. Eggleston MD MPH, Dept of Population Medicine, Harvard Medical School and Harvard Pilgrim Health Care Institute; Amy Cohen, EdM, Dept of Information Technology, Harvard School of Public Health[§]; Fred Sheahan EdM[§], Rima Habre, Doctor of Science candidate[§].

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RESIDENTS AS TEACHERS: A MULTI-MEDIA WEB-BASED TEACHING AID

Lauren J. Fisher, D.O., Manoj K. Dalmia, M.D., Melanie R. Kalmanowicz, M.D.¹,
Neesann Marietta, M.D., Sohin A. Patel, M.D., Solmaz Pirzadeh, M.D. and John D.
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Technology Demonstration

This innovative project standardizes the experience of Third Year Harvard Medical students during their one-week Anesthesia rotation as well as developing residents' teaching skills. In the past, students' educational experience was dependent on the variety of cases they happen to be assigned to, as well as the comfort level with teaching of the residents to whom they are assigned. This project serves to standardize the student's experience by providing daily, web-based mini-lessons focusing on core anesthetic principles that transcend specialty training. Topics include: Respiratory Physiology, Cardiac Physiology, Perioperative Pain control, Ventilator Modes/Settings, and Preoperative evaluation. These mini-lessons are largely case based and include major teaching points as developed by the residents. Due to the accessibility of these multimedia web-based lessons, any resident can review modules with any medical student at any time. This project aims to improve the learning experience of medical students on rotation, as well as residents' confidence in their ability to teach. Planned metrics include resident and student satisfaction, quality of knowledge transfer, and development of confidence and style in presentation by the resident. This project is a part of a larger "Resident as Teacher" curriculum aimed at enhancing resident understanding and application of fundamental educational theory.

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PROGRESS REPORT – ROLE OF HOUSESTAFF WIKI IN RESIDENCY EXPERIENCE AND EDUCATION

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Category of Submission:

Poster Presentation: Educational Technology

As a dynamic user driven experience, a “wiki” is designed as a self-sustaining web resource that can grow without the need for centralized supervision. In 2006, BIDMC internal medicine residents built the medical housestaff wiki with a goal to improve residency education and training experience. In conjunction with faculty advisors, residency administration, and numerous residents, the wiki’s content of literature library, phonebook, and calendar has been expanded and maintained.

In the past three years, the housestaff wiki has seen a near constant increase in users and page visits. We plan to examine the usage patterns of the housestaff wiki to determine what resources are most used, and detail how the housestaff wiki affects the experience and training of medical residents. Through automated trackers, we have detailed usage information regarding website hits, page creations, and page edits. Additionally, we have administered a survey to each class who has used the wiki to evaluate the attitudes, usage, and contribution toward the wiki. Once we have identified strengths and areas in need of improvement we will present an organizational structure for future wiki development, with a focus on how to supervise a dynamic resource with constantly changing housestaff.

WWW.THEANSWERPAGE.COM: AN ONLINE DAILY EDUCATIONAL RESOURCE FOR MEDICAL PROFESSIONALS

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Introduction: TheAnswerPage.com™ (TAP) is an online medical education resource that delivers current, high-quality content in an innovative, time-saving format across multiple specialties including Anesthesiology, Pain Management, Critical Care Medicine, Obstetrics & Gynecology, and Newborn Medicine.

In 1998 the site was launched in an effort to provide daily free education to doctors in training and in practice, and to address three major concerns that medical professionals share regarding on-going medical education: time, convenience, and quality.

Learn Something Everyday™: The Answer Page employs the Socratic-like question and answer teaching method that characterizes much of the clinical education experience. User feedback confirms that medical professionals enjoy the learning structure of the educational clinical experience. TAP succinctly provides expert analysis of a specific topic for the busy clinician through its unique content delivery methods.

Each area of specialty (i.e., Anesthesiology, Pain Management, etc.) has a parallel structure. The principal educational feature is the "Question of the Day™", a daily-changing topic in the given medical field accompanied by a peer-reviewed and referenced answer of approximately 500-1000 words. Questions and answers are grouped together into syllabus topics on a weekly basis. The syllabus is generally, though not exclusively, based on the respective specialty's board certification content outline. The entire archive of past questions and syllabus topics is searchable by date and content.

A key feature of The Answer Page is that users are able to earn AMA Physician's Recognition Award category 1 Continuing Medical Education credits without the requirement of quizzes, tests, or other forms of attestation. This innovative "Quiz-Free CME™" form of online education distribution was granted patent protection in 2006 and remains an industry-unique feature. In 2010 TAP will be introducing an interactive educational crossword puzzle that allows the reader to earn AMA PRA category 1 credit through its patent protected Quiz-Free CME method.

The Answer page has over 20,000 registered users and is read in over 40 countries across the globe. To date, TAP has granted well over 100,000 hours of AMA PRA category 1 credit to clinicians. The TAP database also stores and organizes each user's CME information and allows users to easily download, email, or print CME certificates at any time.

In 2007, The Answer Page was highlighted by the Accreditation Council for Continuing Medical Education (ACCME) as an example of particularly high-quality online educational resource. TAP has received thousands of positive written comments. In addition to major US and International universities linking to TAP as an educational resource, the founders' mission has been realized when they learned their site was also being used abroad on a daily basis by those who could not afford textbooks.

Please review our book of readers comments!

INTERACTIVE SPACED EDUCATION TO OPTIMIZE HYPERTENSION MANAGEMENT:

A Multi-Institutional Randomized Trial

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*** Drs. Kerfoot and Turchin are co-first authors.*

Funded by Veterans Affairs Health Services Research & Development

Objectives: We are investigating whether an interactive spaced education (ISE) intervention directed to primary care providers (PCPs) can significantly reduce the blood pressure of hypertensive patients.

Research Design & Methodology: One-hundred eleven of the 260 PCPs (physicians, nurse practitioners, and physician assistants) working in the northeastern VA hospital system were recruited via email to participate in the study. Participants were block randomized to one of two cohorts: (1) the intervention cohort is receiving the ISE intervention over year 1, and (2) the control cohort is receiving online access to the identical educational content. The ISE intervention consists of an email sent every 3 days containing 1-2 multiple-choice questions on hypertension management. Providers submit answers to the questions online and then immediately receive a webpage with the correct answer and explanations of the correct/incorrect answers. Following an adaptive spaced education algorithm, the questions are repeated at differing time intervals depending on whether the question was answered correctly or not (12 days v 24 days, respectively). Upon answering a question correctly twice in a row, the question is retired. The ISE intervention will be completed once all 32 questions are retired. The ISE intervention is estimated to last an average of 9 months (range 7-12 months depending on clinician performance). The blood pressures of the patients in these PCPs panels will be followed for 2 years: initial changes attributable to the ISE intervention will be identified in year 1, while the retention of these changes would be monitored in year 2. Data collection and analysis will be conducted in collaboration with the Massachusetts Veterans Epidemiology Research and Information Center.

Findings: *Study launched March 2010. Data pending.*

Impact / Significance: If successful, this ISE intervention will improve blood pressure control among VA patient and improve patient outcomes. With content tailored to meet specific needs ISE can be utilized as a tool to improve local, regional or national performance measures and clinical outcomes through improved implementation of clinical practice guidelines.

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AN ELECTRONIC HEALTH RECORD WITH AN INTEGRATED RESIDENT EVALUATION SYSTEM IMPROVES FACULTY EVALUATIONS OF RESIDENTS

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Poster Presentation: Educational Technology

The Residency Review Committee requires emergency medicine (EM) programs to evaluate residents on chief complaint (CC), resuscitation (RS) and procedure (PC) competencies. Many programs use a web based summative evaluation. We developed a new evaluation to both increase the number of evaluations and provide formative evaluations addressing CC, RS, and PC competencies.

Objective: To study the effect on resident evaluation of a Shift Evaluation (SE) linked to an electronic health record (EHR) compared to a web based system.

Method: Design: Before and after study of SE at a residency program with 36 faculty and 36 residents. We compared the number of evaluations on our original system, New Innovations (NI), from 6/08-11/08 compared to the number of evaluations on both NI and SE from 6/09-11/09 one month after implementation of the SE. The SE, linked to our EHR, facilitates live evaluation on a specific patient encounter, CC, RS, or PC competency. Faculty could evaluate residents with both tools. SEs were abstracted to determine if a CC, RS, or PC was addressed. Means with standard deviations and proportions with confidence intervals were calculated; comparisons were made with fisher's exact test and student t-test.

Results: Total number of evaluations increased from 353 to 604 with implementation of the SE. Mean number of evaluations per resident increased from 10.1 (SD 5.5) to 16.8 (SD 6.6) ($P < 0.0001$). The number of faculty doing evaluations did not significantly increase, 27(73%) to 33(89%) ($p = .21$). In the SE, 83%(CI71-96) of the residents were evaluated on CC, RS, or PC competencies. **Conclusion:** The addition of a SE linked to an EHR significantly increased the number of evaluations per resident. The SE addresses the requirement to assess CC, RS, and PC competencies. An evaluation linked to an EHR enabled faculty who were completing evaluations to complete more, but the number of faculty doing evaluations did not significantly increase highlighting an area of needed faculty development.

TRANSESOPHAGEAL ECHOCARDIOGRAPHY SIMULATOR: INTEGRATING ECHOCARDIOGRAPHY INTO RESIDENT CURRICULUM

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Category: Poster Presentation - Simulation

Transesophageal echocardiography (TEE) is a valuable tool for diagnosis and treatment of anatomical and functional abnormalities of the cardiovascular system. Its role in managing hemodynamically unstable patients has been well documented. The existing TEE curriculum requires a year of intraoperative training combined with a cardiovascular fellowship. There is thus a pressing need for instruction extending outside the realm of the cardiac operating rooms which is a challenging setting for the beginner to grasp the basics of image acquisition and structure identification. In addition the constraints of time and trained personnel limit the widespread availability of echocardiography training.

The echocardiography curriculum was developed for the anesthesia residents with the goal to teach the basics of cardiac image acquisition, anatomical correlation and probe manipulation using a TEE simulator outside the operating room in a virtual setting. The simulator comprises of a mannequin, realistic TEE probe that can mimic the manipulations of a regular probe and a computer with a high definition monitor. The split screen capabilities allows simultaneous display of the echocardiographic image and it's anatomical correlates in two dimension or three dimension.

The bimonthly didactic session combines an audiovisual didactic lecture on cardiac anatomy followed by a mentored session at the echo simulator where the residents get hands - on experience on probe manipulation and image acquisition. The curriculum also consists of a session of porcine heart dissection to better understand anatomy and echocardiography correlates.

The echocardiography curriculum is still in its infancy and initial evaluations are encouraging but more robust metrics are needed to measure it's efficacy over time.

MEDICAL SIMULATION OF SENTINEL EVENTS FROM THE EPILEPSY MONITORING UNIT: VALIDATION OF A TEAM TRAINING CURRICULUM

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Poster: Simulation

Rationale: Patient safety has emerged as a critical topic for directors of EMUs. Assessment and management of changes in patient condition in the EMU is a complex process involving a variety of providers with varying levels of training and experience. Successful management requires effective communications and “hand offs”, as well as the institution of a variety of therapeutic strategies. These complex factors increase the risk of delays in treatment and errors in care, potentially leading to adverse events. Although such events are uncommon, they have been reported in patients admitted for elective monitoring. To address these complexities and support effective team performance, we set out to develop a simulation-based team training program for nurses, technicians, and physicians to maximize their ability to provide care in the EMU. Medical simulation has been shown to be an effective method of training medical teams, improving assessment, decision-making, and the institution of treatment strategies in unanticipated patient events. Using simulated scenarios based on actual EMU sentinel events, we aim to introduce and educate neurology residents and nurses to the essential procedural and decision making steps required for EMU care.

Methods: We used a mixed methods study design for two distinct phases of this research project: expert review and consensus in appropriate patient management, and creation and implementation of a simulation based curriculum for multidisciplinary teams. The initial needs assessment/“gap analysis” used prior EMU sentinel events as well as the results of hospital root cause analyses (RCA). A local panel of experts, including two nurses, and three neurologists all with >5 years experience in the EMU and one emergency physician, reviewed the videos of sentinel events and RCAs to identify critical procedural and decision making steps necessary for maximizing care. Through an iterative process to obtain expert consensus, a 14 item procedural checklist was developed to deconstruct and assess appropriate patient care performance. Once the checklist was developed and validated through expert review, the simulation curriculum was initiated. Consent to videotape and review simulations was obtained from participants and the study was approved by the IRB. After receiving an introduction emphasizing teamwork, leadership, communication, and evaluation of change in patient condition in the EMU, subjects were introduced to the medical simulator. Employing the procedural checklist and through interactive video-debriefing, trained facilitators identified strengths and weaknesses of individual and team performance and emphasized essential objectives.

Results: A simulation-based team training curriculum and procedural checklist was created and validated for patient safety in the EMU using review of sentinel events and root cause analyses.

Conclusions: A practical simulated curriculum is feasible and valid to train seizure safety in the EMU as well as potentially having broader applications for safety training. Reliability of the procedural checklist is planned by measuring kappa coefficients for inter-rater agreement of the assessed simulation scenarios.

SIMULATION FOR ENHANCING LANGUAGE COMPETENCY IN A MEDICAL SPANISH COURSE

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Abstract:

Background: Simulation when combined with traditional classroom instruction promises to be an effective learning tool for acquisition of medical Spanish. Simulation may also be an effective method for initial evaluation of language skills and for demonstrating improvement in individual language skills over the course of a semester.

Methodologies: This study will aim to use simulation for two different but intertwined purposes: as an effective way to assess improvement in language skills, and as a way to improve students' confidence levels and comfort with patient encounters in Spanish. Students entering a Medical Spanish class (2010-2011) will be assessed with 3-4 minute simulated interviews using high fidelity mannequins with Spanish speaking physicians playing the part of the patients, and the students playing the role of the physician. In order to provide guidance and structure to the interaction, "patients" and "doctors" will have scripts as first year medical students are not yet familiar with history taking questions. After each 4 minute interview, students be evaluated by native spanish speaking physicans. Evaluation criteria will be based on a 5 point Likert scale for each criterion. Evaluation criteria will include fluency, general vocabulary, medical vocabulary, and appropriateness of greeting. In addition, students will participate in simulation sessions throughout the semester that relate directly to the subject matter they will have learned in their classroom didactics. A post-simulation participation survey will be used to assess self-efficacy and comfort level with medical spanish during the simulated patient interview. We will repeat the initial 3-4 minute interview at the end of the semester, using the same physicians paired with the same students and evaluators, and the same script for the physician "patients." Evaluation criteria will be identical.

Preliminary Results: Informal, written and verbal post-simulation feedback thus far has indicated that simulation sessions are an effective learning tool for the acquisition of medical Spanish as assessed by participant perception.

Conclusions: Simulation appears to be a promising method for language acquisition in a medical Spanish course, and may increase self-efficacy and student confidence in using medical Spanish in clinical encounters. In addition, we hope to show that simulation is an effective evaluation method for demonstrating improvement in language skills for students enrolled in a medical Spanish course.

DEVELOPMENT OF A SIMULATION-BASED MICROSURGERY “BOOT CAMP” FOR PLASTIC SURGERY RESIDENTS AND FELLOWS AT A PEDIATRIC TEACHING HOSPITAL: WORK IN PROGRESS

Speaker: Brian Labow, MD

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Category of Submission: Poster Presentation – Simulation

Purpose:

On demand simulation-based training methods are becoming widespread in helping surgeons gain confidence and master surgical skills that would otherwise take years to achieve, yet few exist in plastic and microsurgery. The broad goal of this project is to develop a simulation-based training curriculum (“boot camp”) in microsurgery related to reconstructive procedures. The curriculum will initially be focused on the training and evaluation of plastic surgery residents and fellows and will be further developed to allow continuing education opportunities for practicing microsurgeons. Via a combination of adult-learning-based curriculum and high fidelity skills trainers, the program aims to (1) provide unique opportunities for deliberative practice of otherwise rare microsurgical techniques within a safe and structured environment without risk to patients and (2) develop metrics of competency in microsurgery across the expertise gradient.

Hypothesis

We hypothesize that a high fidelity simulation-based training “boot camp” in microsurgical technique can be established within a teaching hospital and can be used to develop/validate performance standards regarding safety, efficiency and quality of microsurgical technique.

Specific Aims:

The specific aims of this project are (1) to design and implement a broad, multidisciplinary needs assessment to identify goals and objectives of the “boot camp”, (2) to design and implement a full day curriculum via a combination of didactics, dedicated skills training, integrated high fidelity patient-based scenarios and team training, and (3) to design and validate a scoring tool for microsurgical technique. To achieve these goals we will design and create a realistic microsurgery skills trainer integrated within a currently available whole-body mannequin with free flap transfer/arterial and venous vascular anastomosis capabilities at a donor and recipient site.

Methods:

Collaborative curricular design between the Children’s Hospital Boston Department of Plastic and Oral Surgery and the Children’s Hospital Boston Simulation Program who will draw on extensive experience in simulation course development, bioengineering, trainer development, and vascular simulation.

DOES SIMULATION ENHANCE KNOWLEDGE ACQUISITION OR RETENTION?

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Category: Poster Presentation, Simulation

Background Information: Simulation is gaining increased attention as a technique to facilitate learning, but comes with significant challenges. The literature suggests that simulation can be an effective educational tool in some domains. Controversy remains, however, over whether it represents a significant improvement over lectures and problem based discussions in the cognitive domain. Work is needed to compare simulation to more standard approaches to transmitting information to learners.

Hypothesis: Students will achieve improved and sustained understanding of content and increased confidence/comfort with content area after simulation sessions when compared to lecture experiences. An improvement in knowledge acquisition and content comfort over conventional lecture will be achieved initially and the improvement will be sustained over a 6 month testing period.

Metrics: 52 3rd year HMS PCE students were enrolled on a voluntary basis. Students were divided into 2 groups (A/B and Y/Z). In week one, the topic taught was hypotension and chest pain. Group A/B received simulation instruction on hypotension, while Y/Z received a standard didactic session. Subsequently, the groups received the opposite intervention for the chest pain topic. Questionnaires were administered as pre and post tests. Tests contain elements of knowledge, synthesis, reflection and self-assessment of knowledge and confidence. Both the lecturer and the simulator instructor reviewed and modified test questions. Tests were administered prior to the simulation or lecture, at the conclusion of the simulation or lecture, and will be repeated at 3 and 6 months post intervention to assess retention of knowledge and concepts. At the three month mark, the groups will be taught the same topics using the method they had not been previously exposed to. Pre and post tests will be administered at that session and at the 6 month mark (no additional teaching will be done at the six month time point).

Measures of Success: If the intervention is successful, students will achieve an improvement in objective measures of knowledge which will be sustained. Their subjective confidence with subject material and clinical management will also be improved and be sustained. The study is currently underway; preliminary mid-study data will be available for presentation by October 2010.

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USE OF SIMULATION IN PRECLINICAL MEDICAL EDUCATION: TEACHING BASIC SCIENCE PHARMACOLOGY AT HARVARD MEDICAL SCHOOL

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Medical school curricula have traditionally been divided into two distinct halves—the preclinical course work, and the clinical rotations. During the preclinical years, patient contact is minimal, and the opportunity to demonstrate and apply basic science to direct patient care is sparse. At Harvard Medical School via the Gilbert Program in Medical Simulation, preclinical education is applied to the simulated patient’s bedside.¹ The preclinical pharmacology course utilizes simulation to teach basic pharmacology principles, such as drug metabolism, side effects, antidotes, and safe medication practice. After a review of the literature, this appears to be one of the first uses of simulation for preclinical medical education.¹

The Gilbert Program provides students with teaching sessions at a physical simulation facility with interactive mannequins and vital signs monitors. The students, in teams, interact with mannequins, who’s real-time physiological responses are in direct control of faculty members. The “patient” is experiencing a medical problem, with the underlying pathology associated with a pharmacology principle. Two cases were recently written by the present authors to emphasize concepts in the realm of pain medicine. The first reinforces concepts of local anesthetic mechanism of action, utilization of physical and chemical vasoconstriction, metabolism, and the diagnosis and treatment of local anesthetic toxicity. The second facilitated learning of drug-drug interactions in the P450 enzyme system, benzodiazepine and opioid induced respiratory depression, antidotes, and use of clinical monitoring equipment.

The use of preclinical simulation reinforces the material and concepts relevant to the USMLE Step I. It also allows medical students to think clinically, introduce them to communication skills and team work, and appreciate the use of simulation in medical education. Future research will need to determine if medical students are better able to learn preclinical pharmacology material with the use of simulation, as well as monitor their performance on the pharmacology portion of shelf examinations and USMLE Step 1. This is one of the first times simulation has been described in the literature for teaching medical students basic science/pre-clinical material.¹

References:

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Fig. 1. Blueprint of the Harvard Medical School Curriculum. Integrated within the pre-clinical (Year I and II) is the use of the Gilbert Center for Simulation to help teach the basic sciences.

HMS CURRICULUM BLUEPRINT												
	July	August	September	October	November	December	January	February	March	April	May	June
YEAR I	Fundamentals of Medicine											
		Introduction to the Profession	Molecular & Cellular Basis of Medicine Human Body Human Genetics Introduction to Social Medicine Patient Doctor I				Clinical Etiol & Path. Health Microbiology Medicine Physicians in Community	Integrated Human Physiology Immunology, Microbiology & Pathology Medical Ethics and Professionalism Patient Doctor I				
YEAR II	Fundamentals of Medicine											
			Principles of Pharmacology Human Systems Patient Doctor II Health Care Policy Human Development Psychopathology				Human Systems Patient Doctor II			USMLE I	Principal Clinical Experience* Patient Doctor III - Primary Care Medicine	
YEAR III	Principal Clinical Experience (cont.)*											
	Medicine (cont.)		Patient Doctor III (cont.) OB-GYN-Peds			Surgery (Rotation sequence determined by student schedule)		Primary Care (cont.) Radiology Neurology Psych			Adv. Exp. in Clin Med and Science Required Sub-internships Required Clinical Electives Unspecified Electives USMLE II**	
YEAR IV	Advanced Experiences in Clinical Medicine and Science											
											Required Sub-internships Required Clinical Electives Unspecified Electives Capstone USMLE II**	

* Longitudinal Component: Runs throughout PCE
 ** USMLE II must be completed by December of year IV

SUCCESS OF A HUMAN PATIENT SIMULATION-BASED SINGLE-STATION OSCE TO TEST BEHAVIORS ASSOCIATED WITH THE JOINT COMMISSION NATIONAL PATIENT SAFETY GOALS

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Introduction: The Joint Commission currently endorses twelve National Patient Safety Goals (NPSGs) in addition to the Universal Protocol. Healthcare organizations are responsible for ensuring that their employees are familiar with and follow the established guidelines. The goal of this research was to assess a human patient simulation-based single-station Observed Structured Clinical Examination (OSCE) designed to evaluate intern trainees' familiarity with and adherence to the NPSGs.

Hypothesis: A single-station OSCE can be discriminating and reliable when testing behaviors associated with the Joint Commission NPSGs.

Methods: Station design: A station was designed surrounding the insertion of a central line in a patient in an intensive care unit. The scenario included incomplete hand-offs and unlabelled medication vials as well as all equipment necessary to ensure proper patient identification and infection prevention to test thirteen behaviors associated with four NPSGs (1,2,3, and 7 from 2009 and 2010) as well as the Universal Protocol. Testing: All testing was performed in our hospital's simulation center. The subjects were incoming interns, from all disciplines, completing basic skills training during intern orientation. All interns received an hour-long didactic on central line placement prior to participating in the station. Data Acquisition: All testing sessions were videotaped resulting in 12.7 hours of tape. Two reviewers watched the videos and behaviors were independently scored on a standardized score sheet as 'demonstrated', 'incompletely or incorrectly demonstrated', or 'not demonstrated'. Data Analysis: Behaviors were assigned point values and tabulated for all trainees. Kappa coefficient of reliability was used to assess inter-rater reliability.

Results: 111 of 149 interns (74.5%) were tested using the simulation station. The average time needed to complete the station was 6.9 minutes (SD 1.8; range 3.5-12.6). The maximum score attainable for the station was 26. The average intern scored 9.5 points (SD 4.7; range 2-20; mode 8). The inter-rater reliability of the two raters measured at 0.9. Interns most frequently requested chlorhexidine to sterilize the patient's skin (98.2% of interns demonstrated); identifying an unlabelled medication vial as inappropriate was the most frequently missed item (8.1% of interns demonstrated).

Discussion/Conclusion: Behaviors surrounding tenets meant to protect patient safety and ensure quality patient care can be measured using a single-station OSCE. The OSCE designed to this end at our institution is simple to set up, is discriminating, and is reliable. Overall, using simulation to test behaviors associated with the NPSGs may be a desirable adjunct to the traditional simple knowledge-based tests currently used.

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FEASIBILITY AND IMPACT OF AN INTERNATIONAL FELLOWSHIP IN MEDICAL SIMULATION

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Introduction

Operating and directing a medical simulation center is a complex task. Aside from accreditation organizations that provide guidelines, there is no clear road map for developing, operating and delivering effective educational programs using simulation. Besides encountering the typical hurdles of cost and space, international healthcare organizations, especially those in developing countries, often have additional challenges due to limited mentoring opportunities and limited availability of industry support.

Hypothesis

A six week intensive fellowship in medical simulation can effectively introduce international physicians to the principles of adult learning theory, curriculum development, educational assessment, simulation center operations, equipment programming and maintenance, as well as the necessary business and leadership infrastructure to be successful.

Methods

Four physicians from SRM Medical School and Hospital in Tamil Nadu (Kancheepuram District), India attended a six week intensive fellowship at a hospital-based interdisciplinary simulation center. At its conclusion, each participant presented a simulation program developed during the fellowship to faculty; receiving constructive feedback for improvement. At six months, participants were surveyed on their simulation activities and the status of their simulation center development.

Results

All participants received instruction in center operations and administration (35 hours), curriculum development (44 hours), observing and participating in existing programs (58 hours), leadership development (12 hours) and educational research (12 hours). Each fellow prepared a simulation-based curriculum and assessment tools that met the standards set by the faculty. Six months following the fellowship, participants reported successfully teaching nine Basic Life Support Courses (20 learners per course), two Advanced Critical Life Support Courses (40 learners per course), and one airway course (25 participants). They have developed policies and course manuals for BLS, ACLS and their Airway courses. Educational programs in development include Code Blue training for ICU staff, ACLS for all nursing staff, and extending BLS, ACLS and Airway to all incoming interns. They have received institutional support for their programming and have begun to entrench their programs into the hospital and medical school systems. The main mechanism in which they have been able to do this is through team presentations on simulation to the major clinical departments and stakeholders.

Discussion/Conclusion

An international fellowship in medical simulation is both feasible and beneficial. This fellowship successfully prepared novice, but motivated, international physicians to implement a simulation education program at their institution.

EFFECTIVENESS OF A COMPREHENSIVE SIMULATION CURRICULUM FOR OBSTETRICS AND GYNECOLOGY RESIDENT SKILL DEVELOPMENT

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Purpose: To develop a comprehensive year-round simulation curriculum for obstetrics and gynecology residents and to measure learner perceptions of how the curriculum improved their knowledge and met their learning goals.

Methods: A differentiated simulation based curriculum, including skills in both gynecology and obstetrics, was developed and delivered as part of the technical skills curriculum of an integrated academic residency training program. Twenty four sessions were taught over a 12 month academic year. Course topics included basic and advanced skills, elements of routine and emergency care including: laparoscopy, hysteroscopy, knot-tying, suturing, normal vaginal and cesarean section delivery, episiotomy repair, operative vaginal delivery, vaginal breech delivery, family planning, circumcision, postpartum hemorrhage management, surgical teaching, and team training. Residents were surveyed on a five-point Likert scale on the courses impact on their understanding of the surgical procedure and skills, as well as whether the course met their learning needs. Results were aggregated by session. Not all residents participated in all sessions, but evaluated the sessions they did attend.

Results: Twenty-two learners responded to the end of the year evaluation of the simulation curriculum. Twenty-four teaching sessions were held in 2008-2009, with total instruction time of fifty hours. Forty-one percent (10/24) of the sessions focused on obstetrical skills and procedures and 66% (16/24) sessions were gynecologic specific skills or procedures. These sessions all included didactic instruction and hands on teaching with deliberate practice of the targeted skills. There were 12 faculty course directors and 18 additional faculty served as course facilitators. Of these sessions, "Family Planning Simulation" including vacuum aspiration and family planning emergencies was the highest rated in learner perception of improvement of skills and needs met (4.80, 4.80). The second highest session was the PGY 2 specific "Obstetrics Emergency Teamwork and Communication Training" (4.75, 4.75). "Neonatal Resuscitation" was the lowest rated session by the learners (3.11, 3.00), but still felt the session improved their understanding of the skill.

Discussion: A comprehensive simulation curriculum for obstetrics and gynecological surgical skills is feasible in an academic teaching center. From a learner's perspective, this curriculum can improve skill and procedural knowledge as well as meet developmental goals.

EFFICACY SURVEY OF SIMULATION-BASED EXPERIENCES IN A HARVARD MEDICAL/DENTAL SCHOOL INTRODUCTORY COURSE

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Category: Poster Presentation - Simulation

Introduction: The utility of simulation in preclinical medical education has been explored extensively over the past decade at Harvard Medical School, however the impact of very early simulation exposure (i.e., first week of dental and medical school) has not been well characterized. The authors hypothesize that simulation-based clinical encounters integrated into an introductory medical and dental school course will enhance the preclinical student experience. This study was designed to assess student perceptions of overall utility of deploying simulation exercises in the first week of medical or dental school. We sought to better understand how simulation might enhance student self-efficacy, advance core educational objectives, and benchmark student perceptions of professionalism. Overall, we hoped to gain a better understanding of student perceptions of the overall learning experience, and to assess their willingness to apply new knowledge and skills.

Methods: This is a descriptive study based on a post-participation survey designed to evaluate the two-day simulation component of the Introduction to the Profession (ITP) course. The survey is based on the Kirkpatrick model for evaluating training programs, which describes four levels of learning, ranging from student reaction through changes in actual practice. All participants had just matriculated as first year Harvard medical and dental school students, were enrolled in ITP course, and participated in required simulation sessions during this course. Volunteers were sought from enrollees in the course. An anonymous paper based survey was used to collect information. In addition to baseline survey data collection, secondary analysis will be performed to analyze the difference in satisfaction between students who had introductory hospital experiences scheduled prior to simulation (both coordinated as part of the two-week ITP curriculum), those who had simulation scheduled prior to their hospital experience.

Results: A total of 198 dental and medical students participated in two days of intensive simulation sessions as part of the ITP course encompassing four cases of acute respiratory and cardiovascular emergencies. Of all students, 183 completed the survey (response rate 92.4%). Medical students represented 80.5% of respondents, with dental students comprising 19.5 %; 50.5% were male and 49.5% were female. Preliminary findings indicate that there were no significant differences in student perceptions of learning experiences based on gender, student type, undergraduate major, or order of educational experiences within the course. Full analysis is pending.

UTILIZATION AND RELIABILITY OF MEDICAL SIMULATION SCENARIOS TO ASSESS LEADERSHIP STYLES DURING TRANSITIONS OF PATIENT ACUITY

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Introduction: Effective Leadership is critical in the management of acute and sub-acute clinical scenarios. The Situational Leadership Model¹ purposes that the best leader is one that can change and adapt leadership style depending on the level of understanding and experience of the followers, as well as other factors such as the situational acuity. This model appears to be applicable to the teaching hospital setting, as team leaders must balance providing optimal patient care with educating junior team members. Simulation provides a mechanism in which we can observe changes in leadership styles during changes in patient acuity.

Hypothesis: Our aim is to assess the applicability and reliability of defining leadership styles by employing the Situational Leadership Model to simulated hospital floor clinical scenarios.

Method(s): Small groups of medicine residents participated in a scenario with a patient suffering from respiratory failure or a patient suffering from complete heart block. Each scenario was based on an actual patient event, and was chosen because the patient's level of acuity fluctuates based on both the team's performance and elapsed time. Video recordings of the simulations were evaluated for acuity using the ESI v.3 scale and divided into short clips for analysis. A purposeful sample of five to eight clips; at least one clip for every acuity level and change of acuity level during the scenario, was selected to be analyzed by two physician raters for leadership style. Physician raters participated in a training session and coded the leadership style as directing, supporting, coaching, or delegating style as described by the Situational Leadership model. Results were compiled for descriptive statistical analysis. Inter-rater reliability was determined using a weighted kappa coefficient.

Results: 114 residents, nurses and medical students participated in 20 simulation sessions during Integrated Teaching Unit (ITU) Medicine Ward Rounds. The average scenario was from 9:51 to 20:34, with a mean of 14:53. 109 clips were independently reviewed by the two physician raters. Table 1 shows the leadership styles that were observed during times of acuity change; the most dominant style being supporting (38.02%). The average acuity of the scenarios was 2.73 (range 2 – 4/ 5 pt scale). There was a high level of inter rater reliability between the two raters ($r = 0.81$).

Discussion/Conclusion: Applying the unique framework of the Situational Leadership Model, we were able to reliably identify leadership styles during varying levels of patient acuity. By standardizing the level of experience of both leaders and followers through simulation, we can also begin to understand and observe the relationship between effective leadership strategies and patient outcomes. Additional research is needed to determine whether teams provide better care if the leader displays a certain leadership style for a certain level of acuity.

¹ Hersey, P., & Blanchard, K.H. *Management of organizational behavior: Utilizing human resources* (6th ed.). Englewood Cliffs, NJ: Prentice Hall, 1998. Print.

MEDICAL AND TEAM TRAINING IN THE PEDIATRIC INTENSIVE CARE UNIT THROUGH A MULTIDISCIPLINARY, IN SITU SIMULATION PROGRAM

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Category of submission: Poster Presentation - Simulation

Background: Historically, the MGH Pediatric Intensive Care Unit (PICU) staff conducted weekly mock codes to teach residents to manage pediatric emergencies. The exercises utilized a simple mannequin in the PICU or an off-site interactive mannequin. Other members of the PICU team occasionally participated, but an interdisciplinary approach was not well-developed.

Instructional Method: In 2010, PICU faculty and staff reconfigured the program in collaboration with the new MGH Learning Laboratory team to develop a multidisciplinary, truly *in-situ* PICU program. This new approach allows core members of the care team – nurse, pharmacist, physician, and respiratory therapist – to manage cases together in exactly the same environment in which they practice. Cases are developed with input from leadership from each discipline, and each session is accompanied by a list of core learning objectives. Scenarios are often developed based on the current PICU patient census, e.g. a simulated case of intracranial hypertension held when the PICU is caring for a child with traumatic brain injury. This reinforces the lessons learned at the bedside and allows the team to rehearse for potential critical events that may arise and to reflect on their teamwork. The program creates a realistic environment to more fully engage participants physically, conceptually and emotionally. An interactive mannequin is employed that can cry, breathe, generate vital signs, pulses, heart and breath sounds and respond to interventions. Participants use the same equipment they use in a real situation. They also learn when and how to obtain consults, e.g. surgical airway team, ECMO. Facilitators stay out of sight during the case, and observers watch the exercises from a conference room via live video streaming. Participants are asked to act as they would in real life, such as performing needed procedures, drawing up medications and using the code cart.

Early Experience: Simulation cases occur weekly. The simulated case and debriefing last one hour. A trained PICU facilitator acts as the primary debriefer and leads an interactive discussion focusing on self and team reflection, analysis and synthesis of information to improve performance. Leadership from nursing, pharmacy and respiratory therapy routinely observe cases and participate in the debriefings. Teaching points encompass medical management and principles of crisis resource management. When possible, the resident curriculum includes a lecture on a given topic in advance of the simulated case. Reading materials are disseminated to the participants via email immediately after the exercise. Following the debriefing, an expert in medical simulation and education debriefs the debriefer. The goal of this meeting is to continue honing the primary facilitator's teaching skills. To date, we have conducted 56 *in situ* cases in the PICU with over 300 participants, including pediatric and emergency medicine residents, PICU fellows, respiratory therapists, pharmacists, nurses, social workers, chaplains and unit administrative support staff.

DEVELOPING A NEW HMS COURSE AND CLERKSHIP REVIEW PROCESS

Jonathan E. Alpert, MD PhD¹, Elisabeth Peet MA², and Ed Krupat PhD² on behalf of the HMS Course and Clerkship Review and Evaluation Committee

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Category: Poster Presentation – Assessment (or Undergraduate Medical Education)

Assessment of the curriculum and individual courses is an LCME requirement of all medical schools. The way in which this responsibility is carried out varies widely; there is a paucity of data on comparative approaches to medical school course review. An ideal process would arguably be one that is substantive yet feasible, collaborative yet objective, serves both formative and summative functions, and meets the expectations of medical school leadership and the LCME. This poster presentation describes a new format and process proposed for ongoing course and clerkship review at HMS. The Course and Clerkship Review and Evaluation Committee (CCREC) has been established this year as a standing subcommittee of the Curriculum Committee with the purpose of providing systematic assessments of all required courses and core clerkships in the New Integrated Curriculum at HMS as well as each of the four central programs of the Principal Clinical Experience. The CCREC will also endeavor to highlight and disseminate best practices as well as identify resource needs. Membership of the committee is drawn from among course directors, co-directors and teaching faculty reflecting experience across all core dimensions of the HMS curriculum. There will be 2 or more student representatives as well as *ex officio* members from the Program in Medical Education, HMS Academy, Academic Societies, Center for Evaluation, and Registrar's Office. The current plan is to review all required courses and clerkships on a cycle of no more than once every five years. Data for review will include narrative information provided on-line by course directors, clerkship directors and clerkship committee chairs; course syllabi and handouts; and data compiled by the Center for Evaluation/PME and Senior Course and Clerkship Managers including student evaluations, grade distributions, relevant USLME Step 1 and 2 scores, shelf exam scores, and OSCE performance, and peer review of teaching where relevant. In addition, for most reviews, feedback sessions with selected students and faculty will be held. Where necessary, expert content reviewers within or outside of HMS will be invited to provide comments in addition to those of the primary and secondary reviewers drawn from the CCREC. Feedback from course and clerkship committee directors, clerkship committee chairs and other faculty will be actively sought as this new process is implemented and refined.

CORE COMPETENCY ASSESSMENT IN EMERGENCY MEDICINE: FROM DESIGN TO IMPLEMENTATION

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Category: Poster presentation, Assessment and Graduate Medical Education

Educational purpose: We describe a comprehensive core competencies assessment program designed and implemented in our residency program. The goals of the program are to provide the residents and residency program a robust feedback loop on the achievement of core competence education in Emergency Medicine.

Design: After a residency needs assessment, review of the guidelines, stakeholder meetings, and resource prioritization; we designed a comprehensive yet practical assessment curriculum. The program was centered on multiple assessments balanced between simple and complex observational tools, and repeated at different times to assess a resident's developmental progression over their training, need for resident remediation, and programmatic change. A semi-annual assessment form and online faculty evaluations were developed to document expected PGY-based core competencies and graduated responsibilities. We included in-training examinations scores and a 360-degree evaluation by resident peers and the clinical nursing leadership group. For procedural competency, we selected endotracheal intubation, central venous line placement using a procedure card to obtain real-time faculty feedback for residents. An OSCE was used for the ultrasound assessment. A resuscitation competency log was kept throughout each year. A resident portfolio was generated to keep each of these documents and for self-reflection pieces.

Methods used for implementation: We developed an implementation and roll-out plan with reasonable set deadlines to meet the intern start date at the beginning of the academic year. One of the key components was a clear and transparent communication plan for the residents, faculty, and all staff involved in assessment of the residents.

During the resident meetings we presented the program objectives and expectations, outlined any changes in the electronic data management system, distributed semi-annual assessment forms, handed out the procedure cards, and provided examples of portfolio entries. The residents also receive notification via the data management system to complete 360-degree peer evaluations. The faculty meeting focused on the global faculty ratings and the need for direct observation and constructive feedback after the selected procedures. The residents also met with the program manager to review their portfolios prior to their semi-annual review.

Conclusion: Residency programs are expected to be fully compliant and integrated with the ACGME core competency assessment guidelines by 2011. Residency programs should be proactive in designing and implementing an evaluation and assessment program that best fits their needs based on institutional strengths and available resources. We offer a comprehensive assessment program designed and successfully implemented at our institution that is sensitive to the residents, faculty, and residency program needs for accountability, growth, remediation, and improvement.

DEVELOPMENT OF A COMPUTERIZED OBJECTIVE STRUCTURED CLINICAL EXAMINATION FOR NUCLEAR MEDICINE TRAINEES

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Poster Presentation, Category: Assessment

In imaging specialties, the primary clinical output is the study report. This creates a challenge in the objective assessment of trainee performance, as the report is not the work of the resident alone. Also, faculty evaluation in the reading room is not standardized and does not assess all aspects of trainee performance. Therefore, an Objective Standardized Clinical Examination (OSCE) was developed to assess nuclear medicine trainees. The aim was to assess image interpretation and reporting within a realistic clinical context. Six nuclear medicine residents performed the OSCE. Each examinee was presented with a requisition, clinical information, and study images for 10 nuclear medicine cases. Studies were acquired from 5 hospitals and presented using Powerpoint and a limited DICOM viewer on a dual-screen workstation. 7 trainees took 3-6 h to compose a written report for each study. Anonymized reports were distributed to 6 faculty members and assessed using a 5-point scale to assess 8 different reporting tasks, including description of technique, image interpretation, clinical correlation, impression, and composition. Examinees received feedback on performance on each case and on each reporting task. Mean examinee scores ranged between 76 and 86 (out of 100). There was little correlation between trainee rank on the OSCE and performance on a standardized American Board of Nuclear Medicine in-training examination. Although there was variability among scores provided by faculty evaluators, trainee rank was similar among different evaluators. Examinees reported that written faculty comments were useful and were challenged by limitations on image manipulation and lack of voice recognition software. In summary, assessing nuclear medicine trainees with an OSCE requires careful case selection, computer support, and a well-organized system of review. With additional improvements and further validation, this method of trainee assessment may become a useful tool for assessing trainees in nuclear medicine and radiology.

FIVE-YEAR EXPERIENCE WITH MINI CLINICAL EVALUATION EXERCISE (MINI-CEX) ASSESSMENTS OF OBGYN RESIDENTS

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Objective: Resident assessment of clinical skills performance is often conducted using a summative evaluation instrument and omits individual performance observations. Originating in Internal Medicine Residency Programs, the Mini Clinical Evaluation Exercise (Mini-CEX) can facilitate assessment of residents’ clinical skills during individual patient encounters. A Mini-CEX encounter consists of a brief observation of a clinical encounter and then completion of the instrument and immediate verbal feedback to the resident. This study aimed to evaluate the feasibility and impact of five years of Mini-CEX implementation in an OBGYN Residency Program.

Methods: A retrospective review of resident performance data was conducted to evaluate the descriptive experience of both the residents and faculty who participated in completing a Mini-CEX assessment. These evaluations were conducted in the outpatient setting and were applicable to all level of trainees (PGY 1-4). Faculty had been introduced to the instrument and both the residents and faculty were made aware of this evaluation instrument and its requirement to be completed during outpatient clinics.

Results: 397 Mini-CEX evaluations were completed during January 2005 – June 2010. 49 residents had an average of 7.9 (1-25 range) evaluations completed by 47 faculty (average 8.5, 1-44 range). The Mini-CEX nine point scale instrument included seven clinical skills categories and complete results are shown in Table 1. Construct validity of the instrument is supported in the trend of increase in performance between junior and senior residents. The average observation time was 15.1 minutes (2-240 minutes) and 68% (272/397) of the encounters included verbal feedback (average 3.9 minutes, 0-15). Qualitative analysis of the written comments (50.7%, 201/397 evaluations) revealed 82.4% provided specific performance feedback related to the observation.

Conclusions: The Mini-CEX evaluation tool is feasible and provides specific performance feedback for OBGYN residents in the clinical setting. The observation encounter takes a limited and focused amount of faculty time and often facilitates immediate, direct feedback to the resident. As experts in medical education continue to look for additional tools to measure clinical skills, the Mini-CEX should be considered as an important assessment tool for OBGYN resident education.

Table 1: Summary Results of the Mini CEX Evaluation Results

	Aggregate Average Score	PGY-1	PGY-2	PGY-3	PGY-4	Not Observed
Medical Interviewing Skills	7.78 (5-9)	7.53	8.25	7.91	8.72	126 (31.7%)
Physical Exam Skills	7.80 (4-9)	7.26	8.04	7.99	8.60	83 (20.9%)
Humanistic Qualities/ Professionalism	8.10 (4-9)	7.73	8.50	8.20	8.78	3 (0.8%)
Clinical Judgment	7.90 (3-9)	7.16	8.33	8.11	8.72	27 (6.8%)
Counseling Skills	7.98 (5-9)	7.30	8.26	8.12	8.85	43 (10.8%)
Organization/Efficiency	7.88 (3-9)	7.56	8.13	8.06	8.63	16 (4.0%)
Overall Clinical Competence	7.94 (4-9)	7.35	8.37	8.08	8.72	3 (0.8%)

DEVELOPMENT OF A TEST TO EVALUATE PEDIATRIC RESIDENTS' KNOWLEDGE OF ETHICS

Presenters: Jennifer Kesselheim MD, M.Ed.* Steven Joffe, MD, MPH,* and Graham T. McMahon, MD, MMSc[#]

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Category of Submission: Poster presentation (Assessment)

Background: The Accreditation Council for Graduate Medical Education (ACGME) requires residency training programs to teach professionalism and ensure that residents “demonstrate an adherence to ethical principles.” Efforts to measure or improve outcomes of education in this area are limited by the absence of a standardized tool to measure ethics knowledge.

Objectives: We invited a range of participants, from novices to experts, to complete a test of pediatric ethics knowledge to allow for formal development of a novel assessment instrument.

Methods: We created 23 questions with a true/false format that test knowledge in several domains of pediatric ethics including: professionalism, adolescent medicine, genetic testing and diagnosis, neonatology, end-of-life decisions, and decision-making for minors. All questions and their correct answers were derived from published statements from the American Academy of Pediatrics (AAP) Committee on Bioethics. We then asked 1st year medical students, PGY-3 pediatric residents, and experts in pediatric ethics to complete the test. Eligible subjects completed the test either on paper or electronically. Item test characteristics and reliability of the instrument were evaluated. Score differences were evaluated with a Wilcoxon rank sum test.

Results: The instrument was completed by 54 participants and demonstrated good internal reliability (KR-20) of 0.73. Content validity was established by expert review. Tests were completed by 22 medical students, 26 PGY-3 pediatric residents, and 6 pediatric ethicists. Performance on the test appropriately improved with degree of expertise: median scores for medical students, PGY-3 residents and ethicists were 15 (65%, range 11-19), 19 (83%, range 14-23), and 22 (96%, range 20-23). Ethicist scores were significantly greater than medical students ($P < 0.001$) and residents ($P = 0.007$). Items most frequently answered incorrectly pertained to pediatric assent, responding to requests for genetic testing, and decision-making about life-sustaining treatments.

Conclusions: We have successfully developed a standardized instrument to evaluate residents' knowledge of pediatric ethics. The instrument is easy to administer, reliably discriminates between learners, and has identified content areas in which knowledge may be deficient. The test can help focus future educational efforts and can serve as a useful means of measuring educational outcomes.

HMS CENTER FOR EVALUATION
ANNUAL REPORT OF REQUIRED COURSE AND CLERKSHIP RATINGS
2009 - 2010

Elisabeth Peet MA, Stephen Pelletier PhD, Aga Jackson,
Darren Chernicky, Edward Krupat PhD

Poster Presentation

The Center for Evaluation Annual Report of Required Course and Clerkship Ratings, instituted in 2002, summarizes students' evaluations of PME preclinical courses, HST preclinical courses, and core clerkships at HMS each academic year. Brief comparative references are made to previous years. The report is designed to provide the Curriculum Committee and others within the Program in Medical Education with a curricular overview and information to assist with policy decisions and preparations for future offerings of the courses. The report is available to the HMS community through eCommons.

This poster will present:

1. A summary of data collected during the last academic year
2. Historical comparison of course and clerkship ratings from AY0506 – AY0910
3. Trends and findings of interest in the data

Additionally several issues relating to collection and interpretation of the data will be discussed. These include:

Response Rate: With a wide range of response rates across courses and clerkships we have yet to achieve uniformly solid response rates.

Additional Data: This report summarizes student evaluation of the curriculum. Currently these are the only course evaluation data collected. It is possible that including other perspectives (e.g. peer review, inter- and intra-course review, outcomes data) in the course and program evaluation framework could provide a greater understanding of the program.

Review of Instrument and Report: The course evaluation process relies on data collected using a standard template. As future utilization of the standard template and annual report are considered, it is important to reflect on the usefulness of both the survey template and the annual report format to consider any changes, revisions or updates that are needed to better meet the needs of faculty and administrators within the PME.

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HMS CENTER FOR EVALUATION

HMS 2009 GRADUATES IN THEIR FIRST POST-GRADUATE YEAR: PROGRAM DIRECTORS' ASSESSMENTS

Stephen Pelletier Ph.D., Ed Krupat Ph.D., Elisabeth Peet MA., Darren Chernicky,
Aga Jackson

Poster Presentation

The Liaison Committee on Medical Education (LCME) requires medical schools to collect data on the progress of their graduates (ED 46), including “assessments of program directors ... on graduates’ preparation in areas related to educational program objectives, including the professional behavior of their graduates.” The Harvard Medical School Center for Evaluation collects program directors’ assessments of HMS graduates through a brief “Follow-Up Survey” sent to each residency director, across the country and in Canada, who works with Harvard Medical School graduates in their first post-graduate year.

Program directors assess PGY-1 residents in six areas of competency: patient care; medical knowledge; practice based learning and improvement; interpersonal communication; professionalism; and, systems based practice. In addition, program directors are asked to assess how well HMS transcripts, letters of recommendation, and the Dean’s letter estimate the graduate’s performance as a resident. All data collected is stripped of all identifying information and is analyzed and reported only in the aggregate.

This poster will:

1. Summarize the data collected on 2009 HMS graduates.
2. Identify trends and findings of interest in the past three years of data concerning the HMS Dean’s letter sent as part of the residency application process.
3. Briefly discuss some of the challenges the Center confronts in collecting these data.

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MINI-CLINICAL EXAMINATION EXERCISE (MINI-CEX) AS A STUDENT ASSESSMENT TOOL IN A SURGERY CLERKSHIP: LESSONS LEARNED

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Objective: Determine the feasibility of implementing a mini-CEX in a surgery clerkship and evaluate the impact it has on students' clinical skill assessment.

Design: Retrospective review.

Setting: Academic Medical Center.

Participants: Core Surgery Clerkship students.

Interventions: A mini-CEX was scheduled for each core surgery clerkship student. Returned assessment forms were tallied. Qualitative feedback comments provided were analyzed using open and axial coding strategies. Principal components analysis identified thematic clusters. Thematic comment counts were compared to those provided via global assessments.

Main Outcome Measures: Completion rates; comment counts and themes.

Results: 137 students were eligible to complete a mini-CEX between 2005-2010; mini-CEX score sheets were available for 124 students (90.5%). Thematic clusters identified comment on the following skills: history taking, focused physical examination, fund of knowledge, clinical management skills, interpersonal skills, presentation skills, professionalism, and initiative and desire to learn. On the mini-CEX, each student received an average of 6.5 (SD 2.2) qualitative feedback comments covering 4.5 (SD 1.2) separate skills. 42.7% of these were critical, or negative. In contrast, feedback comments provided in global evaluations were fewer in number (2.9 (SD 0.6), $p < 0.001$) and constrained in scope (0.8 skills (SD 0.2), $p < 0.001$). Moreover, the majority was supportive, or positive (90.9%).

Conclusions: A mini-CEX can be incorporated into a surgery clerkship. The number and breadth of feedback comments make the mini-CEX a rich assessment tool. Critical and supportive feedback comments, both highly valuable to students, are provided equally frequently when the mini-CEX is used as an assessment tool.

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CHARACTERISTICS, CONTENT AND RELATIONSHIPS OF EFFECTIVE FEEDBACK FOR OBSTETRICS AND GYNECOLOGY TRAINEES AND FACULTY

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Objective: Effective feedback can provide reflective insight in one's own professional development in terms of clinical decision making and skills, career development and interpersonal growth.

Despite the multiple venues in medical education to facilitate feedback, little is known about the characteristics and quality of the feedback as well as the relationships between those giving and receiving feedback that make it effective. The aim of this study was to identify elements of effective feedback for both faculty and residents in order to better understand how to structure and promote feedback encounters.

Methods: A 24-item electronic survey was administered to 166 obstetrics and gynecology trainees and faculty at two Harvard Medical School teaching hospitals. The instrument included questions concerning domains of feedback received, who and when effective feedback was provided, and perceived barriers to effective feedback. Quantitative results were analyzed using descriptive statistics. Qualitative responses were analyzed using grounded theory to identify common themes.

Results: 87/166 (52.4%) of participants completed the survey. 19 (21.8%) were trainees and 68 (78.1%) were faculty. As seen in Table 1, faculty indicated feedback about performance towards goals (55.9%), from professional supervisors (63.2%), and provided separate from the action (42.7%) was most effective. Residents indicated feedback about clinical competency (94.7%), from professional supervisors (84.2%), provided in the moment (63.2%) was the most effective. Thematic codes revealed that both faculty and trainees respond best to feedback that is specific and authentic; meaning from someone who they trust and feel knows the skills and knowledge of the individual.

Conclusions: Effective feedback is characterized differently depending on an individual's stage of professional development. Junior professionals prefer specific feedback on clinical tasks and decision making in the moment of clinical care. Faculty perceive feedback as a vehicle for professional growth in a less acute setting. An essential quality for both groups is for the feedback to come from an individual that they respect; either from their own professional accomplishments or through the depth of the working relationship and viewpoint they can provide on performance.

Table 1: Effective Feedback for OBGYN Trainees and Faculty Survey Results

	Faculty (%)	Trainees (%)
Areas of feedback received:		
Professionalism	38.2	63.2
Clinical Competency	45.6	94.7
Psychosocial Issues	10.3	36.8
Communication skills	30.9	68.4
Career decisions	50.0	73.7
Performance towards goal	55.9	73.7
Received Feedback from who:		
Professional supervisors	63.2	84.2
Peers	50.0	78.9
Family	26.5	42.1
Mentors	39.7	52.6
Professional colleagues outside specialty	14.7	15.8
When did you receive the feedback:		
"In the moment"	27.9	63.2
Away from the action	42.6	57.9
Not connected with specific performance tasks	36.8	15.8
Barriers to good feedback:		
Time constraints	67.6	84.2
Uncomfortable receiving/giving criticism	77.9	94.7
Receptiveness to receiving feedback	35.3	47.4

TEACHING VALUES BY ANCIENT ALLEGORY: A TRIPTYCH

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Poster Presentation: Culture, Society and Community

Symbolism can guide the practitioner by allegorically recognizing the range of our own and our patients' values, fears and goals. It is an abstract, qualitative and literary model, to be sure – but no more so than many fanciful and creative techniques used to explain scientific concepts, such as multi-colored, artistically-rendered illustrations of the actions of nitric oxide or the lipid bilayer!

The Ancients cloaked in mystery values that were very much a part of the natural world of health care and medicine. It may be through the acknowledgement of that ancient mythology that the way is paved for us to more rigorously come to grips with these most challenging and human aspects of our craft.

In this triptych of posters – itself an allegory for the ancient Roman writing tablet with three hinged leaves – I will review values integral to medical practice: scholarship, uncertainty, and caring, personified by the Ancients as Chiron and his students, the children of Night and the children of Asklepios.

THE EARLY UNDERGRADUATE SURGICAL OBSERVERSHIP: A NOVEL RECRUITMENT TOOL FOR GENERAL AND ACUTE CARE SURGERY

Poster Submission: Culture, Society, and Community

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Background: From a peak level of interest in general surgery (GS) in 1981 (12.1% of senior medical students) to a nadir in 2001 (6.1%), fields with perceived poor “controllable lifestyles” (i.e., family and internal medicine, pediatrics and GS) have become less popular¹. Population growth and aging, as well as work-hour restrictions and stagnant size of GS residencies contribute to an increased need². In addition, the number of surgical chief residents remaining in GS is as low as 16.5%³. Creative solutions, outreach and recruitment strategies must be developed to overcome this deficit. We propose to develop an observership targeted to early (years 1-2) undergraduate students (EUS) with an interest in attending medical school.

Program Design and Structure: EUS will be recruited to participate in a two-week “observership” in surgery with exposure to a busy trauma and acute care surgery service, cardiothoracic, neurosurgery, and orthopedic services. Trauma ICU and emergency room experience will be offered. The student will spend 1-2 days of the experience in outpatient clinics and tour a busy basic science laboratory in the department of surgery. Attending and resident teaching staff with a particular interest in teaching and mentoring will be selected to provide a range of role models, with the goal of demonstrating the diversity of options when selecting a surgical “lifestyle”. **Discussion and Planned Measurements:** Student perceptions of surgery will be assessed pre- and post-visit with specific questions related to perceived prestige of GS and various surgical subspecialties. Liability issues, “controllable lifestyle”, role models, quality and cost of medical education, patient care, and family plans will be assessed. Ideally, it will be necessary to follow students through their undergraduate, medical and post-graduate education to determine if this program will increase the student’s desire to become a surgeon.

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PEDIATRIC PALLIATIVE CARE AS A VIABLE FOUNDATION FOR THE PRACTICE OF CHILD LIFE

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Poster Presentation: Culture, Society, and Community

The field of child life has recently emerged in pediatrics as another means of addressing children's psychosocial needs that accompany hospitalization. Child life work reduces the risks of children becoming traumatized by hospitalization, increases children's cooperation during invasive medical procedures, and, in general, facilitates children's accommodating to the hospital environment. The number of hospitals offering child life services has doubled since 1965, bringing the sum of child life programs in the United States and Canada to 400 (AAPA, 2006). Credentials of a certified child life specialist include, at minimum, a bachelor's degree in child life, child development, human development, or a closely related field, along with a 480-600 hour long internship under the supervision of a certified child life specialist, and finally, the satisfactory completion of the standardized certification examination.

Though child life work deals directly with themes of pain, suffering, and death, training in pediatric palliative care is not necessary for formal accreditation. This project posits that educational experience in pediatric palliative care better insures that emerging child life specialists will offer high quality care for a wide range of patients and families, especially patients experiencing chronic pain and suffering and families coping with the possibility of losing a child. Specifically, the assumption here is that the opportunity for child life students to be exposed to the interventions used by classically trained pediatric palliative care specialists and educators will significantly improve their efficacy as experts on the physical, emotional, and cognitive needs of hospitalized children.

In June of this year, the Pediatric Advanced Care Team of Children's Hospital Boston enabled such an experience for one emerging child life specialist, a Master degree student in Child development. The resulting capstone thesis was a product of structured patient care observation, daily debriefing, and written reflection. This experience and thesis reinforced our belief that by exposing child life specialists to palliative care early on in their careers, the specialties of child life and pediatric palliative care will become usefully integrated. It is our hope, therefore, that the resulting exchange of ideas might jumpstart similar collaboration with universities and child life programs outside of Harvard Medical School training programs.

A CME PROGRAM IN TRAVEL MEDICINE: 3-YEAR EVALUATION

Lin H. Chen, MD FACP^a and the ISTM Committee and Faculty* for the Travel Medicine Course

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Background

Travel Medicine is a young interdisciplinary specialty, and few continuing education programs focus specifically on this field. A survey for the International Society of Travel Medicine (ISTM) found desire for such a program among all sectors of health professionals (including MDs, DOs, nurses, nurse practitioners, physician's assistants, pharmacists, PhDs). The ISTM and the Mount Auburn Hospital co-sponsored courses from 2007 to 2009 to meet this interest.

Objectives

- To assess knowledge of course attendees using a 3-stage test
- To assess adequacy of the course in preparing candidates for the Certificate in Travel Health (CTH[®]) examination

Methods

A 2-day curriculum is developed based on the Body of Knowledge established by the ISTM using a combination of lectures, question and answer periods, mock tests, and discussion sessions. The Mount Auburn Hospital and the Georgia Nurses Association sponsored the Continuing Medical Education (CME) and the Continuing Education (CE) credits, respectively. In addition to evaluation instruments required for CME and CE accreditation, a 3-stage test was developed to assess participant knowledge at the start of the course (pre-test), at the end of the course (post-test), and several months later (late post-test). The Mount Auburn Hospital IRB granted exemption from review.

Results

The course was held in Fort Worth, Texas, in 2007 and 2008, and in Philadelphia, Pennsylvania, in 2009. The course attracted 207 attendees in 2007 (101 CME/106 CE), 161 attendees in 2008 (84 CME/62 CE), and 185 attendees in 2009 (133 CME/52 CE).

Among the CME respondents, the majority chose the course because of the topics (69%). The overall rating for the course was 4.26-4.33 (scale of 1-5, poor to excellent). Attendees rated topics to be relevant (4.67-4.83), contents up to date (4.65-4.81), sufficient time for Q&A (3.84-4.31) and interaction with faculty (4.02-4.35).

The average of aggregate scores for the 3-stage test from 2007-2009 found (on a scale of 100%): pre-test = 67.1, post-test = 88.9, late post-test = 85.2. Compared to the baseline pre-test scores, post-test scores improved by 32.5% and late post-test improved by 27.0%.

Conclusions

The Travel Medicine education program highlighted best practices and provided timely updates, and found vibrant interest. Some attendees maintained a high level of knowledge gained through the program. Assessment of the program and the retention of knowledge is possible using a 3-stage test, and can be considered for other CME programs.

*ISTM Program Committee and Faculty members include: Rebecca Acosta, Elizabeth Barnett, Michele Barry, Charles Ericsson, David Freedman, Charles Hatem, David Hill, Jay Keystone, Anne McCarthy, Susan McLellan, Nancy Piper-Jenks, Eric L. Weiss, Mary E. Wilson.

Thanks to Brenda Bagwell and Benjamin Thomsen for assistance with data and analysis.

EFFECTIVENESS OF A 90-DAY PLAN TO IMPROVE FEEDBACK TO RESIDENTS

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Poster category: Continuing Medical Education (Faculty Development)

Context: Feedback about performance is essential to learning but difficult to deliver. No single approach has consistently demonstrated positive impact.

Objective: Increase the frequency and usefulness of feedback to residents.

Design: Pre-post feasibility and effectiveness study. Resident and faculty electronic surveys in 2009, 2010; resident Web-based feedback tool. Descriptive statistics, chi square analysis, Pearson correlation. Exempted by BIDMC IRB.

Setting: Anesthesia department of an academic medical center.

Participants: All 64 faculty and 54 residents in anesthesiology at a single site.

Intervention: 90-day plan with five 45-min. collaborative faculty workshops based on prior resident/faculty surveys, with 2-group randomized crossover to MiniCEX and facilitated debriefing approaches. Feedback Wednesdays with email reminder, and weekly Web-based Anesthesia Resident Feedback Form.

Main Outcome Measure: Resident-perceived improvements in feedback frequency and usefulness. Secondary measures: Faculty-reported changes in approach and sufficiency of feedback to residents.

Results: Survey response rates in 2009 and 2010 respectively were 67%, 77% (residents); 30%, 53% (faculty). 57 online feedback tool responses were logged by 21 unique residents immediately following supervision by 34 unique faculty. 68% of resident survey respondents noted improvement in frequency and 54% noted increased usefulness of feedback, with only 2% noting any decline, since institution of Feedback Wednesdays. Frequency and usefulness were moderately correlated ($r=0.68$). 79% of faculty reported making changes in frequency, content, or method of giving feedback following workshops, and faculty perceptions of sufficiency of face-to-face feedback improved significantly from 2009 to 2010 ($p<.01$). On Feedback Wednesdays, residents rated online the feedback they received as very useful (53%), useful (33%), neutral (4%), definitely not useful (0%), or no feedback occurred (11%). Resident narratives regarding feedback results and goals span the 6 ACGME competencies.

Conclusions: We demonstrated the feasibility of a 90-day plan, including a collaborative faculty workshop series and initiation of Feedback Wednesdays, that is perceived by a majority of residents and faculty as effective in improving the approach, frequency, and usefulness of giving feedback to residents. Qualitative analysis for themes in weekly-logged resident strengths, opportunities for improvement, and goals also enables rapid program improvement cycles.

IMPLEMENTING AN EARLY MOBILITY PROTOCOL WITH RESIDENTS, NURSING EDUCATION AND PHYSICAL THERAPY FOR CRITICALLY ILL PATIENTS IN A COMMUNITY TEACHING HOSPITAL: A COMPREHENSIVE APPROACH

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Contact: kzaki@mah.harvard.edu; 857-294-8841 Category: Poster- Continuing Medical Education

Objective: To implement an early mobility protocol for critically ill patients utilizing a comprehensive multidisciplinary approach centered around an education module for medical residents and ICU staff in a community teaching hospital.

Background: Background: Traditionally, bed rest has been considered the standard of care for critically ill patients with physical therapy considered at the time of discharge. However, lack of physical therapy increases the risk of delirium, contributes to persistent and profound weakness, and is associated with a greater risk of falls. Furthermore, immobility is an independent risk for mortality. Recent research demonstrates that early mobility in the intensive care unit improves patient outcome. It reduces length of intensive care unit and hospital stays, and improves functional outcome at the time of discharge. To date, early mobility literature draws primarily from large university based programs and shows reluctance and fear among physicians and nursing staff involved in care of these patients. We present an approach for medical residents and ICU staff in a community teaching hospital.

Method: In order to implement an early mobility protocol for critically ill patients at a community teaching hospital, we developed a comprehensive approach. An interactive case based education module is at the core of this effort. This module, presented by residents to medical house officers, intensivist attending staff, critical care nursing, and physical therapists, highlights a patient case, discusses challenges associated with mobility in the intensive care unit, and incorporates video to engage the learner. Pre- and post-module questionnaires assess the participants' knowledge base and comfort with early mobility. Additional components of our comprehensive approach include a review of the literature and involving clinician stakeholders when developing the physical therapy protocol.

Assessment: Pre- and post-education module questionnaires are compared to assess the impact of the module on the learners' knowledge base and comfort level around early mobility in the intensive care unit. Outcome data from the early mobility protocol itself will include duration of mechanical ventilation, duration of intensive care unit stay, and level of function at time of discharge from the intensive care unit.

SLEEP, LEARNING, AND INTERNSHIP

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Work-in-progress Poster presentation: Graduate Medical Education

Residents must overcome sleep restriction to accomplish two primary tasks: to care for patients and to learn medicine. Decades of research suggest that overnight call among residents may harm patient care. Regarding the impact of sleep upon learning, a broad body of work in non-residents has shown that sleep after learning is essential in the retention of facts, the learning of motor skills, and the development of insight. However, the consequences of call, a sleep-depriving condition, upon learning remain unknown. We hope to assess these consequences by comparing, within Brigham and Women first year medicine residents (interns), learning across call nights to learning across noncall nights.

To assess sleep and learning in interns, we have recruited 40 interns from the Department of Medicine at Brigham and Women's Hospital. Thirteen have thusfar begun our protocol. Our design uses within-subject comparison. In the call condition, each intern learns several tasks, takes call, and is tested on these tasks several days later; in the noncall condition, the same intern learns several similar tasks, does not take call, and is tested on these tasks several days later. The tasks include a brief procedural task (the motor sequence task) known to be sleep sensitive, a memory task (visual paired associated), teaching and testing of medical procedures, and recall of and response to signout vignettes.

The assessment of learning in interns allows us to address unique questions in both graduate medical education and in neuroscience. In graduate medical education, our study addresses two fundamental areas- the first is duty hour regulation, and the second is scheduling of teaching activities. A demonstration of learning impairment associated with call would provide a novel argument for reduction or alteration of duty hours. The form of the relationship between learning impairment and hours of from training to testing would influence policies regarding nap opportunity and consecutive duty hours. Regarding scheduling of teaching, demonstration of call-related learning impairment would suggest structuring educational time to take advantage of times when trainees are sleeping more normally.

We also hope to address several gaps in the literature regarding sleep and learning. First, despite hundreds of papers assessing sleep and learning, only one addresses occupation-specific tasks of sleep and learning. Second, almost all sleep and learning studies utilize subjects spending time in a sleep lab or taking time off from work to complete a study. The effects of stressors, stimuli, distractions, and competing learning are unknown. Third, residents typically obtain brief bursts of sleep. There is evidence that daytime naps partially consolidate procedural and declarative learning. However, compared to lab subjects taking daytime naps, residents attempting to sleep at night experience different circadian influences, more variable sleep opportunity lengths, and greater sleep pressure. These differences likely affect sleep structure and may affect learning.

INTEREST IN AND PERCEIVED BARRIERS TO FLEXIBLE TRACK RESIDENCIES IN GENERAL SURGERY

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Category of Submission: Poster Presentation, Graduate Medical Education

Objective. The American Board of Surgery now permits general surgery residents to complete their clinical training over a six year period. Despite this new policy, the level of interest in flexible scheduling remains undefined. We sought to determine why residents and program directors (PDs) are interested in flexible tracks and to understand implementation barriers.

Design. National survey.

Setting. All U.S. general surgery residency programs that participate in the Association of Program Directors in Surgery listserv.

Participants. PDs and categorical general surgery residents in the United States.

Main Outcome Measures. Attitudes about flexible tracks in surgery training. A flexible track was defined as a schedule that allows residents to pursue non-clinical time during residency with resulting delay in residency completion.

Results. Of the 748 residents and 81 PDs who responded, 505 residents and 45 PDs were supportive of flexible tracks (68% vs. 56%, $p=0.03$). Residents and PDs were both interested in flexible tracks to pursue research (86% vs. 82%, $p>0.05$) and child-bearing (69% vs. 58%, $p>0.05$), but residents were more interested in pursuing international work (74% vs. 53%, $p<0.005$) and child-rearing (63% vs. 44%, $p<0.05$). 65% of PDs believe flexible tracks would make residency scheduling too complicated. While 71% of residents believe that residents who participate in a flexible track would not be respected as the equal of other residents, only 17% of PDs would not respect residents who participated ($p<.0001$).

Conclusions. Residents and PDs differ in their reasons for supporting flexible track residencies, and in their perceived barriers to implementation. These findings have important implications for the new policy of the American Board of Surgery.

ENHANCING EMPATHY IN RESIDENT PHYSICIANS: A PILOT STUDY

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Statement of Problem and Objectives of Intervention: Empathic and relational skills among physicians are significant factors in predicting quality of care, patient safety and satisfaction, and in decreasing vulnerability to malpractice claims. Studies demonstrate that the degree of physician empathy and rapport often plays a significant role in improving outcomes in clinical medicine. Medical residents, however, are not sufficiently trained in this regard in medical school, and innovative post-graduate programs do not exist to teach the management of difficult interpersonal interactions in health care.

Goal of the Project: To determine whether an innovative relational skills training protocol grounded in the neurobiology and physiology of empathy can improve physicians' empathic and relational skills.

Description of Intervention: Eleven resident physicians at the Massachusetts Eye and Ear Infirmary were given an empathy and relational skills training course consisting of three 60-minute modules over a six-week period in January 2010. Residents' empathic and relational skills were measured before and after the training using five self-report assessment instruments and patient ratings using the Consultation and Relational Empathy (CARE) measure from resident outpatient clinics.

Findings: Pre-post changes on all self-report measures were in the predicted direction, and even with the small sample size, two of the changes were statistically significant. Residents showed significant improvements in their knowledge of the neurobiology and physiology of empathy ($p=.008$) as well as in their self-reported capacity to empathize with their patients ($p=.01$). All participants reported that they were likely to apply the skills and concepts to clinical practice. Although the small sample size and lack of a control group limit the generalizability of the findings, this pilot study strongly suggests that empathic skills can be taught to resident physicians.

Future Research: Our group is currently embarking on a randomized controlled trial to test our empathy training protocol in medical, surgical and psychiatric residents with a larger sample size and adequate controls. If this replication is successful, it would confirm that empathic and relational skills can be taught to resident physicians. Future research could address whether this training program leads to better medical outcomes and fewer medical malpractice claims. Additional research could address whether the improvement in empathy and relational skills is long-lasting, or whether booster sessions might be necessary to maintain these gains. Finally, future research could focus on determining which elements of the training are the most effective in promoting positive change to fine-tune the training for maximal effect and efficiency.

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ALTERNATING CALL/ELECTIVE SCHEDULE (ACES): RESTRUCTURING THE BIDMC MEDICINE RESIDENCY

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Background: New Residency Review Committee (RRC) regulations suggest that programs design schedules for ambulatory training that minimize conflicting inpatient and outpatient responsibilities. The internal medicine program at Beth Israel Deaconess is a founding program of the RRC's Education Innovation Project (EIP). Several EIP programs separated inpatient and outpatient resident work removing continuity clinic from inpatient blocks and expanding continuity clinic in elective periods. Our current efforts in EIP build upon other program restructuring to create our own unique model.

Methods: Our intervention (ACES) is focused upon the PGY2 and PGY3 years of training. We divided our residents into two groups (alpha and beta) who have complementary schedules through the academic year. Alphas begin the year on the inpatient side with no continuity clinic followed in 3 weeks by a continuity and elective based experience. Betas start on continuity/elective and move to inpatient work. Each non-call block is further divided into 2 weeks of elective and one Practice Week. During Practice Week, residents have 5 sessions of outpatient continuity practice. During the other two non-call weeks, residents have their weekly continuity clinic(s). The remaining half of the resident Practice Week schedule is devoted to curriculum delivery, quality measurement and improvement activities, and other time intensive experiences including home visits, and multidisciplinary meetings.

Results: End of year evaluations were completed by 143 of 154 (93%) 2008-2009 housestaff in the year prior to the intervention and 135 of 157 (86%) 2009-2010 housestaff after one year of the intervention. The vast majority (90%) of 2009-2010 JARs and SARs felt that ACES was superior to our previous model. Before the intervention, 71% of JARs and SARs disagreed that the system minimized inpatient/outpatient conflict; after the intervention, 97% of JARs and SARs agreed that the system minimized this conflict. The degree to which housestaff agreed that the system promoted safe care improved from 35% to 87% in inpatient care and 41% to 75% in the outpatient setting. The learning experience improved in both settings. Before the intervention, 27% agreed that we provided the best inpatient learning experience improving to 82% agreement. Agreement that we provide the best outpatient learning experience improved from 34% to 67%. There was increasing agreement that the system promotes a continuous healing relationship with a panel of primary care patients from 62% to 75%. Those expressing some or a lot of stress declined from 81% to 74% on inpatient wards and 79% to 74% in clinic.

Conclusions: Our experience to date with this reorganization has been extremely positive. As stated by one resident, "...my focus can be where it is needed: on my primary care patients when I am in the ambulatory world, and on my new admissions and my interns when I am on call in the hospital. It creates more satisfaction with both jobs." As we gather additional experience, we will look at patient panel size, continuity versus episodic visits during weekly versus practice week sessions, and faculty feedback.

A NEW CLINICAL CURRICULUM FOR DERMATOLOGY RESIDENTS: FROM CONCEPTION TO IMPLEMENTATION

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ABSTRACT: submitted as a poster presentation (category: “Graduate Medical Education”)

Background: In 2008, the Executive Committee (EC) of the Harvard Dermatology Residency Program approved an expansion plan that would increase the number of residents in the dermatology and medical-dermatology programs from 18 to 30. This necessitated a department-wide reformulation of clinical rotations. Equivalency of experience, as required by the Accreditation Council for Graduate Medical Education (ACGME), had hitherto been guaranteed as each resident had rotated through every available rotation. With the increasing complement of residents, the overall design of the curriculum needed to change to accommodate the ACGME requirement. Furthermore, the overall structure of the pre-existing program included month-long rotations, which residents and teaching faculty were critical of as they provided limited longitudinal experiences and were loosely planned according to the residents’ levels of training. Finally, increased dedicated elective time to focus on concentrated clinical and research endeavors was warranted given the Department’s overall goal to prepare trainees for life in academia. Overall, a revamped, educationally-sound graduated dermatology experience was essential.

Goals: Our primary goals were:

- to follow best practices for curriculum development
- to ensure that the process be inclusive of all stakeholders
- to create a curriculum of maximum educational value that would address the deficiencies of the pre-existing curriculum
- to evaluate the curriculum according to measurable educational outcomes

Process: Kern’s six steps of curricular development were followed.¹ Focus groups comprising teams from the three major hospitals and chief residents were held to assess needs and to generate preliminary models. The Department’s Education Committee (EdC) convened several meetings, including a meeting open to all teaching faculty and residents, to obtain a targeted needs assessment, to rework the departmental vision, and to determine goals and objectives of the curriculum, teaching resources, and educational strategies. A curricular subcommittee chaired by the authors of this poster then turned the outline into a viable, coherent plan that ensures equivalency of experience at all rotation sites, graduated experience, and four months of dedicated clinical and research elective time. The product of subcommittee work was presented to and approved by the general EdC and the EC.

Results: Based on an expansion plan and critical feedback, a multi-institutional team designed a new curriculum for the Harvard Dermatology Residency Program. Transition to the new curriculum began in July 2010 and will be fully implemented by 2012.

Next steps: Active feedback and evaluation of the curriculum will be sought from both faculty and residents going forward. Measures of success include an improvement in trainee and teacher satisfaction, continued high pass rates on in-service and final board examinations, and an increased number of resident graduates entering and remaining in academic medicine.

¹ Kern DE, Thomas PA, Hughes MT. Curricular development for medical education. A six-step approach. 2009, 2nd Ed. Johns Hopkins University Press, Baltimore.

A NOVEL AMBULATORY NEUROLOGY EXPERIENCE FOR INTERNAL MEDICINE INTERNS

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Introduction: We describe a novel ambulatory neurology experience for internal medicine interns implemented at the Brigham and Women's Hospital (BWH) in academic year 2009-2010. Prior to this, there was no mandatory formal neurology experience in the internal medicine residency.

Curriculum: The experience consisted of a mandatory two week ambulatory rotation during the intern year for all internal medicine interns who were not in the preliminary program. Two general neurology clinics were created at BWH and the Jamaica Plain VA where interns were able to see their own patients with precepting by a staff neurologist. Interns attended one of these clinics for each week of the two week rotation. Interns also spent one to two clinic sessions in a movement disorders clinic and/or a multiple sclerosis clinic. At the end of their rotation, interns participated in a teaching session on the neurologic exam led by a neurology senior resident. The session included an observed neurologic examination. Similar to other ambulatory rotations, interns continued to have their primary care continuity clinic, other outpatient experiences and teaching conferences.

Assessment: Interns were surveyed regarding the neurology experience near the end of the year and asked to rate the experiences as excellent, good, fair and poor. The response rate was low- 15 out of 55 interns. Interns found a benefit to seeing general neurology patients, these clinics were rated as excellent by 29% and good by 59% of the interns. For the multiple sclerosis and movement disorders clinics, interns specifically addressed the prior lack of exposure to these conditions in their comments. Sixty-two percent rated the multiple sclerosis experience as good or excellent, 100% rated the movement disorders experience as good. The neurologic exam teaching session was rated as excellent by 67% of the interns. All the interns felt the session improved their comfort with the neurologic exam- 60% felt it somewhat improved and 40% felt it greatly improved their comfort with the exam. Despite the popularity of the individual experiences, 67% of the interns rated the ambulatory experience as fair, whereas 33% rated it as good. None of the experiences were rated as poor. Comments often desired more clinics and structured teaching.

Conclusion: The neurology experience is continuing academic year 2010-2011. Planned changes include the addition of more neurology clinics, such as a rehabilitation experience, and an online curriculum through the American Academy of Neurology. The neurology teaching session has been expanded. We will survey the residents immediately after their neurology experience with the hopes of increasing the response rate. Overall, this program provided internal medicine residents with exposure to outpatient neurologic issues that were not previously addressed in the residency and helped improve their comfort with the neurologic exam.

USE OF A SPACED EDUCATION CURRICULUM TO PROMOTE PREVENTION, RECOGNITION, AND TREATMENT OF OSTEOPOROSIS IN AN INTERNAL MEDICINE RESIDENTS' CLINIC

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Purpose: Osteoporosis is a common condition associated with morbidity and mortality. Residents' knowledge and competence in diagnosing and managing osteoporosis is deficient. We have designed, and aim to implement and evaluate, a novel curriculum to help residents become competent in osteoporosis care. Our curriculum will deliver the content by email using spaced education, a method that delivers short questions and explanations over time, with incorrectly answered items recycled with an increased frequency.

Methods: Interns and junior residents with continuity clinics in practices using electronic medical records will be randomized to receive either the spaced education intervention or an augmented standard curriculum. Those in the intervention arm will receive an email every 3 days containing 2-3 multiple choice questions that will be validated prior to delivery. The curriculum duration will vary by user between 3 and 6 months. The standard curriculum consists of one hour lecture; these residents will also have online access to the multiple choice questions and answers used in the intervention arm.

Outcomes: The primary outcome will be the fraction of eligible women appropriately screened for osteoporosis. Secondary outcomes will assess management of patients with osteopenia and osteoporosis using chart reviews of the residents' panel of women aged 60 and older including a composite score incorporating rates of FRAX score calculation, vitamin D assessment, and appropriate bisphosphonate prescription. Knowledge acquisition will be assessed using a 20-question multiple choice test six months following the start of the intervention. Knowledge retention will be assessed using a separate multiple choice test one year following the start of the intervention.

Power and Feasibility: We performed a chart review of 34 eligible patients from the panels of five end-of year interns. In this cohort 70% of eligible patients received appropriate bone density screening and were prescribed appropriate calcium supplementation. Only 11% osteopenic patients had a FRAX score calculated and 79% of patients were inappropriately maintained on calcium carbonate supplementation despite concurrent use of proton pump inhibitors. We estimate that 46 resident-participants will be required to demonstrate a 15% difference in screened fraction and anticipate 54 resident-participants.

LEARNING STRATEGIES AND BEHAVIOR CHANGE TO REDUCE SHARPS INJURIES

Works-in-Progress Abstract

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Context: Among 99 Massachusetts hospitals in 2008, 3,126 sharps injuries occurred. Physicians sustained 35% of injuries; nearly half of these were incurred by interns and residents. Sharps injuries occurred most frequently in operating rooms (32%). At BIDMC, 50 perioperative needlesticks were reported in a recent 22-month period. Underreporting is likely. While promising processes to reduce perioperative sharps injuries have been proposed, numerous barriers exist to rapid testing and implementation. Additionally, current intervention approaches often fail to include strategies with demonstrated effectiveness in promoting learning and behavior change.

Objectives: (1) Identify when, how, and to whom intraoperative injuries occur; (2) increase use of safe passing zones for sharps; (3) reduce intraoperative sharps injuries by using systematic, iterative intervention design techniques and application of theories of social cognition and social networks.

Design: Single-site, before-and-after study using direct observation of cases and brief, anonymous electronic surveys of clinicians and staff.

Setting: BIDMC operating rooms

Participants: Residents, fellows, faculty, and operating room clinical staff.

Intervention: The intervention will be informed by retrospective data review, site visits, key informant interviews, an anonymous pre-survey, and theories of social cognition and social networks to overcome previously reported barriers to learning and behavior change. The intervention will be pilot-tested and refined iteratively during a 90-day intervention period.

Main Outcome Measure: Percent of a sample of randomized, observed operative cases in which a safe passing zone is implemented in the month following a 90-day intervention. Secondary measures: Rate of sharps injuries reported both anonymously and to the hospital before use, during use, after use, and before or during disposal; clinician adverse events (e.g., seroconversion, anxiety, prophylaxis treatment and reactions).

Results: TBD.

Conclusions: If successful, the impact of this study will be to (1) improve resident and fellow competencies in patient care, medical knowledge, and practice-based learning and improvement; (2) increase safe practices in the operating room; (3) reduce sharps injuries; (4) provide a replicable model of learning and behavior change to reduce injuries in other sites.

CREATING A CURRICULUM IN INTERNAL MEDICINE FOR PODIATRY INTERNS

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Background: In the [United States](#), podiatric medicine and surgery is practiced by a licensed Doctor of Podiatric Medicine (DPM). During their post-doctoral training, podiatry residents rotate through all main areas of medicine (**Appendix A**), including internal medicine during their intern year. Because today's podiatrist requires an ever-expanding working knowledge of general medicine, this rotation was developed to meet the need of training podiatrists who provide care to patients with a wide variety of medical illnesses while on the wards. Prior to the 2009-2010 academic year, this 4-week rotation was case-based with no formal curriculum, goals or objectives.

Project Goals: I developed a 1-month up-to-date curriculum in internal medicine for podiatry interns at Cambridge Health Alliance (CHA) who rotate on the Hospitalist Service. The goals of this curriculum are two-fold: (1) to increase the knowledge base in common internal medicine problems, and (2) to develop the history-taking, physical examination, diagnostic and clinical management skills.

Description of Target Audience, Setting, and Participants: Two podiatry interns rotate during separate 4-week rotations while on the Hospitalist Service. Each week a hospitalist is assigned an intern to oversee and co-manage up to four patients at a time.

Needs Assessment: To further clarify the educational needs of the podiatry interns during the academic year 2009-2010, I surveyed 6 podiatry residents, 4 of whom have rotated through internal medicine at CHA in the past two years (**Figure 1**).

Educational strategies: Curricular objectives (**Figure 2**) were based upon the needs assessment survey. Interns managed assigned patients while on the wards; attended didactic conferences, radiology and Grand Rounds alongside internal and transitional medicine residents; attended and presented at the Medicine in Podiatry lecture series; and, lastly, did assigned readings and homework assignments involving answering clinically relevant questions.

Evaluation instruments: A designated hospitalist observed each intern perform a comprehensive medical history and physical exam using a checklist related to history-taking and diagnostic skills (**Figure 3**). The rotation coordinator is responsible for summarizing formative evaluations from each hospitalist based on each intern's progress.

Results: Creating an internal medicine-based curriculum with clear goals, objectives and evaluation processes helped podiatry interns increase their knowledge base and hone their clinical and diagnostic skills.

Future directions: Future directions in developing the curriculum will involve training hospitalists in implementing curricular and assessment tools. In response to the interns' feedback, another future endeavor will involve structuring more didactic sessions to discuss assigned readings during the rotation as well as developing a year-long lecture series for all the podiatry residents. We plan to expand the needs assessment by mailing out surveys to practicing podiatrists and will refine our assessment of knowledge with pre- and post-rotation multiple choice tests.

AN EDUCATIONAL INTERVENTION TO INCREASE PREVENTIVE HEALTH SERVICES PROVIDED TO ADOLESCENTS AND YOUNG ADULTS BY INTERNAL MEDICINE PHYSICIANS

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Introduction: Internal medicine (IM) physicians often report inadequate preparation to care for adolescent patients as they transition to young adulthood. Fostering internists' understanding of preventive care guidelines and enhancing their communication skills regarding sensitive topics are essential for ensuring the health of adolescent and young adult patients. We aimed to create, deliver, and evaluate an educational intervention designed to increase Brigham and Women's Hospital (BWH) Internal Medicine (IM) residents' ability to care for adolescent and young adult (AYA) patients.

Methods: The BWH research patient data registry was used to identify the number of patients ages 16-26 seen in residency affiliated clinics by PGY2 and PGY3 IM residents in the year prior to the educational intervention as well as the proportion of these patients screened for *Chlamydia*, HIV, alcohol misuse, and depression. Half the PGY1 and PGY2 residents will be randomly assigned to participate in an interactive workshop consisting of a presentation of preventive care guidelines and practice interviewing adolescent standardized patients. All PGY1 and PGY2 residents will be surveyed before and after the intervention period regarding their comfort taking sexual, substance use, and mental health histories and confidence in their ability to identify and counsel AYAs with sexually transmitted infections (STIs), substance abuse, and depression. The hospital research patient data registry will be accessed six months after the intervention to assess for differences in the screening rates for *Chlamydia*, HIV, alcohol misuse, and depression in patients ages 16-26 seen by residents in the intervention and control groups.

Results: During the baseline study period from July 2009 through June 2010, 117 IM residents saw 523 unique outpatients ages 16-26, representing 8.5% of all outpatients seen by the residents. Seventy percent of the patients had documented alcohol screening, 35% had documented depression screening, 21% had HIV testing, and 40% of females had *Chlamydia* testing. Eighteen PGY3 residents were surveyed to pilot the assessment instrument. More residents reported that they were somewhat or very comfortable taking a sexual history (78%) or a substance use history (67%) than a mental health history (28%) from AYAs. More residents reported that they were somewhat or very confident in their ability to identify and counsel AYAs with STIs (56%) than with substance abuse (6%) or depression (22%). The educational intervention for PGY1 and PGY2 residents is currently in progress.

Conclusions: Adolescent and young adult patients comprise an important population of patients seen by IM residents in the outpatient setting. Current screening rates for *Chlamydia*, HIV, alcohol abuse, and depression are suboptimal. Internal medicine residents appear to be most comfortable with sexual health topics and least comfortable with substance use or mental health concerns in this population. The educational intervention is expected to improve IM residents' confidence in their ability to care for adolescents and young adults and increase their adherence to preventive care guidelines.

THE EFFECT OF EMERGENCY MEDICINE RESIDENCY TRAINING ON RESIDENT PRODUCTIVITY IN THE EMERGENCY DEPARTMENT

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Background: Resident productivity reflects the number of patients that a trainee can manage. Recent publications suggest that resident productivity in the Emergency Department (ED) decreases throughout training and residency training in Emergency Medicine (EM) does not improve resident productivity compared to other specialties, including Internal Medicine (IM). In light of anecdotal evidence to the contrary, this study sought to assess these prior conclusions.

Methods: This study uses retrospective review of computer generated shift lists for all attendings and residents working 8 hour shifts in the higher acuity zone of a large volume, tertiary, academic health care center. Shifts from three months were reviewed: July, October, January. The number of patients seen primarily, admitted patients, and number of patients staffed by attendings were recorded. IM and EM programs were compared by first (1) and second (2) year of training. Groups were analyzed using ANOVA. The study was deemed Quality Assurance, and did not require IRB approval.

Results: This study reviewed 717 shifts: 161 EM1, 274 EM2, 137 IM1, and 145 IM2 shifts. The EM1 number of patients managed per shift showed significant increase by month: July 6.11, October 6.95, January 8.39 ($p < 0.001$). Over all three months, the number of patients managed per shift (EM1 7.09, EM2 11.97, IM1 4.70, IM2 6.24, $p < 0.001$) and number admitted per shift (EM1 3.66, EM2 7.22, IM1 2.31, IM2 2.95, $p < 0.001$) were both significantly different between EM and IM residency programs and year of training.

Conclusions: Contrary to prior studies comparing resident productivity in the ED, this study reveals residents are able to manage increasing numbers of patients as length of training increases. The data also suggests that EM residency training, more than IM residency training, prepares residents to manage ED greater patient volume, including a larger number of patients that require admission.

“DIFFICULT SCENARIOS – COMMUNICATION SKILLS TRAINING FOR OB/GYN RESIDENTS”

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Medical education is placing new emphasis on the humanistic side of medicine, on teaching and communication skills in addition to clinical and surgical expertise. OB/GYN residents encounter many difficult situations, from diagnosing intra-uterine fetal demise to discussing cancer prognosis. We designed a module, combining didactics and simulation, which could be helpful in preparing residents to counsel patients regarding bad news.

The module consists of several components, as follows:

- 1) A didactic session consisting of a communication skills lecture with helpful tips and important issues to address, as well as modeled role-plays.
- 2) An open discussion panel, with participants including patients and providers.
- 3) A videotaped session allowing residents to practice their skills in a role play with a simulated patient (actor), with analysis of the videotaped encounter by two separate faculty members (the co-investigators) and written feedback.

Data consist of pre- and post-module surveys assessing residents’ experience with delivering bad news in various situations, their comfort level, what methods of learning have been helpful in improving their communication skills in the past, and whether they found the module helpful. The videotaped practical role-play sessions will also be analyzed according to an expert-devised checklist as well as subjectively by the two faculty evaluators.

As expected, interns had less experience than other residents in delivering bad news, and felt more uncomfortable with situations overall – and they had the most positive response, feeling somewhat more comfortable after the sessions but also desiring additional training and/or an opportunity to practice their skills. However, 40% of chief residents also stated that they were somewhat uncomfortable with discussing intra-uterine fetal demise with patients, and 60% reported being not at all or somewhat uncomfortable with discussing cancer diagnosis. Most residents found the session helpful, especially appreciating insight from patients during the discussion panel. The majority of communication skills learning was reported as being from observation or “learning as you go” while on the job, although most noted a moderate amount of training in medical school. We are still in the process of arranging the videotaped role-play/practical sessions and will have those results soon (within the next few months).

There is little structured communication skills training for OB/GYN residents in the formal curriculum, especially with regard to the many difficult situations encountered in the field (including cancer and pregnancy loss). While most residents learn from clinical experience, there is little opportunity for feedback and improvement regarding their skills. This is an important, and potentially delicate, area of communication with patients – there is a place among all levels of residents for training in delivering difficult news. Our module employs a multi-modal approach that is effective in improving residents’ communication skills.

RESIDENTS' EXPERIENCE AND COMFORT ELICITING GOALS OF CARE

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Background:

Eliciting goals of care is integral to providing quality care to our hospitalized patients. Medical schools and residency programs in the United States are not effective at teaching the skills necessary to elicit goals of care from inpatients.

Methods:

We designed an 11-item survey tool designed to be completed orally within 7 minutes. We administered the survey to 38 internal medicine residents to determine residents' experience and comfort in leading family meetings, and their willingness to discuss prognosis and resuscitation options. We also administered the survey to 12 first-year medical students.

Results:

By the second year of training all residents reported that they had participated in at least 10 family meetings. Self-rated measures (on a 10-point anchored scale) of comfort in discussing prognosis (median 8, range 6-10) and competence in leading a family meeting (median 8, range 4-10), were generally high among all residents, and level of stress (median 4, range 2-7) was generally low. Resident seniority was linearly associated with increasing self-ratings in comfort ($P=0.09$) and competence ($P=0.01$) with a family meeting, willingness to make a recommendation regarding resuscitation ($P=0.19$) and stress ($P=0.05$) associated with a family meeting. Residents differed significantly from medical students who reported low comfort discussing prognosis (median 5.5, $P<0.001$ compared to residents) and low competence (median 2.5, $P<0.001$), and high stress (median 8.5, $P<0.001$) regarding a family meeting. In open-frame responses, many residents acknowledged that the patient was severely ill, and realized the prognosis might be poor. Residents were noted frequently to misattribute the potential benefit of supplemental oxygen in the management of dyspnea.

Conclusion:

Residents report substantial experience and moderate to high levels of self-confidence and competence in discussing prognosis and leading a family meeting.

A FLEXIBLE EDUCATIONAL APPROACH TO NEUROPSYCHIATRY TRAINING INFLUENCED BY THE MONTESSORI METHOD

(Poster Presentation; Graduate Medical Education)

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The emerging field of neuropsychiatry offers clinicians the opportunity to integrate strengths of its core disciplines (neurology and psychiatry, often with additional input from neuropsychology and social work) in managing patients with brain dysfunction. Educators have defined core competencies for the field of behavioral neurology and neuropsychiatry, a subspecialty requiring fellowship training and certification. Yet, evidence suggests that the majority of psychiatrists and neurologists--who will not undertake subsequent fellowship training--struggle to understand the relevance of cross-disciplinary training and collaboration to their clinical practice. Despite the presence of general neurology questions on board examinations and the recent growth of neuroscience education in psychiatry residency curricula, a study found that psychiatry training directors perceived neuroscience training during psychiatry residency as important for residents' future, but not necessarily current, practice. Beyond improving integrated training so that it actually affects the practices of neurologists and psychiatrists, we suggest the importance of an approach that also incorporates general practitioners and allied health professionals such as social workers, who often manage complex neuropsychiatric patients in areas with a scarcity of subspecialists.

Our proposed approach derives from the Montessori Method, which respects individual differences in background and allows interweaving the subject material of neurology and psychiatry in a learner-focused, case-based manner. We view this model in terms of flexible quadrants (Table 1) where N denotes a traditionally neurologic, and P a traditionally psychiatric, approach to assessment and where patients with brain dysfunction require different admixtures of each approach at different time points, based on their current complaints and underlying neuropsychiatric conditions. The model permits flexible transitions between quadrants, and entry of practitioners with diverse backgrounds into the training program. We plan to evaluate the feasibility and efficacy of this approach at MGH and BWH in a pilot study involving pre- and post-training assessments of perceived competency in managing neuropsychiatric conditions.

Table 1:

	N	n
P	NP	nP
p	Np	np

IS ANESTHESIA FACULTY PREPARED TO GIVE DIFFICULT FEEDBACK?

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Background: In 1983, Ende defined and promoted feedback in medical education in a landmark JAMA publication.[1] In 1999, Rosenblatt and Schartel followed up by performing a survey of 124 Anesthesiology training programs in the United States looking specifically at evaluation, feedback, and remediation.[2] Only 20.2% of programs surveyed provided faculty with development program which included formal training in resident evaluation. This study concluded by strongly encouraging faculty development programs to promote feedback. Despite the call to action from multiple sources, there has been a relative dearth of publication in the Anesthesiology literature regarding strategies for improving feedback to residents. We are particularly concerned if faculty is receiving training on how to best provide feedback to residents who may be labeled as “Difficult”, and so facilitate performance improvement.

Design: As previous work had looked more comprehensively at feedback, evaluation, and remediation,[2] we developed a web-based survey specifically tailored to establish: 1) the frequency of feedback to “difficult” learners relative to the norm and to desired levels of feedback, 2) the quality and utility of feedback in generating formative and summative assessments, and 3) whether a video tool to teach faculty about feedback would be of use. After IRB approval, this survey was distributed via Survey Monkey nationally to core anesthesia program directors anonymously.

Results: 115 surveys were sent and 69 were returned (60%).

Although 90% of program directors feel as though faculty need help learning to provide feedback, only 48% of programs have resources to help faculty learn to provide feedback. An overwhelming majority [94%] would find a video series on providing feedback a useful resource for faculty.

Finally, 62% of program directors get more feedback on difficult residents than average residents

Discussion: While the percentage of programs with faculty development resources has increased from 20.2% in 1999 to 48% today, most program directors in Anesthesiology feel the overwhelming number of their faculty needs more training in feedback, and would welcome more resources to train faculty in providing feedback. Most programs provide adequate feedback on residents having difficulty. Based on this study we are currently developing a series of instructional videos for faculty and residents teaching feedback and professionalism in the operating room.

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RESULTS OF AN EDUCATIONAL MODULE TO ASSESS AND IMPROVE KNOWLEDGE ABOUT EARLY MOBILITY FOR CRITICALLY ILL PATIENTS AMONG RESIDENTS AND NURSING STAFF AT A COMMUNITY TEACHING HOSPITAL

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Purpose: To improve knowledge and comfort about early mobility for critical care patients among house staff and nurses at a community teaching hospital using a small group education module. Based upon different patient care responsibilities, we hypothesize that house staff and nurses will learn differently from our module.

Background: Intensive care unit-acquired weakness is a common complication of critical illness. Critically ill patients are often immobilized for extended periods of time. Recently several investigators described remarkable feasibility and success in mobilizing mechanically ventilated intensive care unit patients. Such an intervention requires a multidisciplinary team that includes nursing, physical therapy and physician resources.

Methods: A resident led multi-disciplinary team, that includes house staff, a critical care attending, a physical therapist, and a critical care nurse educator developed an interactive education module. Nurses and house staff completed pre- module questionnaires that assessed knowledge base and comfort with early mobility. This was followed by a fifteen minute case-based didactic lecture focused on recent advances in early mobility of critical care patients; videos were included to engage the learner. The module focused on background and justification rather than practical teaching about how to move patients. Post - module questionnaires assessed the impact of the educational module on the participants' knowledge and comfort.

Results: Both medical residents and critical care nursing staff participated in the study. Baseline comfort with mobility differed between the two groups: nursing staff reported a higher baseline comfort with mobility and also felt more strongly that mobility was assessed and discussed in the intensive care unit. Despite having a higher baseline level of comfort and awareness about mobility in the intensive care unit, the post-questionnaire data suggested that our education module improved nursing knowledge to a lesser extent than resident knowledge.

Conclusion: Despite having a higher baseline comfort with critical care mobility, our data suggest that nurses do not learn in the same way as medical residents. From a practical perspective, nurses and medical residents have different approaches to early mobility in the intensive care unit. In addition to requiring an understanding about early mobility, nursing staff need to know *how* to mobilize patients. Our education module did not include instruction about how to mobilize critically ill patients. Future educational efforts should target the needs of the learner more specifically.

A NOVEL CURRICULUM TO EDUCATE INTERNAL MEDICINE RESIDENTS IN PEDIATRIC-ONSET CHRONIC DISEASE

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The care of young adults with pediatric-onset chronic illness is a national concern. Every year, nearly half a million youth with special health care needs (YSHCN) transition from pediatric to adult providers. These YSHCN face a variety of barriers to care, including lack of adult providers trained to care for survivors of childhood illness. Family practitioners and Medicine-Pediatrics physicians help to fill this gap, but general and subspecialty Internal Medicine physicians also must be involved. At present, there are no concrete guidelines for incorporating pediatric chronic disease into Internal Medicine training.

To lessen the barrier of physician knowledge as it relates to childhood illness, we created a novel curriculum to train Internal Medicine residents in pediatric chronic disease. The curriculum will teach effective strategies to address these issues at various stages in the transition process, how to utilize available resources for effective transition problem-solving in various practice settings, and how to improve overall systems-based coordination of care to facilitate effective transitions. Further, the curriculum will teach current guidelines for routine health maintenance in specific disease populations. We hypothesize that the combination of video and interactive discussions with a facilitator in a small group environment will increase medical knowledge and provide Internal Medicine residents with greater comfort in dealing with transitioning patients, leading to better access to care for these patients.

The curriculum is modeled on the VISUAL Tutorials (Video for Structured Understanding and Learning) developed for Harvard Medical School in 2003. Further, it incorporates the six ACGME core competencies for residency training. Patients with trisomy 21, sickle cell disease and cystic fibrosis were interviewed by an investigator to establish their experiences with transition as well as their ongoing health needs. Subsequently, more formal interviews will be videotaped at the Harvard media laboratory. These videos will be broken into segments and interspersed with Powerpoint slides illustrating key facts about the patients' diseases. Additional slides will focus on general transition care, such as guardianship and vocation training. An investigator will lead small groups of categorical Internal Medicine residents through each of the case presentations. After all three presentations are completed, residents will take a post-test. As a control group, first-year and third-year categorical Pediatrics residents also will take the post-test, without having participated in the case presentations. We anticipate that test scores will be lowest for first-year Pediatrics residents, with similar higher scores for third-year Pediatrics residents and trained Internal Medicine residents.

Physician knowledge and comfort with pediatric chronic disease is a barrier to care, though not an insurmountable one. As patients with pediatric disease now live longer into adulthood, it is essential that their health needs be adequately understood and that they experience a smooth transition from pediatric to adult health care. Our curriculum can be adapted to address congenital heart disease, inflammatory bowel disease and other disease states previously confined to the pediatric realm. We anticipate that this curriculum will serve as a model for introducing pediatric chronic disease competencies into Internal Medicine residency training.

KEEPING GRANNY SAFE THROUGH GRACE? A MULTIFACETED CLINICAL INITIATIVE TO IMPROVE HOUSESTAFF AWARENESS OF DELIRIUM AND ITS RISK FACTORS.

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Background: Many elderly inpatients develop delirium, a preventable, but debilitating condition. Despite this most medical house officers do not recognize its risk factors, suggesting that better resident education could reduce the incidence of delirium. We tested whether the Global Risk Assessment and Careplan for Elders (GRACE), a geriatric quality initiative, can improve residents' awareness of delirium and its risk factors.

Objectives: To determine the extent to which GRACE alters the ability of housestaff to recognize, prevent, and treat delirium.

Design: GRACE is an initiative to optimize care for all hospitalized elders. It implements a bedside care checklist and modifies the hospital's computerized provider order entry (CPOE) system to prompt providers to remove unnecessary tethers, ambulate elderly inpatients several times daily, and avoid inappropriate medication use. Over a six-month period while GRACE was phased in, we administered three cycles of pre- and post-rotation surveys to residents rotating for four to five weeks on an inpatient medical service. The surveys assessed their knowledge and perception of delirium before and after the rotation. After each cycle surveys were modified based on resident feedback, analysis of responses from the previous cycles and the components of GRACE available for use. For the last two cycles a scripted two-minute in-service was given in the first week of the rotation, educating house staff about delirium and the GRACE initiative. For the third cycle, when the necessary CPOE modifications were implemented, questions about haloperidol dosing, characteristics of delirium, and confidence in its recognition were added to the surveys.

Participants: Internal medicine house officers performing general medicine ward rotations.

Measures: Survey questions were grouped into two domains: knowledge and perceptions. In the knowledge domain, the proportion of correct responses was compared pre- and post-rotation. Questions in the perception domain were compared before and after initiation of the dedicated educational in-service.

Results: A total of 109 out of 126 eligible housestaff (86%) completed pre-rotation surveys. Seventy-three housestaff (58%) completed post-rotation surveys. Comparing pre- and post-rotation surveys from the third cycle the proportion of correct responses to questions on haloperidol dosing and the characteristics of delirium increased from 36% to 87% ($p < 0.0001$). Residents' self reported confidence in being able to identify delirium also increased from 33% to 82% ($p < 0.0001$). Comparing post-rotation responses before and after the initiation of in-services, the proportion of housestaff who reported an improvement in their ability to recall which patients were receiving intravenous fluids increased from 17% to 38% ($p = 0.06$). Corresponding figures were 21% versus 52% for foley catheters ($p = 0.01$), and 28% versus 59% for telemetry ($p = 0.01$). Similarly, 32% before in-service training and 80% afterward ($p < 0.0001$) reported that GRACE improved their awareness of delirium.

Conclusions: A multifaceted clinical initiative to improve the care of geriatric inpatients can dramatically improve residents' knowledge, confidence, and awareness of delirium and its risk factors.

SURVEY OF GENETICS EDUCATION IN MEDICINE RESIDENCY TRAINING

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CATEGORY: Poster presentation- Graduate and Continuing Medical Education

BACKGROUND: Translating recent advances in genetics and genomics into clinical practice will require the participation of well-informed physicians. Genetics education is currently concentrated in the pre-clinical years of medical school with relatively little exposure to genetic principles encountered during clinical training. Little is known about medicine residents' attitudes and knowledge of genetics and their interest in learning more about this field during residency.

METHODS: All second-year residents in the 3-year internal medicine residency program at MGH were surveyed during the AY 2009-10. The survey assessed residents' views regarding the role of genetics in clinical medicine, their genetics training, their level of genetics knowledge, their exposure to genetics in residency, and their interest in learning more about this field during residency. Self-assessed knowledge of genetics was compared to performance on an 11-question test of general genetics concepts.

RESULTS: 49 of 53 surveys were completed (92% response). 90% of responders planned to pursue subspecialty training with 80% likely to participate in research in the future.

Attitude: Although 39% of responders thought that genetics was currently very important in clinical practice, 80% believed it was going to be very important in the future. >80% thought that genetics is and will continue to be very important for medicine research

Training: 16% of residents had participated in genetics research and 15% had taken graduate level genetics courses in the past. Medical school genetics courses were rated by residents as their primary source of genetics information. In 80% of cases, these genetic courses were taken in the first year of medical school and prior to 2005.

Knowledge: One third of residents rated their knowledge of genetics as "poor" and 22% as "excellent". There was a good correlation between the scores on the genetics test and self-assessed genetics knowledge. Half of residents with test scores below the median identified their level of genetics knowledge as "poor," compared to only 16% of high scorers. Many responders did not feel confident in their ability either to interpret and communicate genetic test results to patients (41%) or to read and interpret the current clinical literature in genetics (45%).

Exposure in Residency: 82% of residents rated their exposure to genetics during residency as "low". The level of genetics education during residency was felt to be "too much" by 2%, "just right" by 18%, and "not enough" by 80%. The most common specific genetics tests ordered by residents were FVLeiden, HFE, and Hb electrophoresis. **Interest:** 53% of responders would be very interested in learning more about genetics during residency, with 14% opposed. The topics of greatest interests among responders were pharmacogenetics and the genetics of complex disorders.

CONCLUSIONS: Residents believe that there is a growing role of genetics in medicine, but a substantial portion expressed concerns about their level of knowledge in genetics. The vast majority of residents felt that their exposure to genetics during residency was limited and most expressed interest in learning more about genetics in residency.

PRE-OPERATIVE LEARNING GOALS SET BY SURGICAL RESIDENTS AND FACULTY

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Introduction: The dominant teaching venue for surgical trainees remains the pure discovery-learning environment of the operating room (OR). Previous interventions have focused on pre-operative briefing session to promote guided-discovery learning in the OR. However, research on pre-operative preparation shows divergence between faculty and residents. This study aimed to better understand pre-operative learning goals to identify areas of commonalities and potential barriers to teaching in the OR.

Methods: Brief, structured pre-operative interviews were conducted outside the OR with both the resident and faculty member who were scheduled to operate together. Residents and faculty were asked about learning goals as pertaining to the upcoming case. Answers were immediately transcribed. They were then analyzed and grouped using grounded theory by two members of the study staff. Agreement was reached in a consensus conference.

Results: 27 resident-faculty pairs were interviewed. 9 residents (33%) were junior (PGY 1 and 2) and 18 (67%) were senior residents (PGY 3 through 5). Learning goal categories that emerged from the response analysis were Anatomy, Basic and Advanced Surgical Skills, General and Specific Procedural Tasks, Technical Autonomy, and Pre-, Intra-, and Post-operative Considerations. 3 residents had no personal learning goals. 3 faculty members had no predetermined learning goals; 2 stated that they planned to conduct a needs assessment of the resident in order to tailor their intra-operative teaching. On average, residents articulated 1.5 personal learning goals per procedure (range 0-5, mode 1) while faculty on average stated 2.4 learning goals for residents (range 0-6, mode 3; $p=0.024$). The most frequently identified learning goal by both groups was one classifiable under General Procedural Tasks; 9 of 27 (33.3%) residents and 13 of 27 (48.1%) faculty stated such a learning goal. The greatest divergence is seen regarding peri-operative considerations. Taken together, residents identified peri-operative considerations as a learning goal only 4 times while faculty did so 22 times ($p<0.001$).

Conclusion: Faculty articulate significantly more learning goals for the residents they will operate with than residents articulate for themselves. Both groups identify technical learning goals most frequently. Our data suggests that while residents and faculty align on some learning goals for the OR, residents tend to be more limited, focusing predominantly on technical aspects of the operation. In contrast, faculty members tend to hold a broader view of the learning potential of the OR. This discrepancy may present a challenge to effective teaching in the operating room.

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TEACHING UNCOMMON AND HIGHLY COMPLEX OPERATIONS: MASTER SURGEON EDUCATORS' TEACHING PHILOSOPHY

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Practicing within the Halstedian apprenticeship model of surgical education, academic surgeons serve dual roles as physicians to their patients and educators of their trainees. Despite this significant responsibility, few surgeons receive formal training in educational theory to inform their practice. This study aims to identify teaching strategies employed by those considered master surgical educators to delineate best teaching practices and to evaluate the strategies' concurrence with educational learning theory.

Methods: Electronic open-ended, structured surveys were distributed to a panel of 22 master surgical educators identified by their national leadership roles as department chairs, residency program directors and in education sections of national organizations. The survey asked three questions about teaching philosophy specifically surrounding the teaching of uncommon and highly complex operations to surgical residents. Responses were analyzed using grounded theory. Principal components analysis identified thematic clusters. Selective coding was then used to compare themes that emerged to principles of transfer learning theory.

Results: 21 (95.5%) educators responded to the survey. Two primary thematic clusters were identified; global approach to teaching (90.5% of respondents) and specific intra-operative teaching (76.2%). Many of the emergent themes paralleled principles of transfer learning theory outlined in the psychology and education literature. Key elements included: graduated responsibility (57.1%), development of a mental set (47.6%), deliberate practice (42.8%), deconstructing complex tasks (38.1%), vertical transfer (33.3%), and identifying general principles (9.5%).

Conclusion: Master surgical educators employ many of the same principles encompassed in transfer learning theory when teaching uncommon and highly complex operations.

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OBSERVATION OF CLINICAL TEACHING: INTEREST IN A PROFESSIONAL DEVELOPMENT PROGRAM FOR SURGEONS

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Purpose: Observation of clinical teaching is a powerful tool to develop faculty teaching skills. However, the process of being observed can be forbidding for any educator. Our aim is to assess interest in an Observation of Teaching (OOT) Program within an academic surgical department.

Method(s): 46 faculty, all of whom have assigned medical student and resident teaching responsibilities, were introduced to the OOT Program and surveyed on their interest in participating. The survey asked faculty to indicate whether they would like to be observed teaching in clinic by a peer and/or expert, surgeon and/or cross-disciplinary physician. They were also asked if they would like to observe other faculty as part of a peer review track. Results were compiled for descriptive statistical analysis.

Results: 87% (40/46) of faculty responded after two emails. 75% (30/40) indicated interest in the OOT Program. All faculty who responded positively indicated interest in expert review (30/30), 90% (27/30) in peer review, 87% (26/30) in surgeon review, and 83% (25/30) in cross disciplinary physician review. 48% (19/40) indicated interest in observing others. Of those who were not interested in the OOT Program, restrictions on time (4/10), not enough clinical care responsibilities (2/10), not wanting to be watched (2/10) and program did not seem effective (1/10) were cited as reasons for not participating.

Conclusion: Surgical faculty are interested in being observed and receiving feedback about their clinical teaching by experts, peers, colleagues and cross disciplinary physicians. Professional development programs for surgeons should consider observation as a teaching methodology.

COMPARING A NOVEL RESIDENT-AS-TEACHER SIMULATION PROGRAM FOR EVALUATING OBGYN RESIDENTS' TEACHING SKILLS WITH A TRADITIONAL METHOD OF EVALUATION

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Objective: To determine whether evaluation of residents' teaching skills in a simulated Resident-as-Teacher Program are correlated with traditional global assessments of residents' teaching skills by attendings, residents, and medical students in the clinical setting.

Methods:

Annual videotaped simulated teaching encounters of residents teaching a medical student, with immediate faculty assessment and feedback, are used to evaluate and provide feedback on resident teaching skills. While being videotaped, a trained medical student presents a case to the resident. The resident teaches the student the principles in the case. Subsequently, the resident watches his/her video and receives immediate faculty feedback. Six teaching competencies are evaluated by two faculty independently using a Likert scale (1 = poor to 5 = excellent). The resident completes a self evaluation using the same scale. The same scale is used for medical students, residents and faculty to assess each resident's teaching skills in the clinical setting in the traditional semi-annual global resident evaluation. Data from the last 30 (100%) residents who participated in the Resident-as-Teacher Program over the last three years were included. We evaluated whether the faculty and self evaluations from the Resident-as-Teacher Program in the simulated setting were correlated with the traditional global assessments of residents' teaching skills done by attendings, residents, and medical students in the clinical setting.

Results: Resident and faculty assessments of residents' teaching skills from traditional global assessments in the clinical settings were similar ($P=0.70$). The median score from residents was 4.4 (IQR: 4.0-4.6) and from faculty was 4.2 (IQR: 4.0-4.6). Medical students gave higher scores than residents ($P=0.04$) and faculty ($P=0.02$) with a median score of 4.7 (IQR: 4.3-4.8). Both the resident and faculty scores from the clinical setting were correlated with the faculty rating from the Resident-as-Teacher Program, while the medical student assessment was not. When compared with the faculty score from the Resident-as-Teacher Program, the correlation was 0.38 ($P=0.04$) with the resident traditional global assessments of residents' teaching skills and 0.52 ($P=0.004$) with the attending traditional global assessments of residents' teaching skills score. Correlations with the self-evaluation from the Resident-as-Teacher Program were similar.

Conclusions:

Videotaped simulated teaching encounters with immediate faculty assessment are a means to evaluate and provide feedback on resident teaching skills. The data from this investigation suggests that evaluations of residents' teaching skills in the simulated setting are similar to those obtained from traditional global assessments of residents' teaching skills by faculty and residents in the clinical setting. The Resident-as-Teacher Program methodology may be applied to fulfill ACGME competency assessment of residents' teaching skills in a structured and reproducible fashion.

RESEARCH COLLOQUIUM: TEACHING RESEARCH SKILLS TO RESIDENTS

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Category: Graduate Medical Education

Introduction: Academic Emergency Medicine (EM) residency programs should graduate trainees who are proficient in the interpretation and application of clinical research and comfortable with the basics of research methodology, regardless of whether those graduates choose academic or community careers. Although faculty leaders in EM cite research training as a top priority for residents,¹ surveys of residents report that only a minority feel that they have received adequate training or mentorship in research methodology.² Over the course of residency training, the proportion of residents interested in an academic career decreases,² suggesting that residents may not be receiving adequate support and education necessary to perceive academic EM as a plausible career. We have designed a small-group research training program (the research colloquium) to address these concerns.

Methods: We designed a new research curriculum for our residency that focuses on the teaching of research methodology, including the design, implementation and publication of a research project. The curriculum will be conducted over twelve 1-hour monthly workshops. In each session, a faculty and resident facilitator will co-lead a discussion within a small group of residents, around two articles that demonstrate the topic being reviewed that day. The hour will also include discussion of resident and faculty research projects. We will be conducting pre- and post-surveys of the residency classes to evaluate the strengths and weaknesses of the new curriculum.

Results: The curriculum design is complete, and the evaluation process will be ongoing throughout this year. The curriculum design mirrors the process of development of a research project from determining a question of interest through to publication. Specific topics will be organized into 5 sections. These are introduction (e.g. literature search and formulation of a question), study design (survey design, variable creation and basic statistics), study implementation (IRB, quality control), analysis (basic data analysis, creation of figures) and publication (authorship, journal selection). Residents will complete a pre- and post-survey. Initial resident survey results will be collected and available by the date of abstract presentation.

Conclusion: EM residents report low levels of satisfaction with existing research training curricula. This new innovative research curriculum attempts to address the dilemma of teaching basic research skills to residents with a diverse starting skill set and varying needs.

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RESIDENCY TRAINING - THE CARE OF FRAIL ELDERLY IN A MEDICAL HOME

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Poster Presentation: Graduate Medical Education

Background: According to the American Geriatrics Society, there are approximately 7,500 certified geriatricians in the nation, while estimates suggest some 14,000 are now required to care for today's elderly population. In addition, while the elderly population represents the fastest growing segment of the population, the number of graduating residents pursuing further geriatric training continues to decline. Internists will need to bridge this gap both in the in-patient and out-patient setting. As a result, there needs to be a strong focus on comprehensive geriatric training in internal medicine residency.

Introduction: CHA's Elder Service Plan (ESP) is the primary clinical site for the internal medicine residency program's required four-week geriatrics block rotation for second-year residents. The ESP is part of the Center for Medicare and Medicaid Service's Program for All-Inclusive Care of the Elderly. It offers an interdisciplinary "medical home" for frail, community-dwelling older adults. There are many efforts underway nationally to develop residency curricula within the medical home model of care and as an early adopter of this model, CHA is in a unique position to help determine the shape and format of these curricula.

Methods: Residents will be required to complete a geriatric assessment on each of their patients at ESP. The assessment will include the usual aspects of a history and physical exam and also include information gained from knowledge of working with the interdisciplinary team. This will include topics such as nutritional status, performance of ADLs and IADLs, nursing care needs, family/friend support and home safety evaluation. The patient's medications will be reviewed with an emphasis on appropriate prescribing. The resident will then be asked to come up with a comprehensive assessment and plan based on the above information, developed within the context of the patient's goals of care and advanced directives. Finally, the resident will be asked to anticipate any complications the patient may face if they were to be hospitalized.

Evaluation: The evaluation of the efficacy of this curriculum will have three phases. The first will be pre-rotation checklist assessments of hospital admission write-ups on older adults done by the residents looking for all the elements of a full geriatric assessment as described above. The second phase will be a checklist assessment of the write-ups they do during their geriatrics rotation. The third phase will be performed during the third year of residency training, using discharge summaries and the same content checklist. Our hypothesis is that the write-ups during the period after the educational intervention and before graduation from the program will contain more geriatrics content than the pre-intervention write-ups with some decay of knowledge between the intervention and the post-intervention assessments.

Conclusion: The instruction provided by this program will ensure that CHA internal medicine residents develop the ability to provide individualized care to each geriatric patient based on his or her living situation, cognitive status, familial support structure and goals of care. By providing these future leaders of the medical community with a comprehensive geriatric experience in a medical home setting, they will gain the knowledge and confidence to provide expert care and hopefully, appreciate the older person behind the "patient".

RESIDENTS-AS-LEADERS: A PROGRAM OF LEADERSHIP DEVELOPMENT THROUGH ASSESSMENT, OBSERVATION, FEEDBACK AND COACHING

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Poster Presentation: Graduate Medical Education

Background: Effective leadership by physicians is crucial in the current health-care environment, with increasing emphasis on multidisciplinary teams, collaboration, performance and innovative practice structure. However, little or no consensus exists regarding optimal methods for defining and developing effective leadership during residency. This lack of consensus is reflected in the ACGME competencies, where leadership themes appear in multiple locations without a clear focus.

Setting: The Integrated Teaching Unit (ITU) at Brigham and Women's Hospital, a regionalized general medicine care unit with a focus on bedside teaching, increased educational time, multidisciplinary teamwork and leadership development. PGY-2 and PGY-3 residents spend a month rotating as team leaders on the unit.

Program Description: Each month, the four resident team leaders take part in a structured program of leadership development, co-led by a physician and a management psychologist/leadership consultant. Each resident first completes an online self-assessment of their leadership style including strengths and areas for development, using a commercially available, nationally-normed instrument. Each resident is then individually observed leading team rounds by the leadership consultant, followed by a feedback session incorporating both the results of the self-assessment and the direct observation. During this session residents set individual goals for leadership development for the remainder of the month, which are shared with the team attendings, who provide ongoing feedback. Residents are then observed a second time by the ITU medical director, who again provides feedback targeted to each resident's individual goals. Finally, feedback on residents' performance is obtained from interns and nurses on each resident's team, which is incorporated into a mid-point coaching session with the leadership consultant and medical director.

Evaluation/Outcomes: Our goal is to use information gathered from the resident self-assessments, observations and the 360-degree feedback to create and validate a tool specific to resident leadership skills that can be used both as an assessment and a guide to individual resident development.

THE ART MUSEUM AS A SETTING FOR MULTIDISCIPLINARY TEAMBUILDING

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Poster Presentation: Graduate Medical Education

Background: Multidisciplinary teams are common in medical settings, and failures in teamwork and team communication have been shown to contribute to medical errors.

Setting: The Integrated Teaching Unit (ITU) at Brigham and Women's Hospital, a regionalized general medicine care unit with a focus on bedside teaching, increased educational time, and multidisciplinary teamwork. Teams of attendings, residents, and medical students rotate on the unit for one-month periods.

Program Description: We designed a teambuilding intervention that takes place twice a month at the Harvard Art Museum. Each team rotating on the ITU has an evening session at the museum attended by all members of the medical team, a selection of nurses from the unit, and the team's assigned social worker, physical therapist, nurse care coordinator, and pharmacy students. Teams take part in a series of structured discussions about works of art, led by a museum educator and a physician. Each work is chosen to prompt discussion and reflection about the nature of teamwork, the communication and interaction style of that specific team, and professional issues raised in the course of caring for patients. Program participants also complete several brief writing exercises over the course of the evening, inviting them to reflect on team dynamics, their own contributions to their team, and parallels or differences between the team's experience in the museum and in the hospital.

Evaluation: Program participants complete a written evaluation at the end of the evening in addition to the reflective writing exercises. Feedback from both medical teams and other disciplines has been 100% positive. Common themes that emerge in the writing exercises and evaluations include respect, listening, hierarchy, the traditional segregation of disciplines, and the value of incorporating a wide range of perspectives. Participants frequently comment on the power of working together in a setting where traditional hierarchies and roles are absent. Nurses, social workers, care coordinators, pharmacy students and physical therapists who attend the sessions report that the teambuilding sessions have improved communication and collaboration with the medical teams rotating on the unit.

Conclusion: An art museum-based experience that engages both emotional and cognitive themes, allows transcendence of traditional roles and hierarchies, enacts team dynamics and encourages reflection on all these themes, has potential to improve communication and teamwork in a multidisciplinary medical team setting.

PROJECT IMPART: A MODEL CURRICULUM FOR TRAINING PSYCHIATRY RESIDENTS IN EMPIRICALLY VALIDATED PSYCHOTHERAPIES

Presenters: David R. Topor PhD, Mark S. Bauer MD, Christopher G. AhnAllen PhD, Judith A. Bayog PhD, Michelle M. Braun PhD, Chandlee Dickey MD, Fe E. Festin MD, Kelly E. Green PhD, James J. Levitt MD, Lewis Kirshner MD, Grace J. Mushrush MD, Mark F. Poster MD, Benjamin Presskreischer PsyD, Ann Rasmusson MD, Heather M. Walton PhD

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Poster Presentation

Category: Graduate Medical Education

The ACGME (Accreditation Council for Graduate Medical Education) 2007 requirements for medical education in psychiatry stipulate that residents "should develop competence in applying supportive, psychodynamic, and cognitive-behavioral psychotherapies." However, the ACGME does not offer guidelines for training residents in these therapeutic modalities. Further, there has been little examination of the efficacy of psychotherapy training and of identifying the elements of training that are most beneficial to psychiatry residents.

Project IMPART (Initiative for Manual-Guided Psychotherapies to Augment Residency Training) was developed and implemented for psychiatry residents in the Harvard South Shore Psychiatry Residency Training Program in an effort to provide guidelines for psychotherapy training. Project IMPART is a multi-disciplinary initiative that includes both psychiatrists and psychologists in the teaching of the principles and the practice of core psychotherapies to residents. These core therapies include: supportive psychotherapy, psychodynamic psychotherapy, cognitive-behavioral psychotherapy, cognitive processing therapy, and motivational interviewing.

The goals for this poster are to outline the training model promoted by Project IMPART, suggest future research directions of evaluating the effectiveness of psychotherapy training, and discuss changes to further augment the current training curriculum. It is the hope that this training model and future research findings can be shared among psychotherapy training programs to improve psychiatry resident training.

THE USE OF TEACHING SCRIPTS BY OB/GYN EDUCATORS

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Submission Category: Poster Presentation Undergraduate Medical Education

Abstract:

Objective: In the fields of Medicine and Pediatrics expert clinical teachers have been shown to use teaching scripts. The aim of this study was to determine if OB/GYN educators also use components of teaching scripts.

Study Design: One hundred and fifty OB/GYN educators who were members of the Association of Professors of Gynecology and Obstetrics were contacted by email to complete a survey consisting of demographic information and two short clinical vignettes where participants were asked to identify teaching points and expected common errors learners might make.

Results: Thirty-five OB/GYN educators responded to the survey. Of the respondents over 94% identified three teaching points and over 85% identified two of three expected errors. Length of time teaching, academic rank and receipt of teaching awards did not have impact on responses.

Conclusion: Consistent with data from other fields of medicine Ob/GYN educators appear to use common components of teaching scripts. This data will be used to help create a library of teaching scripts for OBGYN educators.

EFFECT OF FILMED OR WRITTEN CASES ON THE CRITICAL THINKING OF MEDICAL STUDENTS IN TUTORIAL

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Background:

Problem-based learning facilitates the development of critical thinking among medical students. Film and written materials have distinct provocative properties for learners, but their influence on the engagement of students in critical thinking activities is unknown.

Methods:

We developed two filmed cases using patient vignettes that evolved in sections over time. We created matched written cases from the transcripts of these cases. Four tutorial groups (each with 7 students) in a second-year endocrine and reproductive pathophysiology course were enrolled and were randomly assigned in a cross-over design between a video case or a written case. Tutorials were facilitated by the same experienced tutors. Twenty-four hours of tutorial discussions were recorded, transcribed and analyzed according to Kamin's coding metrics of group discussions. The ratio of deep to superficial phrases was used to calculate the critical thinking ratio (CTR). A generalized estimating equation with repeated measures was used to determine differences.

Results:

10,619 phrases were analyzed and categorized among 35 categories. Problem identification, description and exploration accounted for 4%, 32% and 56% of the phrases respectively, while integration and applicability discussions accounted for 8% of the phrases; modality did not affect the distribution of activity. Female students contributed proportionately more to discussions than male students (64% vs 36% of contributions, $P=0.04$). Compared to written cases, use of filmed cases was associated with a significantly higher CTR in problem identification (-0.25 for video, -0.35 for text, $P<0.001$), but a significantly lower ratios for problem description (0.53 vs. 0.61 respectively, $P<0.001$) and exploration (0.78 vs. 0.87 respectively, $P<0.001$). Qualitative analysis demonstrated greater engagement of students in the video cases. Surveys data showed students (79%) and tutors (100%) each expressed a significant preference for video cases over use of text-based cases.

Conclusions:

Filmed cases were more popular and more engaging than cases presented in writing but significantly reduced the amount of critical thinking that occurred in problem-based learning tutorials.

MEDICAL STUDENT HOME VISIT PROGRAM: IMPROVING CARE TRANSITIONS FOR COMPLEX PATIENTS

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Poster Presentation, Undergraduate Medical Education

Purpose: Systems-based practice, including understanding the components of successful care transitions, is an undergraduate medical education competency. The importance of optimizing education in this area to improve student knowledge and enhance patient outcomes is highlighted by the high hospital readmission rate in Massachusetts. However, students currently receive little specific education regarding successful care transitions. They often lack a clear understanding of the patient's post discharge environment and the resources necessary to support a successful care transition. This project provides students with an opportunity to learn about successful care transitions including recognizing how understanding a patient's post discharge environment, drafting a clear discharge summary, and optimizing resources prior to hospital discharge can result in improved patient outcomes and reduced readmission rates.

Methods: During their internal medicine clerkship at the Beth Israel Deaconess Medical Center, third year medical students participate in an educational experience and home visit focused on successful care transitions in medically complex patients. Students identify and receive permission from a patient they cared for in the hospital to visit them at home following discharge. On the day of the visit, students meet with a geriatric or hospitalist preceptor to discuss basic tenants of home visits, review the discharge summary, and identify specific care transition issues they wish to address during the visit. The preceptor and two paired students then make the home visits lasting 45-60 minutes each depending on patient complexity. At the conclusion of the visits, the preceptor reviews learning issues which were identified during the visit and discusses what modifications to the discharge summary might have improved the transitions of care experience. A multi-component assessment of the program is being conducted:

1. Students edit the discharge summary following the visit to include information that may have been helpful in optimizing the care transitions experience for the patient. Although these edits do not become part of the official medical record, preceptors communicate with the house officer who completed the discharge summary regarding suggested edits to expand the educational impact of the program and improve future discharge summaries.
2. Students complete a confidential pre and post survey evaluating their attitudes and knowledge regarding home visits and transitions of care.
3. Patients or, if they are unable, their caregiver complete a survey regarding the utility of the home visit.

Conclusions and Future Goals:

Despite being identified as an educational competency, medical students currently receive little formal training around successful care transitions. Through educational sessions and a home visit, students participating in the program gain an increased appreciation for the components of successful care transitions including a concise but thorough discharge summary and arranging for the appropriate home resources prior to discharge. Future goals include dissemination of the project to other medical schools and expansion to the Harvard geriatric medicine fellowship.

REVITALIZATION OF PATHOLOGY LABORATORIES IN A GASTROINTESTINAL PATHOPHYSIOLOGY COURSE USING MODIFIED TEAM- BASED LEARNING TECHNIQUES AND MULTIMEDIA PRESENTATIONS

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Category: Poster Presentation, Undergraduate Medical Education

Background: From 2005 to 2007, pathology laboratory scores lagged behind the overall course evaluation score and tutorial session scores in a second-year gastrointestinal (GI) pathophysiology course. This discrepancy stimulated the GI Pathophysiology Advisory Group to recommend changes to improve student engagement in pathology laboratories.

Aim: Our aim was to design more engaging and interactive pathology laboratories to improve students' perception of the contribution of the pathology labs to their learning.

Methods: Over the summer of 2007 we restructured the laboratories and created new case material in a more interactive format. DAVE Project videos, animations and overlays were added to each laboratory. In the summer of 2008, additional changes were made, using a modified team-based learning technique. These included: 1. Introduction of USMLE board-style quizzes at the beginning of each laboratory with five questions per quiz. Each question was linked to an unknown pathology slide. The quizzes were used for private self-assessment. 2. Addition of both individual immediate readiness assurance testing and group readiness assurance testing, which used geographic grouping of eight students per team to discuss the quiz. 3. Incorporation of a clinician as a co-teacher to navigate the DAVE Project videos and to add clinical pearls to the discussion.

Results: The 2009 and 2010 data for pathology laboratory contribution to learning improved significantly compared to 2005-2007 ($p < 0.001$), narrowing the gap between the course evaluation, tutorials, and the pathology laboratories. Increased voluntary attendance at pathology laboratories was noted. Spontaneous student comments supported the positive impact of the laboratories students' learning in 2009 and 2010, and overall course scores improved compared to 2005-2007 ($p < 0.001$).

Conclusions: Pathology laboratory innovations including modified team-based learning techniques of individual and group self-assessment quizzes, multimedia presentations, and paired teaching by a pathologist and clinical gastroenterologist led to significant improvement in student ratings of the pathology laboratories' contribution to their learning in a gastrointestinal pathophysiology course for second-year medical students.

INTEGRATIVE MIND-BRAIN MEDICINE: AN INTERDISCIPLINARY COURSE FOR THIRD YEAR MEDICAL STUDENTS

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Introduction: We describe our initial experience with a novel, interdisciplinary course for third year medical students at Brigham and Women's Hospital (BWH) in academic year 2009-2010. The goal of the mandatory course is to introduce medical students to an integrative approach to mind/brain disorders. This approach is facilitated by recent developments in the cognitive and affective neurosciences that have enhanced our ability to view the mind and brain in an integrated fashion, and by the emergence of medical specialties and modalities, such as neuropsychiatry and functional neuroimaging, that increasingly blur the distinction between "neurologic" and "psychiatric" disorders. An integrative perspective to mind and brain is particularly helpful in treating patients with acquired brain lesions, who often suffer from a combination of motor, sensory, affective, perceptual and cognitive symptoms that are best understood in a unitary fashion, in relation to the underlying neuropathology. In the research arena, the integrative perspective facilitates new approaches to the investigation of mind/brain disorders by providing convergent evidence from multiple disciplines and levels of analysis, and promoting cross-pollination of conceptual paradigms. Faculty members from various brain-related specialties were involved in the design and teaching of the course including radiology, neuroradiology, psychiatry, neuropsychiatry, neurology, neurosurgery, and neuropathology.

Curriculum: This course consists of hour-long, weekly sessions over the 12 weeks of the "flex block" comprised of the neurology, psychiatry, and radiology clerkships. The course is organized into three modules: 1) overview and visionary interactive sessions with leaders in the fields of neurology, neuropsychiatry and neuroradiology, 2) module on stroke 3) module on epilepsy, with either a session on cutting-edge work at the mind-brain interface, or a feedback session held in the final week. This year we have also added a module on neuro-oncology. Each clinical module consists of focus sessions presented from the perspectives of neurology, neuropsychiatry, and neuroradiology during each of the first three weeks and culminates in the fourth session with a patient-based conference with faculty members from the fields of neurology, psychiatry and neuroradiology.

Assessment: Students were surveyed after each lecture and at the end of the 12 week block, including both formal written evaluations and oral feedback and discussion. The overall course assessment was rated on a scale of 1-5, with 1 being the best rating. The students found the course to be well organized (1.7), faculty were accessible (1.4), the quality of teaching overall was excellent (1.8), enhanced the students' interest in the subject matter (1.7), offered new material in the overall HMS curriculum (1.4), promoted an integrated view of the material (1.3), and the course overall was rated very well (1.7).

Conclusion: The principle clinical experience (PCE) structure has allowed for the development of an integrative and interdisciplinary course during the 12 week Flex block of neurology, psychiatry and radiology. This course has been highly rated, has exposed students to the interdisciplinary nature of clinical neurosciences and has enhanced the students' interest in the subject matter.

EARLY PERFORMANCE IN THE PATIENT DOCTOR RELATIONSHIP AS A PREDICTOR OF SUCCESS IN DENTAL EDUCATION

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Background: The relationship between admission criteria and academic performance in dental education is weak, making it difficult to predict dental students' performance during the early stages of the 4-year curriculum. Given the significant investment from institutions and students alike, early identification of students who excel and those at risk for problems may provide opportunities for efficacious expenditure of resources.

Introduction: Students attending the Harvard Schools of Medicine and Dental Medicine are required to take a first year, two-semester patient-centered course that teaches the medical interview titled, Patient Doctor I (PDI). The student faculty ratio is 2:1, which provides extended time for faculty to observe student performance during the first academic year. General consensus among PDI faculty indicates that performance in this course - specifically outliers, predicts high or low performance in the later dental clinical education years. If faculty's anecdotal predictions have empirical support, early identification of high or low performance may provide opportunities to address the unique needs of outliers to improve academic success and satisfaction among students.

Objective: To develop a rating method to quantify existing qualitative formative narratives to rate individual performance of first year dental students in an applied patient-centered course. This will form the basis for the second phase of this study in which we will use the quantified ratings to predict later clinical performance.

Design: The present study is qualitative research that utilized individual interviews, focus groups and an empirically-driven content analysis.

Methods: Individual faculty interviews and a focus group were conducted with a convenience sample of nine faculty (nearly 50% of dental PDI faculty). An empirically-based coding strategy was developed to quantify the PD I year-end formative narrative evaluations. Twenty formative narrative evaluations were used to test the coding strategy. A five point scale was developed based on our coding strategy. Three PDI course faculty members were extensively trained in the coding strategy. They used the developed coding strategy to rate 209 narrative evaluations of student performance. As the anchor points "1" and "5" were essential for our study, if any of the coders had rated the narrative as "1" or "5" those cases were discussed and resolved.

Results: Thirty nine narrative evaluations (18.7%) had to be resolved and recoded (26 anchored at "1" and 13 anchored at "5"). Prior to resolving these disagreements the inter-rater correlations ranged from .68 to .74. After recoding, agreements of .82, .84, and .84 were achieved. Cronbach's alpha, that assesses internal consistency of the ratings, was 0.75 which is considered good. Widely accepted cut off in social sciences is 0.70. Based on the ratings, 24 (11.5%) of the narrative evaluations were coded as "high performers" and seven (3.3%) as "low performers" in PDI course.

Conclusion: Our study demonstrated the feasibility of quantifying narrative evaluations to determine high and low performance in a patient centered course for dental students. This will provide the basis for examination of a relationship between student performance in a first year patient-centered course and performance in later clinical years.

Acknowledgements: American Dental Association (funding); Beverly Woo, MD (PDI Course Director)

LESBIAN, GAY, BISEXUAL, AND TRANSGENDER-RELATED CONTENT IN UNDERGRADUATE MEDICAL EDUCATION

Stanford University School of Medicine LGBT Medical Education Research Group

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Poster Presentation: Undergraduate Medical Education

Context: Health and healthcare disparities in lesbian, gay, bisexual, and transgender (LGBT) communities are well-documented. Medical education organizations have called for LGBT-sensitive training but to what extent schools educate students to deliver comprehensive LGBT patient care is unknown.

Objectives: To characterize LGBT curricula offered by medical schools and associated curricular evaluation and development practices, as well as deans' perspectives on LGBT curricular content.

Design, Setting, and Participants: Deans of Medical Education (or equivalent) at allopathic and osteopathic medical schools in Canada and the United States completed a novel, 13-question, web-based questionnaire.

Main Outcome Measure: Number of LGBT-related content hours in medical curricula.

Results: Of 176 allopathic and osteopathic medical schools in Canada and the United States, 150 (85.2%) responded, and 132 (75.0%) completed the questionnaire. The median time devoted to teaching LGBT-related content in the entire medical curriculum was 5 hours (mean 6.9 hours, SD 6.4 hours). More than 6% and 32% reported zero instructional hours during pre-clinical and clinical years, respectively. Regional analyses revealed a significant difference in median pre-clinical hours between the South and West regions ($p = 0.0055$), and the median clinical hours differed significantly between U.S. osteopathic and U.S. allopathic institutions ($p = 0.009$). Ninety-seven percent (97.1%) taught students to ask patients if they "have sex with men, women or both" during a sexual history. The teaching frequency of 16 LGBT-specific topic areas is reported. Clinical clerkship sites focusing on LGBT populations were available at 15.0% of the responding institutions. Deans most commonly (45.0%) rated their institutions' coverage of LGBT content as "fair" (e.g., 3 on a 5-point scale). Deans' preferred strategies to increase curricular content were "curricular material focusing on LGBT-related health and health disparities" (58.6%), and "faculty willing and able to teach LGBT-related curricular content" (52.1%).

Conclusions: This is the first comprehensive study of LGBT medical education, which reports substantial variation in the quantity and content of LGBT-related curricula. The development of LGBT-related medical education standards may reduce observed inter-institutional variation and improve self-rating while reducing health disparities of these vulnerable populations.

CREATION OF A NOVEL INTERDISCIPLINARY, MULTI-SITE CLERKSHIP FOCUSED ON A SYSTEMIC DISEASE: “UNDERSTANDING LUPUS”

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BACKGROUND: Few elective rotations offered to final year medical students offer exposure to the longitudinal care of patients with complex diseases spanning multiple clinical specialties and environments. Systemic lupus erythematosus provides an ideal disease process to afford medical students the opportunity to learn from providers across a multidisciplinary healthcare team. Students are able to practice with clinicians in rheumatology, dermatology, nephrology, cardiology, and neurology who are routinely involved in the care of patients with this disease. The diagnosis and management of lupus also relies heavily on the basic science of clinical immunology, providing a link to fundamentals taught during the preclinical curriculum. Additionally, lupus spans both pediatric and adult populations and a range of ethnicities.

OBJECTIVE: Creation of a fourth-year elective rotation for medical students at HMS that enables rotators to achieve the following competencies at the end of the elective:

- Conduct a thorough history, physical exam, and review of systems covering the multifaceted nature of systemic lupus
- Clinically recognize unique physical findings in systemic and cutaneous lupus
- Counsel patients regarding therapeutic options and potential side effects as well as considerations of chronic immunosuppression
- Describe fundamental basic science principles behind auto-antibody testing.

METHODS: Focus groups were held with HMS students to assess learning needs and educational components of an elective rotation in order to uncover elements historically lacking in traditional clinical electives. A one-month elective was designed, combining ambulatory patient care in rheumatology, dermatology, and multidisciplinary clinics at Brigham and Women’s Hospital and Children’s Hospital Boston. Inpatient exposure was incorporated via rheumatology and dermatology consult services. A longitudinal continuity experience was established, allowing students to accompany one patient with severe systemic lupus to multiple specialist appointments, focusing on the breadth of impact of a systemic disease on an individual. Didactic sessions were incorporated through Rheumatology and Dermatology Grand Rounds, Journal Club, Lupus Case Conferences, and a Joint BWH-DFCI-JDC Immunology Seminar, emphasizing and incorporating evidence-based medicine and relevant, up-to-date basic science research. Unique exposure to the Clinical Immunology Laboratory was arranged for students to observe and enhance their understanding of serologic and auto-antibody testing. Final evaluation was based on performance in the clinical arena as well as presentation of a scholarly project completed during the rotation.

RESULTS: The course, “Understanding Lupus: A Multidisciplinary Approach to Systemic Disease” was first offered in July 2009. Feedback from students and faculty involved in the course to date has been uniformly highly positive, highlighting the rich and unique interdisciplinary and inter-institutional exposure around a single disease.

CONCLUSIONS: This integrated, inter-disciplinary, multi-institution rotation for fourth-year medical students has been enthusiastically received and presents a model for further curricular innovation. As revisiting basic sciences in the clinical years is encouraged, this course also directly translates basic laboratory medicine in a clinically-relevant manner.

HMS PCE LOG UTILIZATION DURING A SURGICAL CLERKSHIP: WHAT PROCEDURES ARE WE *NOT* TEACHING OUR STUDENTS?

Poster Submission: Undergraduate Medical Education

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Introduction: PCE Students from Harvard Medical School rotate at Beth Israel Deaconess Medical Center (BIDMC) in 12 week intervals for the third year surgical clerkship. Goals and objectives are provided at the beginning of the course. Four technical skills are required (IV, NGT, Foley catheter placement, and suturing wounds). During the rotation, students log their operative and technical experience in PCE log system, introduced in May, 2009 to replace a paper system. This system has 5 additional skill-related procedures (staple placement or removal, fracture splinting, knot tying, aseptic technique, and airway management) that can be logged. **Methods:** As an initial clerkship quality assurance project The PCE logs of BIDMC students were reviewed in a de-identified fashion from May, 2009 to July, 2010 to determine what technical procedures students did *not* participate in during their clerkship. Descriptive statistics are used to determine how often students are not documenting this procedural experience.

Results: During the study period, 126 students rotated on the surgical clerkship rotation at BIDMC. The number and percentage of students who successfully completed the course without logging the stated procedure is noted in the Table.

Table: Students not logging any experience with listed procedure

	IV	NGT	Foley	Suture	Staple	Splint	Knot	Aseptic	Airway
#	26	47	16	15	14	64	26	31	18
%	20.6	37.3	12.7	11.9	11.1	50.8	20.6	24.6	14.3

Discussion: The clerkship goals and objectives delineate the minimum experience students require during the third year clinical clerkship. The 4 technical procedures are basic, yet 11.1-37.3% of our students are not reporting any experience with them. Of particular concern is the 37.3% of students who document no experience with NGT placement or management and 11.1% of students who document no experience with wound suturing. Of the five procedures able to be coded in PCE and not listed in the clerkship manual, between 11.1-50.8% of students do not log any experience. While the log may not be a true reflection of a student's experience, other non-procedural topics are documented by the same students. We intend to update the student manual and broaden student's exposure at BIDMC. We will share these results with faculty and resident teaching staff and will develop ways of determining deficiencies in experience prior to completion of the clerkship. Questions for future research will be to determine how much experience in these procedures is required for competency at a third year level and how we can assess competency in these procedures and provide developmentally appropriate feedback to trainees.

FIVE CONCERNS AND TEN SUGGESTIONS: DEVELOPING A STRUCTURED UNDERGRADUATE SURGICAL OBSERVERSHIP

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Decreased reimbursement, diminished prestige, patient care issues, increasing liability, lack of role models, increasing medical school costs and general “lifestyle” concerns contribute to decreasing interest in surgery. Medical students’ attitude regarding a surgical career can be favorably altered by a 4-day preceptorship², but the effects of undergraduate observerships are unknown. There are both administrative and educational concerns regarding undergraduate observerships³. (1) Credentialing issues must be addressed with the OR Executive Committee and will vary by institution. (2) Patient confidentiality must be protected at all times. (3) Special OR training in infection control will be required for all observers. (4) Written goals and objectives must be provided and the role of the observer should be clear to all. (5) Other learners (medical students, residents, fellows, and nurses) must not have their teaching diminished as a result of the observer. I have developed a structured surgical observership for 1st and 2nd year undergraduate students at Beth Israel Deaconess Medical. Ten suggestions are listed:

1. Involve pre-medical directors at targeted undergraduate institutions.
 2. The application process should involve a written statement and a CV.
 3. Ensure the observer understands his/her role. The goal is to understand the basic structure of the educational system, to observe operative and ambulatory etiquette and obtain as much exposure to clinical settings as possible.
 4. Choose attendings and resident teachers with a variety of experience and styles. Ensure they have appropriate enthusiasm and will be good role models.
 5. Include any interest of the student, but also include exposure to “exciting” sub-specialties, such as trauma surgery, orthopedics, cardiac and neurosurgery.
 6. Arrange for some ambulatory experiences such as pre-operative evaluation and decision making and post-operative wound care.
 7. Develop a simple list of brief surgical topics for informal didactic teaching.
 8. Perform a post-visit evaluation.
 9. Perform evaluations of involved attendings and resident teachers to keep them engaged in the program.
 10. Follow up with faculty, residents and administrative assistants. Let them know that they are important role models for these young potential doctors.
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CURIOSITY AND NEED FOR COGNITION IN THIRD YEAR MEDICAL STUDENTS: UNDERSTANDING MOTIVATIONS FOR LEARNING BEYOND THE STRICT “NEED-TO-KNOW”

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Category of submission: Poster presentation (Undergraduate Medical Education)

Background: Curiosity can be described as both a general interest in learning and acquiring knowledge (“interest-type” or I-type curiosity) and as a drive to answer a specific question or fill a knowledge void (“deprivation-type” or D-type curiosity.) Need for Cognition (NFC) describes one’s enjoyment of and tendency to engage in effortful cognitive activities. Motives for and Strategies of learning can be determined by the Study Process Questionnaire (SPQ) as Deep or Surface in nature. Deep Motives and Strategies (Deep-SPQ) describe an intrinsic interest in learning with a goal of maximizing understanding, while Surface Motives and Strategies (Surface-SPQ) describe a fear of failure and task-specific, focused learning efforts. To our knowledge, NFC, SPQ, and curiosity types have not been studied in undergraduate medical education. NFC, SPQ and curiosity scores may correlate with an individual’s interest in and responsiveness to specific educational interventions. One specific educational opportunity within the BIDMC Principal Clinical Experience (PCE) course for third year medical students is an optional “Challenge Track” – a high-intensity elective with integrated learning in basic-clinical science correlation conferences, in the simulation center and at the bedside.

Objective: We hypothesized that PCE students demonstrate a range of NFC and curiosity scores, and those who self-selected to participate in the “Challenge Track” (CT) would have higher NFC and I-type curiosity scores as compared to “non-Challenge Track” students (non-CT.) **Design:** Using previously described survey tools, we measured NFC, Deep-SPQ, Surface-SPQ, I-type and D-type curiosity scores in PCE students. Scores for the CT group were compared to the non-CT group. **Results:** Data from fifty-four students were analyzed, nine of whom had self-selected into the CT group. Among all students (CT and non-CT), NFC was positively correlated with Deep-SPQ ($r = 0.40$, $p < 0.01$), and both I-type ($r = 0.72$, $p < 0.01$) and D-type curiosity ($r = 0.67$, $p < 0.01$.) NFC was negatively correlated with Surface-SPQ ($r = -0.50$, $p < 0.01$.) Deep-SPQ scores for the CT group were higher than the non-CT group (mean scores 39.22 [CT] versus 31.7 [non-CT], $p < 0.01$.) Surface-SPQ were lower in the CT versus the non-CT group (mean scores 16.00 [CT] versus 19.98 [non-CT], $p = 0.01$.) **Conclusion:** Intrinsic interest and a desire to maximize meaning are important motivators for learning in this cohort, but their importance was greater for students in the CT group as demonstrated by higher Deep-SPQ scores. Measuring NFC, SPQ and curiosity scores could allow educators to prospectively identify students who may be more responsive to specific methods of learning, and thereby tailor interventions to a student’s curiosity type and intrinsic desire to learn. Some students with low NFC, high Surface-SPQ and D-type curiosity scores may respond better to (and learn more effectively from) conventional modes of education, while students with high NFC, high Deep-SPQ and I-type curiosity scores may prefer creative, unconventional educational interventions. Further work will assess whether NFC, SPQ and curiosity scores can be used to better individualize curricula in undergraduate medical education.

ENHANCING MEDICAL STUDENT ATTITUDES ABOUT OBESITY THROUGH LONGITUDINAL PATIENT RELATIONSHIPS

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Background: Despite obesity's relevance and impact, curricula addressing obesity are under-represented in clinical medical education. We developed an obesity education curriculum and assessed student attitudes toward obesity and obesity surgery.

Methods: We paired third-year students with obese patients undergoing bariatric surgery. Students established a longitudinal patient relationship, received faculty mentorship, and kept a reflections journal. An attitude assessment survey was administered before and after third year. Reflections were analyzed for common themes.

Results: Student responses differed from those reported of practicing physicians on many survey statements, including more strongly agreeing with the relationship between obesity and serious medical conditions ($p < 0.001$), the need to educate patients about obesity risks ($p < 0.001$), and willingness to recommend bariatric surgery evaluation ($p = 0.004$). Differences were maintained after clinical clerkships. Reflection themes included recognition of obesity stereotypes, improved estimation of body-mass index, and awareness of physicians' attitudes about obesity.

Conclusions: A pilot longitudinal curriculum has impact on student attitudes and understanding of obesity. Students have different attitudes toward obesity than practicing physicians, and programs such as this may help maintain positive attitudes.

DEFINING MINIMUM REQUIRED PALLIATIVE CARE COMPETENCIES FOR GRADUATING MEDICAL STUDENTS

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Poster presentation of work in progress, Category: Undergraduate Medical Education

Background:

Caring for patients at end of life and their families is a fundamental skill in the practice of medicine, but most medical students feel unprepared to address pain and symptom management, offer psychological support, and communicate with their patients with advanced illness. Furthermore, medical school training in palliative care is widely-viewed as inadequate, and there is wide variability in what is taught and learned. A set of consensus-derived, competency-based standards for medical student education in palliative care are needed to guide education and evaluation.

Goal: To identify a comprehensive set of minimum competencies in palliative care for graduating medical students, and achieve expert consensus on these competencies.

Methodology:

1. Assembled a working group of palliative care medical educators to draft minimum palliative care competencies for residents and medical students based on the recently published core competencies for fellowship programs in hospice and palliative medicine.
2. Planned initial validation process: online palliative care expert consensus survey to recommend whether each competency is essential, desirable or neither.
3. Planned content validity process: Same questions to deans of medical education, residency directors, residents, medical students, and educators with special interest in palliative care education.
4. Plan to revise competencies based on expert feedback, seek endorsement of relevant professional societies, publish consensus guidelines, and pursue funding for outcome evaluation.

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THE *FIRST NIGHT* LECTURES, HANDS-ON INTERNAL MEDICINE FOR THIRD YEAR MEDICAL STUDENTS

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Category of submission:

- Poster Presentation
- Undergraduate Medical Education

The *First Night* lecture series has been created as part of the BIDMC Internal Medicine's Senior Teacher elective. Available to third year Internal Medicine residents, this two week elective works to improve teaching skills by providing an opportunity to lead didactics with third and fourth year medical students. Currently senior teachers are scheduled to meet with medical students for an hour of dedicated didactics without a clear or consistent curriculum. In order to provide material to the resident and a practical use of the didactic time for the medical students, the First Night lecture series was created.

The lecture series, developed by residents to be delivered by their colleagues, focuses on the night of admission for common clinical scenarios, chosen from the Internal Medicine curriculum. The initial topics under development are: Syncope/Falls, Acute Renal Failure, Fever, Determining Volume Status, Dyspnea, Chest pain, Altered mental status, Abdominal pain, and GI Bleed.

The goal of these talks is to prompt the learners to organize and consolidate their knowledge of differential diagnoses, diagnostic tests, and therapies for each scenario as they would on the initial admission night when admitting patients with these common presentations. Furthermore students will be encouraged to determine what needs to be done immediately (i.e. the night of admission rather than later in the hospital course), what should be anticipated overnight, and what to expect over the subsequent hospital course. The resident teacher will also look up and prepare a patient recently admitted with the same clinical scenario so that the group can compare the plan they developed with one actually put into place.

By focusing on the first night, students may use their knowledge actively and with the constraints they will encounter as interns. By focusing on these topics, our goal is to prepare them not only for clerkship examinations, but to begin to think as their house officer counterparts do.

The talks are designed in such a way that they can be given by any senior teacher, not just the original authors. In this way, we can ensure that the curriculum lives on past its initial creation, and we can continue to add to it over time.

DESIGN AND IMPLEMENTATION OF A PROCEDURAL SKILLS CURRICULUM FOR THIRD YEAR MEDICAL STUDENTS

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Category of Submission: Poster Presentation, Undergraduate Medical Education

Introduction: The Association of Surgical Education states that the learning of basic procedural skills by medical students is essential for success during residency. However, while these skills are deemed integral to undergraduate medical education, teaching of these skills is often based on haphazard clinical opportunities, non-standardized, and without opportunities for adherence to principles of learning. The goal of this intervention was to design and implement a curriculum to address these needs.

Methods: A new procedural skills curriculum was designed and implemented during academic year 2010-11 at Brigham and Women's Hospital, a Harvard Medical School-affiliated teaching hospital. The nine skills included were selected by consensus of all third year Core Clerkship Directors to be most relevant to third year students. The curriculum included the creation and dissemination of rubrics for each of the skills selected; a website containing these rubrics along with other resources; a case to facilitate discussion about medical students performing procedural skills with patients; several structured simulation sessions for skill building, practice and assessment.

Results: Fifty-three students prepared for and completed the first two simulation sessions of the curriculum between May and July 2010. Students completed questionnaires regarding their confidence and experience around each skill as well as their impression of the overall curriculum. Planned analysis will evaluate the effect of this curriculum on student confidence and competence with the skills at the completion of the curriculum.

Conclusions: Creation and implementation of an innovative skills curriculum was feasible as a component of the third year clinical curriculum. Assessment of the effect of the curriculum on student confidence and competence is underway.

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