HARVARD MEDICAL SCHOOL

MEDICAL EDUCATION DAY

BOOK OF ABSTRACTS

TUESDAY OCTOBER 27, 2009
12:00 PM TO 5:30 PM
JOSEPH B. MARTIN CONFERENCE CENTER
INTRODUCTORY KEYNOTE • 12 TO 1:30 PM • 1ST FLOOR – PECHET FAMILY CONFERENCE ROOM

Keynote: Ready to Fly: Evaluating Competence in Aviation: A Cross Professional Look at Performance Assessment
Captain Calvin Augustin, USAF Lt. Colonel, Flight Instructor Boeing & FAA Examiner Boeing, Retired Captain/ US Airways

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

Assessment Tools - 1ST FLOOR – PECHET FAMILY CONFERENCE ROOM
Edward Krupat, PhD; Susan Farrell, MD, EdM

Medical Knowledge in the Application of Patient Care – ROOM # 216
Richard Schwartzstein MD; Elizabeth Breen, MD

Teaching and Evaluating Humanistic Competencies in Physicians – ROOM # 217
Susan Block, MD

The Role of the Hidden Curriculum in Physician Professional Development – ROOM # 214
Elizabeth Gaufberg, MD, MPH; Sigall Bell, MD

CLOSING PLENARY AND ABSTRACT AWARD CEREMONY • 3:30 TO 4:30 PM • 1ST FLOOR – PECHET FAMILY CONFERENCE ROOM

Presentation of HMS Award for Excellence in Medical Education Scholarship and of HMS Commendation Awards for Medical Education Scholarship

Plenary: Faculty Development for Evaluating Professionalism
Yvonne Steinert, PhD
Faculty of Medicine and Centre for Medical Education
McGill University

POSTER & TECHNOLOGY SESSION / RECEPTION • 4:30 TO 5:30 PM • 2ND FLOOR – JOSEPH B. MARTIN CONFERENCE CENTER

HMS Faculty and affiliates’ poster and technology demonstrations of research projects related to medical education
October 27, 2009

Dear Colleagues:

Welcome to Harvard Medical School's eighth 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 Role of Performance Assessment in the Development of a Physician.” We are very excited to welcome Captain Calvin Augustin, United States Air Force (USAF) Lt. Colonel, as the introductory keynote speaker. With forty years of aviation experience as a command pilot with the USAF, as a pilot instructor in the military as well as domestic and international civilian airlines, and as an FAA examiner and manager of evaluation departments for Boeing, he will share with us his experience in the assessment of pilots in training. His talk will be followed by a discussion with a panel of faculty, during which we will have an opportunity for an interesting cross-disciplinary exchange on student assessment. Four concurrent workshops on various aspects of performance assessment of medical trainees will convene after the panel discussion. Following the workshops, Dr. Yvonne Steinert, Professor of Family Medicine and Associate Dean for Faculty Development at McGill University, will present her work on faculty development for evaluating professionalism. The afternoon will conclude with a poster session and reception, during which we will acknowledge three 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,

Susan Frankl, MD
Faculty Chair, Medical Education Day

Richard Schwartzstein, MD
Director, Academy at Harvard Medical School
Medical Education Day Planning and Review Committee

Susan Frankl MD, Faculty Chair
Lisa Frontado, MS, EdM
Rick Gillis
Jane Neill
Michael Parker, MD
Elisabeth Peet, MA
Toni Peters, PhD

Scholarship in Medical Education Awards Reviewers

Erik Alexander, MD  Graham McMahon, MD
Stanley Ashley MD  Richard Mitchell MD, PhD
Patricia Kritek, MD  Laurie Raymond MD
Alan Leichtner, MD  Robert Stanton MD
Table of Contents

From page 17 forward, poster locations correlate directly with the page numbers in this book — for example, an abstract on page 17 of this book refers to poster location #17 on the 2nd floor of the Joseph B. Martin Conference Center, 77 Avenue Louis Pasteur.

<table>
<thead>
<tr>
<th>PAGES</th>
</tr>
</thead>
<tbody>
<tr>
<td>WORKSHOPS IN MEDICAL EDUCATION</td>
</tr>
<tr>
<td>HMS COMMENDATION AWARDS FOR SCHOLARSHIP IN MEDICAL EDUCATION</td>
</tr>
<tr>
<td>DEMONSTRATIONS: Educational Technology</td>
</tr>
<tr>
<td>POSTERS: Educational Technology</td>
</tr>
<tr>
<td>Simulations</td>
</tr>
<tr>
<td>Assessment</td>
</tr>
<tr>
<td>Culture Society and Community</td>
</tr>
<tr>
<td>Continuing Medical Education</td>
</tr>
<tr>
<td>Graduate Medical Education</td>
</tr>
<tr>
<td>Undergraduate Medical Education</td>
</tr>
</tbody>
</table>

INDEX BY AUTHOR

<table>
<thead>
<tr>
<th>PAGES</th>
</tr>
</thead>
<tbody>
<tr>
<td>List of Authors</td>
</tr>
</tbody>
</table>

List of Authors

<table>
<thead>
<tr>
<th>BY FIRST AUTHOR – PRESENTATION TYPE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Balasundaram K, Logiudice R, Dillon E, Abookire S, Gordan P - POSTER - CME</td>
</tr>
<tr>
<td>Barnett SR, Mitchell JD, Jones SB - POSTER - GME</td>
</tr>
<tr>
<td>Block S — WORKSHOP</td>
</tr>
<tr>
<td>Botts A - POSTER - GME</td>
</tr>
<tr>
<td>Botts A, Barnett S - POSTER - GME</td>
</tr>
<tr>
<td>Brett-Fleegler M, Rudolph J, Eppich W, Fleegler E, Simon R - POSTER - ASSESSMENT</td>
</tr>
<tr>
<td>Chiappa V - POSTER - GME</td>
</tr>
<tr>
<td>Clark W, Daetwyler C, Novack D, Saizow R - DEMONSTRATION - TECHNOLOGY</td>
</tr>
<tr>
<td>Clinton BK, Gross AF, Baker J, Stoklosa J, Wei M, Blesius CR, Denninger J - POSTER – TECHNOLOGY</td>
</tr>
<tr>
<td>Corn SB, Segal BS - DEMONSTRATION - TECHNOLOGY</td>
</tr>
<tr>
<td>List of Authors</td>
</tr>
<tr>
<td>---------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Cort A, Gandhi R - Demonstration - Technology</td>
</tr>
<tr>
<td>Crotty B, Mostaghimi A - Poster - Technology</td>
</tr>
<tr>
<td>Dalal AK, Thordike MEL - Poster - UGME</td>
</tr>
<tr>
<td>Doherty EG - Poster - Assessment</td>
</tr>
<tr>
<td>Farrell SE, Fabiny AR, Krupat E, Pelletier SR, Kesselheim JC - Poster - Assessment</td>
</tr>
<tr>
<td>Fisher L, Mitchell J, Jones S - Poster - UGME</td>
</tr>
<tr>
<td>Gaufréberg E, Bell SK — Workshop</td>
</tr>
<tr>
<td>Gaufréberg E, Bell SK, Batalden M, Sands R - Poster - UGME</td>
</tr>
<tr>
<td>Gaufréberg E, Givon L, Joseph R, Kueppenbender K, Shtasel D - Poster - UGME</td>
</tr>
<tr>
<td>Henry D, Robson J, Green-Hopkins I, Hron J - Poster - GME</td>
</tr>
<tr>
<td>Hess J, Allen W - Poster - Culture / Community</td>
</tr>
<tr>
<td>Irish J, Lown B, McKenzie M, Rock L, Roberts D, Schwartzstein R - Poster - GME</td>
</tr>
<tr>
<td>Jones SB - Poster - GME</td>
</tr>
<tr>
<td>Guterman EL, Cohn M, Krupat E, Shields HM - Poster - UGME</td>
</tr>
<tr>
<td>Krupat E, Armstrong EG - Poster - Assessment</td>
</tr>
<tr>
<td>Krupat E, Farrell S — Workshop</td>
</tr>
<tr>
<td>Kesselheim J, Joffe S - Poster - GME</td>
</tr>
<tr>
<td>Demonstration - Technology</td>
</tr>
<tr>
<td>Krupat E, Pelletier SR, Chemicky DW - Poster - Assessment</td>
</tr>
<tr>
<td>Lage DE, Ahn C, Day CS - Poster - Culture / Community</td>
</tr>
<tr>
<td>Lee PT, Nelson BD - Poster - UGME</td>
</tr>
<tr>
<td>Linos D, Hodin R - Poster - GME</td>
</tr>
<tr>
<td>Long A, Kerfoot BP, Chopra S, Shaw T - Poster - CME</td>
</tr>
<tr>
<td>McCormick F, Kadzielski J - Poster - GME</td>
</tr>
<tr>
<td>Miller K, Rao S, Johnston K, Potter J, Nekhlyudov L - Poster - GME</td>
</tr>
<tr>
<td>Monaghan C, Sharma N - Poster - GME</td>
</tr>
<tr>
<td>Schwartzstein R – Poster - Assessment</td>
</tr>
<tr>
<td>Pallais JC - Poster - GME</td>
</tr>
<tr>
<td>Pallais JC, Florez JC, Altshuler D, De Bakker PIW - Poster - GME</td>
</tr>
<tr>
<td>Pallais JC, Babushok D, Padmanabhan V, Hunt D, Bazari H - Poster - Assessment</td>
</tr>
<tr>
<td>Pallais JC, Bazari H, Wexler D, Demay M, Hunt D, Freeman M, Haber D, Crowley W,</td>
</tr>
<tr>
<td>Florez JC, Thakuria J, Holmes L, Altshuler D - Poster - GME</td>
</tr>
<tr>
<td>Park EM, Surber C, Gimbel B, Wolfe D - Poster – Technology</td>
</tr>
<tr>
<td>Peet E, Pelletier S, Jackson A, Chernicky D, Krupat E - Poster - Assessment</td>
</tr>
<tr>
<td></td>
</tr>
</tbody>
</table>
# List of Authors

<table>
<thead>
<tr>
<th>Author(s)</th>
<th>Presentation Type</th>
<th>Pages</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pian-Smith MCM</td>
<td>POSTER - SIMULATION</td>
<td>21</td>
</tr>
<tr>
<td>Puig A</td>
<td>POSTER - GME</td>
<td>54</td>
</tr>
<tr>
<td>Puig A, Wright D</td>
<td>POSTER - GME</td>
<td>60</td>
</tr>
<tr>
<td>Raju S, Karson A, Finn K</td>
<td>POSTER - GME</td>
<td>55</td>
</tr>
<tr>
<td>Rutledge R, Wertheim B, Bhan I, Wright DE</td>
<td>POSTER - TECHNOLOGY</td>
<td>20</td>
</tr>
<tr>
<td>Sabharwal S</td>
<td>POSTER - UGME</td>
<td>67</td>
</tr>
<tr>
<td>Schwartzstein R, Breen E</td>
<td>WORKSHOP</td>
<td>2</td>
</tr>
<tr>
<td>Shapiro FE</td>
<td>POSTER - GME</td>
<td>56</td>
</tr>
<tr>
<td>Ship AN</td>
<td>POSTER - CULTURE/COMMUNITY</td>
<td>33</td>
</tr>
<tr>
<td>Siegelman J, Huang C, Pallin DJ, Pozner CN</td>
<td>POSTER - SIMULATION</td>
<td>22</td>
</tr>
<tr>
<td>Silverman BC, Clinton BK, Brendel DH</td>
<td>POSTER - GME</td>
<td>57</td>
</tr>
<tr>
<td>Thompson RW, Lewis KH, Krauthamer MB</td>
<td>POSTER - GME</td>
<td>58</td>
</tr>
<tr>
<td>Urion DK</td>
<td>POSTER - CME</td>
<td>37</td>
</tr>
<tr>
<td>Urman R, Rosow C, Strichartz G, Pawlowski J</td>
<td>POSTER - UGME</td>
<td>69</td>
</tr>
<tr>
<td>Vlassakova B, Waisel D</td>
<td>POSTER - CME</td>
<td>38</td>
</tr>
<tr>
<td>Weinstein AR, Tess AV, Almeida JM, Schwartzstein RM, Roberts DH</td>
<td>POSTER - UGME</td>
<td>70</td>
</tr>
<tr>
<td>Weintraub R, Cancetta C</td>
<td>DEMONSTRATION - TECHNOLOGY</td>
<td>14</td>
</tr>
<tr>
<td>Weiss D</td>
<td>POSTER - GME</td>
<td>59</td>
</tr>
<tr>
<td>Wong GT, Wu E, Ciccarese P, Ocana M, Clark T, Kinoshita J</td>
<td>DEMONSTRATION - TECHNOLOGY</td>
<td>15</td>
</tr>
<tr>
<td>York-Best CM, Khachadoorian-Elia HR, Wosu UA</td>
<td>POSTER - UGME</td>
<td>65</td>
</tr>
<tr>
<td>Zukotynski K</td>
<td>DEMONSTRATION - TECHNOLOGY</td>
<td>16</td>
</tr>
</tbody>
</table>
EIGHTH ANNUAL
Medical Education Day
WORKSHOPS

WORKSHOP #1 • 1:45 PM TO 3:15 PM • 1ST FLOOR – PECHET FAMILY CONFERENCE ROOM

Assessment Tools
Edward Krupat, PHD; Susan Farrell, MD, EdM

OVERVIEW

This workshop provides participants with a review of available instruments for the assessment of knowledge, attitudes, and skills. The session will consist of three parts: The didactic component will consider a review of how to match methods, instruments and approaches to assessment goals, as well as the pro’s and con’s of specific instruments and approaches. In the second part, time will be allotted for participants to ask specific questions about assessment needs. Finally, participants will be presented with assessment challenges and be asked in small groups to discuss these and propose solutions.
WORKSHOP #2 • 1:45 PM TO 3:15 PM • ROOM # 216

Medical Knowledge in the Application of Patient Care

Richard Schwartzstein, MD; Elizabeth Breen, MD

OVERVIEW

In this workshop, Drs. Lisa Breen and Rich Schwartzstein will work with the participants to define the skills and behaviors that comprise the competence we call “clinical skills,” and to explore the strengths and limitations of various approaches to assess competence in this vitally important domain. The group will address both procedural and cognitive issues and the range of learners from students to residents and fellows. Faculty are encouraged to share examples of evaluation instruments they may have developed for the assessment of clinical skills.
Teaching and Evaluating Humanistic Competencies in Physicians

Susan Block, MD

OVERVIEW

1. Define humanistic competencies (group discussion)

2. Approaches to assessing humanistic competencies
   - Purposes of assessment
   - Formative (focus on feedback)
   - Summative (focus on measurement)

3. Brief review of evidence re: teaching humanistic competencies

4. Review of learner videotape (interactive exercise)
   - Providing effective feedback
   - Measurement issues

5. Conclusions and summary
The Role of the Hidden Curriculum in Physician Professional Development

Elizabeth Gaufberg, MD, MPH; Sigall Bell, MD

OVERVIEW

The strongest influences on physician development may not be those transmitted through intended or formally-endorsed curricula of our medical schools. In fact, there is increasing understanding of a powerful "hidden curriculum" shaping the values, roles and identity a physician develops over the course of training. Educators routinely prioritize holding students to high standards of professional responsibility, adherence to ethical principles, self-awareness, and moral reasoning. A major challenge in teaching these content areas is that there is often a stark and pervasive contrast between the standards we would like to hold our students to and what they see all around them in their clinical settings. Students absorb attitudes toward difficult or marginalized patients, adopt constructive or maladaptive ways to cope with suffering or loss, and learn from their role models styles of communication with both patients and colleagues. Medical students are socialized into the physicians they become by immersion in the culture and hierarchy of medicine. “Real life” lessons on professionalism learned through direct apprenticeship often trump classroom ideologies.

This interactive workshop will employ direct student observations and reflections on the hidden curriculum to serve as "feedback" to the faculty about our own attitudes and behaviors, and their impact on medical trainees. We will explore the implicit assumptions and values embodied in medical culture, and consider strategies to empower medical students (and ourselves) to maintain self-awareness, communicate effectively and achieve high standards of professionalism against the backdrop of the hidden curriculum.
EIGHTH ANNUAL
Medical Education Day

October 27, 2009  Joseph B. Martin Conference Center  Harvard Medical School

AWARD RECIPIENTS
Awards for Scholarship in Medical Education

FIRST PRIZE
HMS Award for Excellence in Medical Education Scholarship

DEBRIEFING ASSESSMENT FOR SIMULATION IN HEALTHCARE (DASH): ASSESSMENT OF THE RELIABILITY OF A DEBRIEFING INSTRUMENT — Marisa Brett-Fleegler\textsuperscript{a}, MD, Jenny Rudolph, PhD\textsuperscript{b}, Walter Eppich\textsuperscript{c}, MD, MEd, Robert Simon, EdD\textsuperscript{b} [\textsuperscript{a}Division of Emergency Medicine, Children’s Hospital Boston, Harvard Medical School, \textsuperscript{b}Department of Anaesthesia, Harvard Medical School and Center for Medical Simulation, Cambridge, MA, \textsuperscript{c}Division of Emergency Medicine, Children’s Memorial Hospital, Northwestern University Feinberg School of Medicine] – ASSESSMENT POSTER

HMS Commendation Awards for Medical Education Scholarship


DETERMINING PRECISE EXPERT RATING STANDARDS FOR THE PEER OBSERVATION OF MEDICAL LECTURES – Lori Newman, MEd\textsuperscript{1}; Dara Brodsky, MD\textsuperscript{2}; Charles Vollmer Jr, MD\textsuperscript{3}; David Roberts, MD\textsuperscript{1} Anna Johansson, PhD\textsuperscript{3}; K Meredith Atkins, MD\textsuperscript{1}; Richard Schwartzstein, MD\textsuperscript{1} [\textsuperscript{1}Shapiro Institute for Education and Research, \textsuperscript{2}Dept of Neonatology, \textsuperscript{3}Dept of Surgery, \textsuperscript{1}Dept of Obstetrics and Gynecology, BIDMC] – ASSESSMENT POSTER

AWARD RECIPIENT ABSTRACTS FOLLOW
DEBRIEFING ASSESSMENT FOR SIMULATION IN HEALTHCARE (DASH):
ASSESSMENT OF THE RELIABILITY OF A DEBRIEFING INSTRUMENT
[ASSESSMENT POSTER]
Marisa Brett-Fleegler\textsuperscript{a}, MD, Jenny Rudolph, PhD\textsuperscript{b}, Walter Eppich\textsuperscript{c}, MD, MEd, Eric Fleegler\textsuperscript{a}, MD, MPH, Robert Simon, EdD\textsuperscript{b} for the EXPRESS investigators \textsuperscript{[a]Division of Emergency Medicine, Children’s Hospital Boston, Harvard Medical School, \textsuperscript{b}Department of Anaesthesia, Harvard Medical School and Center for Medical Simulation, Cambridge, MA, \textsuperscript{c}Division of Emergency Medicine, Children’s Memorial Hospital, Northwestern University Feinberg School of Medicine]}
Contact information: Marisa Brett-Fleegler, MD: marisa.brett@childrens.harvard.edu.

First Prize: HMS Award for Excellence in Medical Education Scholarship

Debriefing is a facilitated conversation following a critical event in which participants explore and analyze their actions and thought processes in order to improve future performance. A reliable and valid tool capable of assessing healthcare simulation debriefing is needed to enhance instructor training and document debriefing competency. The Debriefing Assessment for Simulation in Healthcare (DASH) is designed to meet this need. The DASH was developed in the context of a multicenter study assessing the impact of a debriefing script on the debriefing skills of novice Pediatric Advanced Life Support instructors (the EXPRESS study). The DASH is a six element, evenly weighted, criterion-referenced, behaviorally anchored rating scale. Content validity is derived from theoretical foundations in organizational behavior, experiential learning, and related fields. Each element is scored on a 7-point Likert scale. Elements collectively assess the debriefer’s ability to create an engaging and safe learning environment, foster reflective practice, and help identify and close observed performance gaps.

Fifty multiprofessional simulation instructors from around the world participated in a live, web-based DASH training session. They viewed and scored a series of standardized poor, superior and average debriefings created by the DASH developers. Inter-rater reliability of the DASH was assessed from the raters’ scores at the element level and for the 6 elements overall using intraclass correlation coefficients (ICC). Additional inter-rater reliability data was obtained from the scores of a separate group of seven raters from the EXPRESS study after a two-day training session.

The six elements of the DASH had the following correlations coefficients for the multiprofessional instructors: for element one, ‘sets the stage for an engaging learning environment’, the ICC was 0.75. For element 2, ‘maintains an engaging context for learning’, the ICC was 0.83. For element 3, ‘structures debriefing in an organized way’, the ICC was 0.83. For element 4, ‘provokes interesting and engaging discussions and fosters reflective practice’, the ICC was 0.84. For element 5, ‘identified performance gaps’, the ICC was 0.71. For element 6, ‘helps close performance gaps’, the ICC was 0.80. The overall ICC for the DASH was 0.77. For the EXPRESS raters, the ICCs ranged from 0.73 to 0.94, with the exception of element 1 which had an ICC of 0.44. The overall ICC for the DASH was 0.81.

A debriefing evaluation tool both allows assessment of debriefing competence and provides debriefers with feedback to improve their performance. Importantly, improved simulation-based debriefing is also expected to lead to enhanced instructor feedback and debriefing skills in the clinical setting. Our data support the robust inter-rater reliability of the DASH as well as its generalizability to a range of simulation instructors. Our ultimate goal is its dissemination for widespread use, to support educators in their use of debriefing and to develop reflective healthcare practitioners.

6 ~ HMS Commendation Awards for Scholarship in Medical Education
**INDICATORS OF STUDENT PROFESSIONALISM ON THE HMS COMPREHENSIVE OSCE [ASSESSMENT POSTER]**

Susan E. Farrell MD, EdM, Anne R. Fabiny, MD, Ed Krupat PhD, Stephen R. Pelletier PhD, Jennifer C. Kesselheim, MD: HMS Center for Teaching and Learning

Contact: S. Farrell: 617 432 5401; sefarrell@partners.org.

HMS Commendation Award for Medical Education Scholarship

**Background:** The HMS Comprehensive OSCE is a 9-station, standardized examination designed to evaluate students’ abilities to integrate basic science and clinical knowledge and demonstrate clinical skills through observed encounters with standardized patients (SP). Faculty examiners assess students’ history-taking, physical exam skills, and knowledge, and trained SPs assess aspects of the patient-doctor relationship, including communications skills and professional demeanor.

**Objective:** In 2009, the Comprehensive OSCE Steering Committee included observable indicators of professional behavior in the faculty examiners’ checklists of two OSCE cases. The purpose of this pilot was to determine the reliability of the professionalism indicators on the two cases, the percentage of students who were observed to perform the indicated behaviors, and the relationships of examiners’ observations to both examiners’ and SPs’ global ratings of assessed professional skills.

**Methods:** A review of the medical education literature revealed a number of articles defining various aspects of medical professionalism. Six observable behaviors were selected for inclusion in the examiners’ dichotomous checklists: 3 behaviors related to ‘history-taking’ and ‘building a relationship with the patient’ and 3 behaviors associated with physical examination techniques, as well as the indicator, ‘student is receptive to feedback in a professional manner’. The SP rating scale (1 = poor to 5 = excellent) was included in the examiner checklist to assess students’ abilities to ‘deal with the patient in a professional and compassionate manner’.

Faculty examiners’ were oriented to the new checklists. Data from 160 students were collected as part of the routine administration of the OSCE. Descriptive statistics and Pearson correlations were calculated.

**Results:** Observed indicators of professional behavior ranged from 98%: ‘introduces self’, to 79%: ‘washes hands’. Only 49% of students were observed to perform all six behaviors and to be receptive to feedback in a professional manner. 18% of students were felt by the examiner not to be receptive to feedback in a professional manner. Overall mean global rating scores were: ‘deal with the patient in a professional and compassionate manner’ = 4.45 ± 0.8, and ‘receptive to feedback in a professional and thoughtful manner’ = 4.44 ± 0.8. Eighty seven and 88% of students were rated highly (‘very good’ or ‘excellent’) on these indicators, respectively. Professional behavior in dealing with patients and in being receptive to feedback were strongly positively correlated (alpha = 0.75; p < 0.01).

**Conclusions:** During an OSCE, basic professional behaviors were able to be observed by faculty examiners, but half of the students assessed were not observed to exhibit all of the assessed behaviors. Though the overall ratings of professional behavior were very good, almost one in five students was not considered by the faculty examiner to be receptive to feedback. Indicators of students’ professionalism during a test experience need to be correlated with students’ actual behaviors in the clinical setting. However, basic professional behaviors should be successfully incorporated into students’ patient interactions, regardless of the context in which they are observed. Attention to feedback as a method of improving clinical skills is needed, as an additional component of students’ professional maturation.
DETERMINING PRECISE EXPERT RATING STANDARDS FOR
THE PEER OBSERVATION OF MEDICAL LECTURES
[ASSESSMENT POSTER]
Lori Newman, MEd; Dara Brodsky, MD; Charles Vollmer Jr, MD; David Roberts, MD
Anna Johansson, PhD; K Meredith Atkins, MD; Richard Schwartzstein, MD
1Shapiro Institute for Education and Research, 2Dept of Neonatology, 3Dept of Surgery, 4Dept of Obstetrics and Gynecology, BIDMC.

HMS Commendation Award for Medical Education Scholarship

Background: We sought to establish a new peer observer training program utilizing a previously validated peer observation instrument for assessing the quality of lectures1. The primary objectives of a peer observer training program are to standardize interpretation of performance, reduce observer error, and improve the instrument’s inter-rater agreement measure. To achieve these objectives we needed to develop a set of expert-derived, precise performance rating standards and behavioral anchors for each of the instrument’s 11 criteria and rating scales. Authors LN and RS chose expert panelists (n=7) from the staff of the BIDMC Office of Education Research and Resource Faculty program. The panel included individuals from a diversity of medical disciplines, who possess extensive experience and training in clinical education, and have taught in a variety of educational venues. All panelists had participated in development of the original lecture assessment instrument.

Method: Our expert panelists convened during a one year period to define exact behavioral descriptions for each of the instrument’s performance criteria and rating levels. Working through each criterion in turn, the group observed 5-8 minute segments of videotaped medical lectures chosen from publicly accessible websites. During the observation, group members took notes on content, language, audience reaction, learning environment, eye contact, and gestures. Following each observation, the group discussed the exact behaviors they witnessed and performance levels the behaviors represented. Group members then rated the criteria that were the focus for the session (usually 1 to 3 criteria per session). Members justified their rating by pinpointing the exact behaviors that determined their scores. Panelists considered each other’s perspectives during a rigorous discussion, and were then given a chance to change their ratings. The group continued rating individual criteria until an acceptable inter-rater agreement of .8 intraclass correlation coefficient (ICC) was achieved.

Results: To date we have observed 36 lectures. To achieve our target measure of .8 ICC, the group watched and discussed, on average, 9 lectures (range 5 to 14) for each criterion. The number of lectures we needed to view for a particular criterion appeared to depend on its level of concreteness. For a concrete criterion such as “communicates goals of the talk” the group achieved an ICC of .8 by watching 5 different tapes; for more abstract criteria, such as “demonstrates command of the subject matter,” the group watched and discussed 14 lectures.

Discussion: Through an intensive group consensus-building process, we have developed precise behavioral standards for each of the lecture criteria defined for the Peer Assessment of Medical Lecturing instrument. Early in the process, the group realized the necessity for a rater’s guide to accompany the scoring instrument. The guide will help observers identify precise behavioral standards for each criterion, thereby establishing a consistent frame of reference for accurate assessment and higher inter-rater reliability.

EIGHTH ANNUAL

HMS Medical Education Day

Poster and Technology Demonstration
Abstracts (grouped by category)
HEALTHCARE COMMUNICATION: AN E-LEARNING RESOURCE

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Evidence shows that better communication enhances quality, safety, efficiency and medical outcomes, and lessens malpractice actions. Teaching interview and communication skills is a challenge for educators. doc.com is an e-learning resource that describes and demonstrates effective communication to improve relationships with patients and team members. doc.com’s 41 fully referenced Modules cover the interactional competencies that IOM, ACGME and AAMC reports consider essential; including for example, depression, domestic violence and alcohol abuse, as well as related professionalism topics such as boundaries, mindfulness and teamwork. More than 400 videos show physicians demonstrating effective communication strategies and many videos include embedded annotations and the author-expert’s comments. Interactive functions such as ability to form groups, give feedback and take quizzes are features of doc.com’s unique educational platform.

In an evaluation project, Drexel researchers assessed (with standardized patients) 60 medicine residents’ ability in giving bad news, before and 3 months after random assignment to an educational intervention with or without doc.com. They found a significant trend in abilities with increasing intensity of the intervention (p<.01). (Presented: EACH, Oslo, 2008)


Faculty users made these comments:
• “We use doc.com in all years, as part of our required curriculum, and have used it for resident remediation as well. We are sold and would be glad to talk to anyone interested.” -Pittsburgh
• “One resident told me she literally ‘replayed’ the words used in the doc.com video and couldn’t believe what transpired. She reorganized the conversation toward partnership, and said, ‘Wow, this stuff really works!’ It was very rewarding.” -Boston
• “My faculty like being able to view students’ online answers at their convenience” -Miami
• “I used doc.com to remediate one resident in trouble because of poor doctor-patient relationships. It made a great difference. doc.com may have saved his career.” –Philadelphia

Harvard Medical School physician authors of doc.com Modules include William Clark, Elizabeth Gaufberg, Muriel Gillick, Steven Locke, Beth Lown, Elizabeth Rider, and Dr. Clark is doc.com Managing Editor. Additional physician authors are from Einstein, Hopkins, Yale, Stanford, McMaster and other outstanding schools.

More than 12,500 subscribers at more than 50 institutions including Yale, Stanford, Drexel, Hopkins, Einstein, Pittsburgh, Wake Forest, Minnesota, Kentucky, Miami, as well as 2 Australian schools are learning with doc.com.

The American Academy on Communication in Healthcare in partnership with Drexel University College of Medicine designs and publishes this e-learning resource.

See doc.com at www.AACHonline.org or http://webcampus.drexelmed.edu/doccom. To explore interactive functions, including assessment quizzes, click for a FREE “15-day trial”
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 and Gynecology, and Newborn Medicine.

Co-founders Stephen B. Corn, MD and B. Scott Segal, MD developed the website in 1998 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”

TAP employs the Socratic-like question and answer teaching method which characterizes much of the clinical education experience. User feedback confirms that medical professionals enjoy the learning structure of their 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 TAP 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” form of online education distribution was granted patent protection in 2006 and remains an industry-unique feature.

TAP has nearly 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, TAP was highlighted by the Accreditation Council for Continuing Medical Education (ACCMCE) as an example of particularly high-quality online educational resource. TAP has received thousands of positive 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. (See user comment book).
WWW.IDIMAGES.ORG:
A DIGITAL TOOL FOR LEARNING INFECTIOUS DISEASES

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The Partners Infectious Disease Images (www.idimages.org) web site provides an easily searchable collection of cases and images to educate healthcare students and providers on important infectious diseases, including HIV/AIDS, tuberculosis, malaria and many others. A result of collaboration among the Infectious Diseases Divisions at the Massachusetts General Hospital and the Brigham and Women’s Hospital, the Ragon Institute and the Infectious Diseases Society of America (IDSA), the site publishes images and cases provided by the hospitals’ faculty and staff, members of IDSA, ID fellows in training, and by other contributing authors including physicians in resource-scarce settings.

Availability: The www.idimages.org website is free-of-charge to health care professionals throughout the world, and is particularly useful to medical students, residents and fellows training in infectious diseases, to medical educators and to practicing physicians. Current expansion efforts, supported by a grant from the National Library of Medicine, include collaboration with the faculty of the Harvard Medical School “Immunology, Microbiology and Pathology” (IMP) course to develop cases illustrating the major topics covered by the course and an atlas of microbiology images. The collection of illustrative case material is easily available to Harvard Medical School students outside of scheduled class time, either via the web site URL www.idimages.org or through a direct eCommons link.

Teaching and Self-assessment tool: The www.idimages.org web site enhances the teaching of infectious diseases by providing a searchable collection of cases and images that illustrate important pathogens and clinical syndromes. By including high quality images and digital videos of physical findings, radiology, pathology and microbiology in the context of case histories, the site allows trainees and physicians to expand their knowledge of infectious diseases. The medical case material on the www.idimages.org web site can be searched as unknowns, a useful feature for self-assessment. The facts of the case are followed by a differential diagnosis, after which appear the diagnostic procedure, discussion and final diagnosis. Searches can also be performed by organism (e.g. streptococcus), syndrome (e.g. pneumonia), type of image (e.g. microbiology, radiology, physical finding) and type of host (e.g. immunocompromised or elderly). Both specific key-word and drop-down menu search options are available for greater ease-of-use.

Partners Infectious Diseases Images has been recognized as the best web site for infectious diseases case material by Clinical Infectious Diseases, one of the most prominent journals for infectious diseases practitioners in the United States.
Within medical education, there is a need for students and residents to learn how to negotiate sensitive conversations with patients. By using simulation, students can practice and demonstrate their ability to complete these complicated tasks without the risk of affecting the health of real patients. To date, medical schools and licensing boards have used patient-actors for this task, but there are significant financial and scheduling related obstacles to this approach.

The Computer Simulation Assessment Tool (CSAT) is a web-based patient-physician interaction tool created to augment traditional or distributed, asynchronous learning. Using custom built software and a commercially available web-hosting service, a “choose your own adventure” interface was created, which affords the learner the opportunity to approach the clinic scenario from multiple lines of inquiry. Users select scenario actions using one of two interfaces: selecting from a series of drop down menus, or searching a database of actions using “search as you type” technology. Each user action is accompanied by a related Flash video clip. To replicate the time constraints of an actual patient encounter, a virtual timer is used to display the time remaining in the appointment. After the allotted time expires, or the user indicates they are finished, the program provides feedback regarding the appropriateness of actions. Individualized remediation -- in the form of videos and PDFs -- is used to target additional learning for each student based on specific deficits identified by the simulation. The events of a completed session are easily retrieved so that performance may be reviewed with a supervisor or teacher in detail. Aggregate data collected from participants can be used for completing gap-analyses and needs assessments for additional curriculum offerings.

Currently, several different patient-physician simulations are under development using CSAT. These include a simulation during which the physician must consent a psychotic 22-year old female for use of an antipsychotic medication; a simulation during which a physician must consent a 40-year old male for the use of citalopram as adjunct therapy to cognitive-behavioral therapy; and, a simulation in which a physician must complete a motor, sensory, and cognitive exam of a patient suffering an acute stroke to determine if the patient is an appropriate candidate for the clot-busting agent, TPA.

Advantages of this approach include: asynchronous and distributed learning; highly individualized feedback and remediation based on performance data; integration, synthesis, and demonstration of material obtained in more traditional didactic formats.

PROJECT DEMONSTRATION: https://www.psychsimulation.com/demo
ACCURACY OF AN AUTOMATED ANALYZER OF CORONARY CT ANGIOGRAPHY IN ED:

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Purpose:
To determine the accuracy of an Automated Analyzer for Coronary CT Angiography, versus Conventional Radiologist Reading, in setting of the Emergency Department Patient with Suspected CAD

Methods and Materials:
101 consecutive coronary CTA performed in the ED of a major teaching hospital between September 2008 and July 2009 for suspected CAD are to be analyzed using the COR Analyzer, an automated Coronary CTA reader from Rcadia. Automated results for each of the 10 coronary artery segments (LM and proximal, mid and distal for each of RCA, LAD and LCX) are to be retrospectively compared to review of each case by an expert CCTA reader. Analysis of the 1010 coronary artery segments from the 101 patients was performed. There was no comparison available for 25 segments.

Results:
Review of the 101 patients showed the following distribution: 51%, females, 28% on lipid lowering therapy, 9% on beta blockers and 20% on aspirin. 60% of patients had no known CAD or obvious risk factors. ECG was normal in 40% of patients. Stress test and ECHO were available for 44% and 26% of these patients, and when done were normal in 72% and 50% respectively. Results from analysis of the 1010 coronary artery segments in 101 patients by COR Analyzer for significant (greater than 50%) stenosis are as follow : true positive 3; false positive 33, true negative 943, false negative 6. Cor Analyzer automated, compared to a Radiologist, reading of CCTA for significant CAD in the ED patients in our study had a sensitivity of 33% specificity 96%, PPV 8% and NPV 99%. Results from analysis of 101 patients by COR analyzer for significant (greater than 50%) stenosis: true positive 7; false positive 13, false negative 2, true negative 78. Cor Analyzer automated; compared to a Radiologist, reading of CCTA for significant CAD in the ED patients on study had a sensitivity of 77%, specificity 85%, PPV 35% and NPV 97% (No comparison was available for one patient).

Conclusion:
Interim analysis of the 1010 coronary artery segments in 101 patients for suspected CAD in the ED setting suggests that a negative result by the automated COR Analyzer tends to be reliable, a negative predictive value of 99% in segment analysis and 97% in patient analysis. Automated reading is, therefore, likely to have a useful role in the ED setting where a quick negative result has benefits in terms of patient-waiting times and resource allocation. However, positive results should not be considered reliable. Instead, they should be used an indicator for more thorough CCTA analysis by an experienced reader. Our data suggest that the automated reader tends to “overcall” abnormal areas, especially regions of hard plaque.
THE CLINICAL EXCHANGE COMMUNITY ON GHDONLINE.ORG: SHARING COMPLEX CASES AND DISCUSSING BEST MANAGEMENT IN RESOURCE-LIMITED SETTINGS

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Unlike physicians in affluent settings who can ask for consult services and opinions at any point in time, clinicians operating in resource limited settings often work in isolation and rarely have access to specialists for advice, or are unable to share their practical knowledge with colleagues. Despite these challenges, the development and quick adoption of Information and Communication Technologies in the medical field and the unprecedented increase in global health funding has created new opportunities for electronic health services. Developed by the Global Health Delivery Project, GHDonline (http://www.ghdonline.org) is a Virtual Professional Collaboration [1] platform where health care providers engage in real-time problem-solving, and share images, files and links with other members either online or via email.

This demonstration will introduce Clinical Exchange, a private community created in March 2009 where Brigham and Women’s and Partners In Health Rwandan clinicians consult with each other and on complex clinical cases they encounter in the field. In the case of a 12-year old female previously diagnosed with nephrotic syndrome who presents with facial edema and ascites, a Rwandan internist requests assistance discerning a differential diagnosis and prognosis. First advised by a GHDonline moderator to supplement additional laboratory data, a nephrologist then advises this is likely a recurrence of nephrotic syndrome and details proper treatment and monitoring. The internist then provides an update after the patient’s follow-up visit to an outpatient clinic and asks follow-up questions regarding her medical regimen.

In addition to offering consult services to Rwandan clinicians, this community provides invaluable training opportunities to all its members - with exposure to rare cases and specialists’ insights - and the ability to search through past cases and discussions via a built-in search engine. With cases spanning a wide range of sub-specialties, including cardiology, general surgery, and dermatology, Rwandan and Boston-based moderators help guide the community. Members can contribute to this secured community seamlessly via email or by signing in online, where they can post files such as X-ray images, blood smears, and digital images of rashes. Functionality developments enabling video uploads and mobile integration are in the planning phase.

Alzheimer Disease is the most common cause of dementia in 2009, accounting for 60 – 80% of all dementia cases. An estimated 5.3 million people have Alzheimer Disease in the US. Alzheimer Disease is a highly complex disease, involving the interaction of various genetic and environmental influences, resulting in multiple pathophysiological and metabolic changes, on the protein, cell and tissue level of the CNS and circulatory systems. The challenge to develop cures for highly complex diseases demands extensive interdisciplinary collaboration and exchange of biomedical information in context.

The Alzheimer Disease Knowledge Base (ADKB) enables researchers to browse, search and annotate scientific hypotheses, claims and information, putting these into the context of testable hypotheses and treatment discovery. It is freely available from the Alzforum website as well as at the URL: http://hypothesis.alzforum.org/swan/do!getHome.action

Currently, 150° hypotheses of AD cause and progression have been curated into the ADKB, including 1500° claims, citing 1500° journal articles and web sources, reflecting the work of 7000° individual researchers. ADKB relies upon a moderated community process to capture the collective insights of the AD field, and welcomes and explicitly models disagreements and differing interpretations of data. The value of ADKB as a medical educational resource is reflected in these authors’ comments: “One cannot overestimate the importance of this resource for students in neurosciences” and “I use SWAN for teaching junior lab members and to share with colleagues.”

The ADKB is part of the Alzheimer Research Forum (http://www.alzforum.org/), the web's most dynamic scientific community dedicated to understanding Alzheimer disease and related disorders. Access to the web site is free to all. The web site reports on the latest scientific findings, from basic research to clinical trials; creates and maintains public databases of essential research data and reagents, and produces discussion forums to promote debate, speed the dissemination of new ideas, and break down barriers across the numerous disciplines that can contribute to the global effort to cure Alzheimer's disease. The key to Alzforum’s success lies in having a dedicated staff of editors, curators and developers who produce timely, high-quality scientific information resources. Alzforum has been notable in being able to engage hundreds of AD researchers to comment on newly published articles, participate in live discussions, and donate their time and expertise to lead virtual conferences. The ADKB utilizes SWAN (Semantic Web Application in Neuromedicine), which was developed with Semantic Web technology, a new standard for knowledge organization and transfer on the Web. SWAN is an interdisciplinary project to develop a practical, semantically-structured framework for scientific discourse initially applied in collaboration with the Alzheimer Research Forum to create the ADKB.
AN IPHONE-BASED QUIZ ON THE TNM STAGING FOR LUNG CANCER

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Category of Submission: Technology Demonstration

Abstract:

The American Joint Committee on Cancer is expected to publish the new edition of the TNM staging guide in October 2009, which will come into effect on January 1, 2010. In particular, a revised TNM staging system for non-small cell lung cancer has been proposed. The goal of this project is to develop a quiz to assist physicians and residents in learning the revisions to the TNM staging system by using a series of questions. For ease of use, the quiz has been implemented as an application (iApp) on the Apple iPhone. The application asks the user a series of questions in several forms, of which one example is: “In the TNM staging of lung cancer, what is the N classification if there are metastases to ipsilateral hilar lymph nodes?” The user is then prompted to enter the correct answer. If an incorrect answer is provided, the application displays the correct one. A running tally of correct/incorrect answers is recorded. In this technology demonstration, we will invite participants to use the application and to provide feedback for future versions.
PSYCHIATRY HUB WIKI: THE DEVELOPMENT OF A COLLABORATIVELY EDITED WEBSITE FOR PSYCHIATRY RESIDENCY EDUCATION

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Psychiatry residents are exposed to large quantities of information during training. Within the MGH/McLean Adult Psychiatry Residency, resident feedback has highlighted a concern that current educational demands often overwhelm the ability to actively learn, organize, and share important information. Additionally, each resident faces unique opportunities and challenges within his or her individual education based on varying call schedules, caseloads, and supervisors. We suspected that centralized online access to educational material would improve our sense of curriculum and community within the residency and within the psychiatry department as a whole. As the leaders of this effort, we will describe our ongoing journey towards building a collaborative online learning resource that is aligned with the needs of our residency and department.

In the summer of 2008, we began to field ideas for a psychiatry residency “wiki,” a collaborative website that is editable by anyone with access to the password protected site. We were motivated by similar efforts within the neurology and medicine residencies, but we also discovered that even within our own residency there had been several past websites that had been initiated but not adopted. It was evident that successful integration of a new technology requires reflection and careful planning. In our work to develop a sustainable project, we considered both proprietary and free online platforms for creating group “wikis”. In order to avail ourselves of essential technical support, we successfully petitioned our department to finance our use of the ‘hub’ platform supported by the Massachusetts General Hospital Laboratory of Computer Science (http://hub.partners.org). The ‘hub’ provides a number of tools that support learning online including a “wiki” area, file sharing, a group calendar, and discussion forums.

The “Psychiatry Hub Wiki” began construction in October of 2008 and was launched two months later for a community of 130 residents and faculty. We will describe our progress, challenges, and plans for future development. This will include technical aspects, leadership and administrative demands, and patterns of user adoption and resistance, all of which are important to integrating a community-driven technology into residency education. We propose that a collaborative website-based learning platform such as this has the potential to generate enthusiasm for active learning among residents and faculty. A live demonstration will be available for participants to experience the website.
HOUSESTAFF WIKIS IMPROVE SELF-REPORTED INTERN EXPERIENCE AND EDUCATION

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The increase in the use of digital resources for patient care and medical education has outpaced our ability to organize this information and use it efficiently. Concurrently, newer web technologies that foster collaboration and dissemination of real-time information are gaining popularity and bringing about a cultural change in the internet that embraces decentralized editing. We created a wiki, a website that links content and allows users to edit and author pages quickly with limited programming skills, to improve resident education. We postulated that the creation of a housestaff wiki organized around the existing internal medicine curriculum would enable widespread adoption of a collectively authored and updated residency knowledge bank.

The wiki was created using Microsoft Sharepoint Software installed on a secure hospital server. The site contained organizational information such as clinical pathways, phone directories, and a calendar of conferences, as well as limited quick reference information with direct links to the literature. We tracked website usage data and administered pre and post intervention surveys to interns to establish baseline attitudes regarding web technology and to evaluate for educational impact.

Usage data indicate that the wiki was accessed 23,327 times during the 2008-2009 academic year. Eighty-three percent of these visits occurred from an affiliated clinical site, with the remainder occurring from a community internet provider, mobile data networks or non-affiliated clinical sites.

Of incoming interns surveyed (n=33), 54.5% had used a wiki previously to look up information and 9.1% had contributed to a wiki previously. At one year, 30% of interns (n=48) reported contribution, and 85.5% of interns agreed or strongly agreed that the wiki improved their overall experience as interns. Additionally, 87.5% of interns felt the wiki improved their efficiency in completing tasks, while 54.2% felt that it improved their education. There were no differences by sex or by age in quartiles by regression analysis.

We have found through this experience that a wiki is a low cost and effective tool for supplementing the education of house officers. Usage and survey data indicate that the wiki has become an essential fixture on the wards. A limited number of complete reference topics and lack of video of conferences may have limited perceived educational benefit, but expansion of both of these is currently underway.
A major strength of many residency programs is a diversity of exposure to patient populations and treatment settings. The Harvard Longwood Psychiatry Residency Training Program embodies this mission. Residents rotate at a variety of institutions including Brigham & Women’s Hospital, Faulkner Hospital, Beth Israel Deaconess Medical Center, Children’s Hospital, Mount Auburn Hospital, Carney Hospital, Healthcare for the Homeless, and Massachusetts Mental Health Center. Similarly, many other residency programs utilize a variety of training sites for their residents. While many regulations and guidelines for residents are shared across sites, each facility maintains its own clinical and administrative policies, call schedules, and medical record systems, a potential source of confusion for rotating trainees. Centralized access to this administrative information, evaluation forms, residency policies, and educational materials, has become essential.

When combining distinct institutions that use different e-mail systems, networks, and file servers, finding a cost-effective and convenient way to distribute information can be challenging. The incorporation of a residency website is one solution utilized at many training programs. Major factors that limit more widespread use of such web-based tools among training programs include financing and the need for computer programmers.

This year, the Harvard Longwood Psychiatry Residency Training Program has designed a website hosted by Google sites that takes advantage of Google’s popular, web-based email system. The advantage of using this website server include: the allowance for enough storage space to hold key documents relevant to administrative and clinical issues, ease of creation, and its cost-effectiveness while still maintaining a level of security through the use of personal email accounts and an “invitation” system. Faculty members across sites use a multitude of institution-specific networks; the HLPRTP website provides a unified medium. Building an interactive website through Google sites does not require knowledge of HTML formatting, allowing people with limited computer experience the ability to create a sophisticated website with a reasonable budget.

The www.HLPRTP.com website allows residents to access the program’s many resources regardless of their geographic location or training site. Information on the website includes an online interactive calendar, resident survival guides, pan-institutional directory, and didactic course materials. Residents can easily reference clinical guides and sentinel papers. Similarly, all faculty and lecturers have the ability to browse the didactic information distributed to the residents. As such, the 59 residents and over 200 associated faculty in the Harvard Longwood Psychiatry program can use this website to easily share information and resources.
IMPLEMENTING A REAL-TIME INPATIENT PHYSICAL FINDINGS DATABASE AT MASSACHUSETTS GENERAL HOSPITAL: ATTEMPTS TO IMPROVE INPATIENT PHYSICAL DIAGNOSIS EDUCATION

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Introduction: Physical diagnosis education is crucial throughout all stages of medical training, but is one of the most difficult educational activities to coordinate, as available physical findings vary based on the inpatient census. At Massachusetts General Hospital (MGH), physical findings rounds are conducted multiple times weekly. To identify potential patients for inclusion, the physician leading physical findings rounds must contact several colleagues throughout the hospital and solicit patients who have physical findings that would be useful for the group to observe. This process can be time consuming and inefficient and presents challenges when potential patients are discharged, the physical finding resolves, or when physicians aware of a physical finding are not contacted in time. We sought to assess the ability of a centralized, shared database integrated with existing clinical workflow software to improve identification of patients with physical findings.

Methods: We developed a physical finding database and software interface to allow clinicians to rapidly record physical findings of educational value. An icon was added to Apprentice, an inpatient task management system used at MGH, to add a given patients’ information and physical finding into the database. A database view was developed to allow on-demand generation of a list of current inpatients with notable physical findings. We will assess user acceptance of the data entry and retrieval systems through qualitative interview.

Results: Results are being collected at the time of this submission. We will show one month of data, including type of physical finding reported, time of report (during work rounds, during afternoon work session, etc) and level of training of reporter (attending, intern, resident) as well as user perceptions of usefulness.

Conclusions: An electronic physical finding database and software interface has the potential improve identification of patients with features of particular educational value. Assessment of one such implementation is reported.
SPEAKING UP ACROSS AUTHORITY GRADIENTS:
ARE THESE SIMULATOR LESSONS RETAINED AND TRANSFERRED?

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Introduction: Trainees should question teachers if they disagree, have safety concerns, or when treatment plans are unclear. We determined that a simulation-based educational intervention that teaches a diplomatic “advocacy / inquiry” technique (A/I) improves the frequency and effectiveness with which residents speak up to superiors during simulated OB emergencies. Subsequently we seek to determine the transferability and longevity of these simulator-based lessons, by testing if techniques of A/I are accessed and demonstrated by these subjects in a computer-based exercise 2 years later.

Methods: In a simulated OR setting, 40 anesthesiology trainees were individually presented with opportunities to challenge co-workers (confederates acting as anesthesiology attending, surgery attending and circulating nurse) about their actions or directives (eg, an order to administer a relatively contraindicated medication). In debriefing, trainees were taught techniques of advocacy (saying one’s observation) and inquiry (an open curious request for the other’s reasoning). Subjects participated in another scenario at that time with new opportunities to challenge. In this ongoing work, consented subjects are followed up 2 years later and are asked to view video vignettes on a website. In the movies, an attending anesthesiologist asks them to do things that are controversial (eg, place a spinal in a septic patient, or give nalbuphene to a narcotic-abusing patient). Their real-time spontaneous responses are audio-taped. They each view 4 of 5 possible videos in random order and have 2 opportunities to “speak up” during each case. As with the initial simulation-based intervention, language is scored by 2 raters using a 5-point scale (1: no acknowledgement of problem; 2: oblique answer; 3: A or I; 4: A and/or I repeatedly with desire for discussion; 5: crisp succinct A/I). A control group (45 trainees and junior faculty who are experienced with simulation but who have not been trained specifically about A/I) is also being studied, from the Feinberg SOM of Northwestern, Geffen SOM at UCLA and Miller SOM in Miami.

Results: Mean scores for the original subjects were statistically different, pre- and post-debriefing (challenge scores specifically towards anesthesiology attending were 2.62 +/- 1.19 vs 3.23 +/- 1.27, p=0.0004, using the Wilcoxon signed-rank test). Fifteen subjects completed the follow-up study using the computer-based exercise. The mean time interval between initial training and follow-up is 24.5 +/- 5.3 months, and the mean follow-up language score for challenging is 2.92 +/- 1.36. Results from the control group are pending, but will be complete at the time of presentation.

Discussion: A simulation-based educational program improved “speaking up” by residents across authority gradients during simulated OB emergencies. We are assessing long-term retention and transferability of such simulation lessons with a computer-based exercise 2 years later, by comparing the results from those obtained from naïve controls. Ultimately, overcoming communication barriers within the medical hierarchy may improve learning opportunities and promote patient safety.
ASSESSING PERFORMANCE IN SIMULATED IN-HOSPITAL VENTRICULAR FIBRILLATION CARDIAC ARREST

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Abstract Text
Introduction: High-quality CPR and early defibrillation improve outcomes in cardiac arrest from ventricular fibrillation. We assessed our hospital’s response to ventricular fibrillation arrests (VFA) using simulated codes.
Objectives: To determine time to CPR/defibrillation, and identify opportunities for improvement.
Methods: We collected data from consecutive unannounced simulated VFAs between 2003 and 2008 in both clinical and non-clinical areas at an urban academic hospital. Local staff responded initially, followed by the hospital code team; responders were instructed to act as if the simulation were real. All simulations were run by a single facilitator, using a computerized mannequin. Time to CPR and defibrillation were compared to our institution standards of 1 and 3 minutes. We report medians (interquartile range [IQR]), and proportions meeting the standard (95% confidence intervals [CI]).
Results: There were 45 mock codes during this period, with complete timing data on 43. Median time to CPR was 75 seconds (IQR 62-112.5), with 23% (95%CI 12-39%) meeting the standard. Median time to defibrillation was 329 seconds (IQR 242-535.5), with 9% (95%CI 3-22%) meeting the standard. Deficits included failure to: perform adequate CPR (63%), communicate well (56%), and properly operate or access equipment (42%).
Conclusions: In this single-center analysis of response to in-hospital cardiac arrest, hospital standards were rarely met. First responders and the code team were often slow to initiate CPR and defibrillation, often performed CPR poorly, and often had poor team dynamics. While the mock codes may not be an exact proxy for real events, these results corroborate prior studies and suggest that an alternative training strategy is needed.
DEBRIEFING ASSESSMENT FOR SIMULATION IN HEALTHCARE (DASH):
ASSESSMENT OF THE RELIABILITY OF A DEBRIEFING INSTRUMENT
[ASSESSMENT POSTER]

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First Prize: HMS Award for Excellence in Medical Education Scholarship

Debriefing is a facilitated conversation following a critical event in which participants explore and analyze their actions and thought processes in order to improve future performance. A reliable and valid tool capable of assessing healthcare simulation debriefing is needed to enhance instructor training and document debriefing competency. The Debriefing Assessment for Simulation in Healthcare (DASH) is designed to meet this need. The DASH was developed in the context of a multicenter study assessing the impact of a debriefing script on the debriefing skills of novice Pediatric Advanced Life Support instructors (the EXPRESS study). The DASH is a six element, evenly weighted, criterion-referenced, behaviorally anchored rating scale. Content validity is derived from theoretical foundations in organizational behavior, experiential learning, and related fields. Each element is scored on a 7-point Likert scale. Elements collectively assess the debriefer’s ability to create an engaging and safe learning environment, foster reflective practice, and help identify and close observed performance gaps.

Fifty multiprofessional simulation instructors from around the world participated in a live, web-based DASH training session. They viewed and scored a series of standardized poor, superior and average debriefings created by the DASH developers. Inter-rater reliability of the DASH was assessed from the raters’ scores at the element level and for the 6 elements overall using intraclass correlation coefficients (ICC). Additional inter-rater reliability data was obtained from the scores of a separate group of seven raters from the EXPRESS study after a two-day training session.

The six elements of the DASH had the following correlations coefficients for the multiprofessional instructors: for element one, ‘sets the stage for an engaging learning environment’, the ICC was 0.75. For element 2, ‘maintains an engaging context for learning’, the ICC was 0.83. For element 3, ‘structures debriefing in an organized way’, the ICC was 0.83. For element 4, ‘provokes interesting and engaging discussions and fosters reflective practice’, the ICC was 0.84. For element 5, ‘identified performance gaps’, the ICC was 0.71. For element 6, ‘helps close performance gaps’, the ICC was 0.80. The overall ICC for the DASH was 0.77. For the EXPRESS raters, the ICCs ranged from 0.73 to 0.94, with the exception of element 1 which had an ICC of 0.44. The overall ICC for the DASH was 0.81.

A debriefing evaluation tool both allows assessment of debriefing competence and provides debriefers with feedback to improve their performance. Importantly, improved simulation-based debriefing is also expected to lead to enhanced instructor feedback and debriefing skills in the clinical setting. Our data support the robust inter-rater reliability of the DASH as well as its generalizability to a range of simulation instructors. Our ultimate goal is its dissemination for widespread use, to support educators in their use of debriefing and to develop reflective healthcare practitioners.
360° ASSESSMENT SYSTEM FOR THE HARVARD NEONATAL-PERINATAL FELLOWSHIP PROGRAM

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Objective: To determine whether adding a 360° Assessment System provides valuable input to fellow evaluation within the 6 core competencies and improves overall effectiveness of feedback.

Background: The ACGME has challenged fellowship (and residency) programs to provide documentation via outcomes assessment that all fellows have successfully mastered the six core competencies. A variety of assessment "tools" have been identified by the ACGME for outcomes assessment determination; one of which is the 360° assessment tool. This tool provides timely, consolidated feedback from sources in the fellow’s sphere of influence (attendings, nurses, respiratory therapists, social workers and self-assessment). We believe that the 360° assessment tool will enhance feedback in the development of training exceptional neonatologists and will improve the fellow’s ability for self-assessment and reflection to encourage lifelong learning.

Methods: Survey-monkey will be utilized to administer a pre-survey and to administer the actual 360° assessment system to attendings, nurses, respiratory therapists, social workers and fellows. (http://www.surveymonkey.com/MySurvey_EditorPage.aspx?sm=OE0HKwzQz52SWrsgDrdiGPaTdS2eeiJaY31nXTN0kk%3d). Staff will be given education and training regarding the process and purpose of the assessments. Pre-survey will be administered in August to 2nd and 3rd year fellows. (http://www.surveymonkey.com/MySurvey_EditorPage.aspx?sm=ztIZvZ%2bNrvgXwQH5G6Gpqdm6VFWuFdujXZ8M2pXglk%3d). The 360° assessments will be administered (for all fellows) twice per year (November and April). Surveys will remain anonymous. One year after inception a post-survey will be administered to staff.

Results: To be determined. After review of the 360° assessment data, fellows will be given both formative and summative feedback with specific areas for improvement/development identified twice per year by Program Director. Action plans will be designed if needed. Results from 360° assessment tool will be compared with the current monthly post-rotation evaluations. Any gaps or inconsistencies will be identified.

Conclusions: To be determined. After one year, the 360° Assessment System will be reviewed to determine whether it is a valuable, reproducible, and quantifiable tool to assess the 6 core competencies and to provide feedback to improve the level of training for the Harvard Neonatal-Perinatal Fellows.
INDICATORS OF STUDENT PROFESSIONALISM ON THE HMS COMPREHENSIVE OSCE

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HMS Commendation Award for Medical Education Scholarship

**Background:** The HMS Comprehensive OSCE is a 9-station, standardized examination designed to evaluate students’ abilities to integrate basic science and clinical knowledge and demonstrate clinical skills through observed encounters with standardized patients (SP). Faculty examiners assess students’ history-taking, physical exam skills, and knowledge, and trained SPs assess aspects of the patient-doctor relationship, including communications skills and professional demeanor.

**Objective:** In 2009, the Comprehensive OSCE Steering Committee included observable indicators of professional behavior in the faculty examiners’ checklists of two OSCE cases. The purpose of this pilot was to determine the reliability of the professionalism indicators on the two cases, the percentage of students who were observed to perform the indicated behaviors, and the relationships of examiners’ observations to both examiners’ and SPs’ global ratings of assessed professional skills.

**Methods:** A review of the medical education literature revealed a number of articles defining various aspects of medical professionalism. Six observable behaviors were selected for inclusion in the examiners’ dichotomous checklists: 3 behaviors related to ‘history-taking’ and ‘building a relationship with the patient’ and 3 behaviors associated with physical examination techniques, as well as the indicator, ‘student is receptive to feedback in a professional manner’. The SP rating scale (1 = poor to 5 = excellent) was included in the examiner checklist to assess students’ abilities to ‘deal with the patient in a professional and compassionate manner’. Faculty examiners’ were oriented to the new checklists. Data from 160 students were collected as part of the routine administration of the OSCE. Descriptive statistics and Pearson correlations were calculated.

**Results:** Observed indicators of professional behavior ranged from 98%: ‘introduces self’, to 79%: ‘washes hands’. Only 49% of students were observed to perform all six behaviors and to be receptive to feedback in a professional manner. 18% of students were felt by the examiner not to be receptive to feedback in a professional manner. Overall mean global rating scores were: ‘deal with the patient in a professional and compassionate manner’ = 4.45 ± 0.8, and ‘receptive to feedback in a professional and thoughtful manner’ = 4.44 ± 0.8. Eighty seven and 88% of students were rated highly (‘very good’ or ‘excellent’) on these indicators, respectively. Professional behavior in dealing with patients and in being receptive to feedback were strongly positively correlated (alpha = 0.75; p < 0.01).

**Conclusions:** During an OSCE, basic professional behaviors were able to be observed by faculty examiners, but half of the students assessed were not observed to exhibit all of the assessed behaviors. Though the overall ratings of professional behavior were very good, almost one in five students was not considered by the faculty examiner to be receptive to feedback. Indicators of students’ professionalism during a test experience need to be correlated with students’ actual behaviors in the clinical setting. However, basic professional behaviors should be successfully incorporated into students’ patient interactions, regardless of the context in which they are observed. Attention to feedback as a method of improving clinical skills is needed, as an additional component of students’ professional maturation.
SPACED EDUCATION PROGRESS-TESTING OF MEDICAL STUDENTS

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• Background:
  Traditional progress-testing of medical students is resource-intensive and provides little educational benefit. We investigated whether online spaced education could be utilized as a reliable, valid and educationally-valuable method of longitudinal progress-testing.

• Methods:
  Students from four US medical schools were recruited via email. One-hundred twenty questions-answers were developed and validated in pre-clinical (anatomy and histology) and clinical (cardiology and endocrinology) domains. Students were randomized into two cohorts. For 30 weeks, students randomized to ‘longitudinal progress-testing alone’ (LPTA) received four new questions each week. Students randomized to ‘spaced education progress-testing’ (SEPT) received the identical four questions each week, plus 2-week and 6-week cycled-reviews of the questions. During weeks 31-34, the initial 40 questions were re-sent to all students to assess longer-term retention.

• Results:
  Of 2648 eligible students, 1067 enrolled in the trial. The 120-question progress-test was completed by 446 (84%) and 392 (74%) of LPTA and SEPT students, respectively. Cronbach alpha reliability was 0.87. Progress-test scores were 39.9%, 51.9%, 58.7% and 58.8% for year 1-4 students, respectively. There was no significant difference in performance between students in years 3 and 4. Progress-test performance correlated with Step 1 and Step 2 CK scores (r=0.52 and 0.57, respectively; p<0.001). The cycled-reviews generated a 170% relative increase in learning retention compared to baseline (effect size 0.95).

• Conclusions:
  SEPT provides a reliable, valid and educationally-valuable method of longitudinal progress-testing for medical students. Year 4 of medical school adds little to students’ knowledge in the domains tested. Spaced repetition of content can markedly increase longer-term retention of learning.

Disclosure: Dr. Kerfoot owns equity in and is a board member of Spaced Education Inc.
THE ANATOMY OF MEDICAL STUDENTS’ PRINCIPAL CLINICAL YEAR: A QUALITATIVE ANALYSIS USING CRITICAL INCIDENT REPORTS

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**Background:** Medical students’ first intensive clinical exposure to patients during their third year brings with it a broad array of thoughts and feelings. While these have been much discussed, few studies exist in which medical students’ observations of their third year have been systematically collected and analyzed.

**Methods:** During AY 2005-2006 45 Harvard Medical School students were asked to complete an anonymous check-in at the end of each month of their year-long clinical experience. They were asked to describe 2-3 interesting or memorable experiences that were associated with their clerkship during the past month. In all, 770 individual responses were received. These were coded for positivity-negativity and content, with a significant proportion coded by three independent coders for purposes of reliability.

**Findings:** The reflections fell into five broad content areas: about physicians (e.g., doctors giving instruction, doctors as positive or negative role models); about themselves or other students (feelings of uncertainty, of being useful, of work load); about patients and patient care (e.g., learning by doing or observing, forming bonds with patients); about professional culture (working in groups, comparison of different hospitals or services); and about specific content (e.g., birth, death, cancer). Two thirds of the incidents were coded as positive.

**Conclusions & Implications:** Third year medical students’ described care from a variety of perspectives, both biomedical and psycho-social. Although many of the experiences they reported involved negative or unpleasant occurrences, students often found value in being exposed to these and portrayed them as opportunities for growth.
DETERMINING PRECISE EXPERT RATING STANDARDS FOR
THE PEER OBSERVATION OF MEDICAL LECTURES

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HMS Commendation Award for Medical Education Scholarship

Background: We sought to establish a new peer observer training program utilizing a previously validated peer observation instrument for assessing the quality of lectures¹. The primary objectives of a peer observer training program are to standardize interpretation of performance, reduce observer error, and improve the instrument’s inter-rater agreement measure. To achieve these objectives we needed to develop a set of expert-derived, precise performance rating standards and behavioral anchors for each of the instrument’s 11 criteria and rating scales. Authors LN and RS chose expert panelists (n=7) from the staff of the BIDMC Office of Education Research and Resource Faculty program. The panel included individuals from a diversity of medical disciplines, who possess extensive experience and training in clinical education, and have taught in a variety of educational venues. All panelists had participated in development of the original lecture assessment instrument.

Method: Our expert panelists convened during a one year period to define exact behavioral descriptions for each of the instrument’s performance criteria and rating levels. Working through each criterion in turn, the group observed 5-8 minute segments of videotaped medical lectures chosen from publicly accessible websites. During the observation, group members took notes on content, language, audience reaction, learning environment, eye contact, and gestures. Following each observation, the group discussed the exact behaviors they witnessed and performance levels the behaviors represented. Group members then rated the criteria that were the focus for the session (usually 1 to 3 criteria per session). Members justified their rating by pinpointing the exact behaviors that determined their scores. Panelists considered each other’s perspectives during a rigorous discussion, and were then given a chance to change their ratings. The group continued rating individual criteria until an acceptable inter-rater agreement of .8 intraclass correlation coefficient (ICC) was achieved.

Results: To date we have observed 36 lectures. To achieve our target measure of .8 ICC, the group watched and discussed, on average, 9 lectures (range 5 to 14) for each criterion. The number of lectures we needed to view for a particular criterion appeared to depend on its level of concreteness. For a concrete criterion such as “communicates goals of the talk” the group achieved an ICC of .8 by watching 5 different tapes; for more abstract criteria, such as “demonstrates command of the subject matter,” the group watched and discussed 14 lectures.

Discussion: Through an intensive group consensus-building process, we have developed precise behavioral standards for each of the lecture criteria defined for the Peer Assessment of Medical Lecturing instrument. Early in the process, the group realized the necessity for a rater’s guide to accompany the scoring instrument. The guide will help observers identify precise behavioral standards for each criterion, thereby establishing a consistent frame of reference for accurate assessment and higher inter-rater reliability.

KNOWLEDGE VS INTEREST: AN ASSESSMENT TOOL TO OPTIMIZE EDUCATIONAL RESOURCES IN AN AMBULATORY SUBSPECIALTY ROTATION

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BACKGROUND: New medicine residency training regulations have resulted in the creation of new ambulatory subspecialty rotations. One of the initial challenges in developing new curricula is identifying the important topics that need to be covered as this guides resource allocation. Currently, most prioritization schemes focus on addressing knowledge deficits. Greater efficiency may be achieved by evaluating not only learners’ knowledge of particular subjects but also their interest in learning more about those topics. By taking into account the learners’ motivation, one can better tailor educational interventions. For example, optional web-based self-assessment modules may prove useful for topics that interest the learner, but are unlikely to be of benefit if the learner has little interest in the subject.

OBJECTIVE: The aim of the study was to explore the relationship between knowledge and interest and to identify high-yield endocrine topics characterized by relatively low perceived knowledge but high interest level.

METHODS: All 72 residents scheduled to rotate through the required endocrine selective for the last two years were asked to complete a survey evaluating both their perceived knowledge and interest in a number of endocrine topics. Using a scale of 1(worst) to 5(best), residents rated their knowledge in several general endocrine fields - diabetes, thyroid, calcium, adrenal, neuroendocrine, and reproductive endocrinology. In addition, residents evaluated both their level of knowledge and interest in 60 specific endocrine topics. Each topic was plotted on an “interest vs knowledge” graph according to its average score for each measure. Using the median of the means for all the topics, the graph was divided into four quadrants: low knowledge/low interest; high knowledge/low interest; high knowledge/high interest; and low knowledge/high interest.

RESULTS: 62 residents (86%) completed the questionnaire. Among the general endocrine fields, diabetes had the highest knowledge score (3.60± 1.03) and reproductive endocrine had the lowest (2.19± 0.87). There was internal consistency of scores whether analyzed by either general field or by grouping of individual topics by field. For the 60 specific topics, the average knowledge scores ranged from 2.03 to 4.15 with a median of 3.25. The average interest scores ranged from 2.61 to 4.23, with a median of 3.69. There was good correlation between interest and knowledge (r = 0.66) as shown by the fact that 76% of the topics were located in concordant quadrants (low knowledge/low interest and high knowledge/high interest). Of note, all of the reproductive endocrine topics fell into the low knowledge/low interest category. There were seven high-yield topics in the low knowledge/high interest group: thyroid emergencies, thyroid-drug interactions, calcium physiology, euthyroid sick syndrome, diabetes trials, hyperaldosteronism, and carcinoid.

CONCLUSIONS: Using a simple assessment tool showed that residents’ perceived knowledge of various endocrine topics is correlated to their interest. In addition, the survey provided a quantitative way of identifying both high-yield topics and areas with challenging deficits that inform how we prioritize educational resources. Similar assessments may be helpful in the development of other subspecialty curricula.
HMS Center for Evaluation
Annual Report of Required Course and Clerkship Ratings 2008 - 2009

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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 AY0405 – AY0809
3. Examples of the survey instruments

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 (26%-100% for AY0809) 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.
RACIAL AND GENDER DIVERSITY IN ORTHOPEDIC SURGERY: IMPLICATIONS FOR MUSCULOSKELETAL EDUCATION

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Introduction: Despite rising health disparities and unequal access to care in orthopedic surgery, the specialty has the lowest Latino and female representation of any other specialty and has lagging numbers of African-Americans. Previous studies have shown that musculoskeletal (MSK) education in medical schools nationwide is lacking, and that a commitment to strengthening the MSK curriculum is associated with greater minorities and women being interested in orthopedics. This study sought to determine areas of weakness where educators can target interventions to improve diversity within the orthopedic workforce, analyzing and comparing the orthopedic workforce trajectory to other surgical and medical specialties.

Methods: We used 2006 data from the Association of American Medical Colleges (AAMC) Facts Database and the U.S. Census to determine the racial and gender distribution of the general population, medical students, orthopedic residents, and practicing physicians in the U.S. The AAMC Faculty Roster was used to determine faculty diversity in orthopedics. Orthopedic residents and faculty were compared to residents and faculty of general surgery and other surgical and medical specialties. Statistical analysis was performed using Chi-squared and Fisher exact tests. Significance was assessed at p<0.05.

Results: The study found a significant difference between the racial/ethnic distribution of U.S. medical school graduates and orthopedic residents (p<0.001). Latinos represent 14.8% of the U.S. population, 6.7% of medical school graduates, 3.7% of orthopedic residents, and 2.3% of orthopedic faculty, and African Americans represent 12.3%, 7.1%, 3.5%, and 2.8% of these groups, respectively. Women represent 49% of medical students, but only 11.5% of orthopedic residents, 12.5% of faculty, and 3.7% of full professors. The proportions of Latino and African-American residents and faculty in orthopedics are significantly lower compared to general surgery, some surgical specialties, and internal medicine (p<0.05). Further, the orthopedic applicant pool is significantly more diverse than the eventual admitted group, and Latino and African-American applicants to orthopedic residency apply to fewer programs on average than white and Asian-American applicants.

Discussion: This study found that orthopedic surgery has a significant lack of diversity relative to other surgical and medical specialties, and that these disparities increase along the workforce trajectory. The relative lack of diversity compared to other surgical fields could be related to weaknesses in the MSK curriculum, as students are comparatively receiving more exposure to other fields. Further studies are needed to assess the specific biases of minorities and women against orthopedics and to determine the extent to which residency programs seek out and value diversity. At the medical school level, however, much can be done to ensure that a diverse group of prospective orthopedic surgeons are educated in MSK issues and mentored for successful residency placement to ultimately improve gender and racial disparities in care.
A PILOT SERVICE PROJECT IN HIV/AIDS:
TRAINING STUDENTS AS HIV TEST COUNSELORS

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The project began as collaboration between staff in the OEP and HU CFAR, focusing on increasing students’ interest in working with people with HIV/AIDS in Boston agencies. Aware of the continuing impact of HIV/AIDS on communities of color, staff sought to increase awareness and volunteering among students in local agencies in general and communities of color in particular. The Justice Resource Institute/Center for Training and Professional Development (under contract with the MA Department of Public Health) provided two, two-day trainings. Overall, 20 students were trained and certified; eight received rapid testing training certificates. These 20 students received concrete, skills-based information they can utilize throughout their careers, including education about HIV transmission, harm reduction, and how to carry out an effective sexual history and risk assessment. The students who donated ongoing time at specific sites honed their counseling skills, practiced how to take a comprehensive sexual history, discussed intimate details and completed an HIV risk assessment with a wide range of clients. They also gained experience working on multi-disciplinary teams, gained valuable primary care experience and increased their understanding of how public health departments and community health centers operate.

Other successes:
• Over 140 hours were donated to area agencies.
• Over 75 people received HIV education, counseling and testing.
• Eight students received certification in HIV rapid testing.

Only about one quarter of students who were trained did ongoing volunteer work and only 38% utilized their training at all. This was due to two major challenges: organization and scheduling. A second year will address these challenges.

When asked, “What is the most important thing you learned from taking the training and/or providing HIV C & T?” students very much appreciated learning about the harm reduction model:

“The process of harm reduction…is a very different rationale than what is typically taught in medicine, and I think it has a lot to offer to patient interaction. Meeting the patients where they are and providing the level of help they feel prepared for is sensible.”

“Acting as a volunteer counselor is probably one of the most hands-on, eye-opening experiences offered to medical students. The ability to have a potentially longer-term counseling relationship with a client is very unique and the perspective of harm reduction complements (and challenges) the teachings in PD1.”

Overall, one student said “I’ve learned a new-found respect for people’s efforts to keep themselves healthy, go to great lengths to learn about disease and transmission, be proactive in their treatment. Anyone who doubts patients’ investment in their own well-being should do some of this work.”
LISTENING TO LITERATURE:
A READING GROUP FOR PRIMARY CARE RESIDENTS AND FACULTY

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In 2009, I created the syllabus for and facilitated a short-fiction reading group for primary care doctors at BIDMC. The goal was to provide a sense of community for those in the Primary Care Program, to expand participants’ critical thinking skills, and to share in the discussion of literature and life. All Primary Care residents and HCA Faculty were invited. Participation was voluntary, but all were asked to attend at least 4 out of the 6 sessions in order to maintain continuity. Eighteen physicians participated; monthly attendance ranged between 13-16 individuals. The group included 6 faculty and 12 house officers; 2 of these were interns. Meetings were held monthly at my home. At the final meeting, participants completed an anonymous, written survey regarding the experience.

I chose short stories as the medium, so that it would be feasible for all to read the texts fully. Works were chosen for their literary value and not for any particular content, medical or otherwise. Stories read included Raymond Carver’s Cathedral, Alice Munro’s Meneseteung, Charlotte Perkins Gilman’s The Yellow Wallpaper, Tim O’Brien’s The Things They Carried, John Cheever’s The Country Husband, Gish Jen’s Birthmates, and Elizabeth Strout’s Incoming Tide.

The group dynamic was excellent: everyone participated, no one monopolized the conversation, and there were no silences. Discussions focused initially on the fictional work, but naturally moved to other issues that the texts raised: cultural differences, challenging family dynamics, gender expectations, perceptions of disability and mental illness, among many others. More than once, participants found that the text illuminated issues in their lives as physicians.

Spontaneous positive feedback about the group occurred before the final survey. One house officer sent an email to say that the group was a welcome balm during her difficult bone marrow transplant rotation. Several physicians routinely carpooled to the group and continued discussions en route. The final written feedback was uniformly positive and consistently documented that individuals saw their Reading Group colleagues as more interesting and complex individuals, felt a stronger connection to that community, felt sustained by having a sometimes “dormant” part of their intellect stimulated, and were invigorated by the discussions.
A MULTI-FACETED APPROACH TO IMPLEMENTING A HOSPITAL-WIDE, CULTURE-CHANGING RAPID RESPONSE SYSTEM

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Purpose: To create and implement a hospital-wide Rapid Response System (RRS) designed to recognize and act upon deteriorating patients.

Background: Rapid Response Systems have been shown to decrease the number of in-house cardiac arrests.

Method: A multidisciplinary team consisting of physicians and nurses created a two-tier RRS. The first tier comprised of the patients’ primary physicians and nurse. The second tier was activated if the primary team needed further assistance. This second tier team comprised of an intensivist, critical care resident and nurse, respiratory therapist and nurse supervisor. In order to educate the hospital about RRS, an education module was designed. This module comprised of a Power Point® presentation and included sample situations. In total, over 200 nurses and physicians were educated. The education sessions continued throughout the first few weeks of hospital-wide implementation. In addition, hospital-wide reminders were posted in the form of badges, posters and e-mails. Feedback was continuously given via e-mail, one-on-one discussions, and ongoing didactic sessions.

Data: Twenty RRS calls were made during the first seven weeks. Three patients were transferred to a higher level of care. The second tier team was involved in all three cases. In the first two weeks, the second tier team was called four times before the primary team. With extensive one-on-one feedback, repeated education sessions and reminders in the forms of posters and badges, the frequency of second tier calls without primary tier calls was reduced.

Conclusions: Our experience indicates that a multi-faceted approach helped implement a hospital-wide, culture-changing system. The multiple facets included didactic lectures, case scenarios, individual participant feedback, posters, badges, and e-mails.
IS ONLINE SPACED EDUCATION AN EFFECTIVE ADJUNCT TO A LIVE CONTINUING MEDICAL EDUCATION (CME) COURSE? – A Pilot Study

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Background: Online spaced education has been shown in randomized trials to increase knowledge acquisition, boost learning retention, and improve clinical behavior. Spaced education is currently delivered via e-mails sent at regular intervals (ranging from every one to four days) containing one or more clinically relevant questions. Upon submitting an answer to a question online, the answer is recorded in a central server, and the learner receives immediate feedback. Based on the learner’s performance, an adaptive algorithm customizes the spacing and content of subsequent questions for each learner. It is not clear how spaced education can best be ‘blended’ with traditional forms of medical education. We conducted a pilot study to determine whether spaced education is an effective adjunct to a live lecture-based CME course.

Methods: Attendees of the Harvard Medical School Update in Internal Medicine course, held in Boston in December of 2008, were recruited via e-mail. The spaced education program began at the close of the program in December 2008 and ran through May 2009. The program consisted of 12 questions on hepatitis C, which was the topic of a featured lecture during the course. The 12-item adaptive spaced education course was structured so that learners were sent two questions every two days. If a question was answered incorrectly, it was repeated 12 days later. If a question was answered correctly, it was repeated 24 days later. Once a question was answered correctly twice in a row, it was retired and not repeated again. Participants completed the program by retiring 80% of the questions and, upon doing so, were asked to complete an end-of-program evaluation using 5-point Likert-type scales.

Results: Eighty-six of 516 course attendees enrolled in the trial. Fifteen enrollees (17%) did not answer any questions. Forty-seven of the participants (66%) completed the program, of whom 42 (89%) submitted the end-of-program evaluation. Respondents reported that [1] the program enhanced the impact of the live CME course (90% strongly agree/agree), [2] they would recommend the spaced education program to a colleague (85%), [3] the program reinforced their knowledge of hepatitis C (91%), and [4] the program increased their confidence in managing patients with hepatitis C (81%). Forty-one of 42 respondents (98%) requested to participate in further spaced education programs offered as supplements to live CME courses.

Conclusions: Online spaced education is an effective and well-accepted adjunct to a live CME course.

Disclosure: Dr. Kerfoot owns equity in and is a board member of Spaced Education Inc.
DIFFERENTIATED TRACKS IN A CONTINUING MEDICAL EDUCATION COURSE: USER SATISFACTION AND MEDIUM-TERM EFFICACY

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The Department of Neurology at Children’s Hospital Boston has offered a biennial Continuing Education Course in Child Neurology since 1978. Over the years, this course has expanded from three full days to five full days of lectures and demonstrations. When originally conceived, the course was designed to meet the continuing education needs of primary care pediatricians and adult neurologists who were forced to see pediatric patients because of the paucity of child neurologists in their areas. In 1986, for instance, pediatricians constituted 65% of the attendees and adult neurologists 30%; all child neurologists attending the course were from outside the United States.

Through a variety of forces, the number of child neurologists in the United States has expanded greatly over the interval since 1986. The professional demographics of those attending this course has also changed over the interval, so that by 2006 just under 60% of the attendees were child neurologists, mostly trained in US or Canadian programs, 30% were pediatricians, and less than 5% were adult neurologists. Feedback from attendees in 2006 showed dissatisfaction with some content of the overall course, but in a bimodal fashion. The pediatricians complained that many sessions were far too detailed and complex for their understanding and learning needs, and the child neurologists complained that many of the talks were far too basic.

For the 2008 course, which appeared through registration data to be headed towards a similar demographic split, it was decided to differentiate the course. Morning sessions were plenary on topics of general interest. Lunch time talks were expanded “general interest” topics (e.g., Learning and the Adolescent Brain). Afternoon sessions were divided into Clinical and Neuroscience “tracks”, which ran simultaneously. Attendees could choose to hear about a given topic in either a format that was designed for primary care clinicians or for child neurologists and topics were organized so that the same faculty would present their topic sequentially in both formats (e.g., Tuberose Sclerosis for the general pediatrician, and Update on new genetic insights in TS).

User satisfaction regarding content was substantially higher in both groups compared to the 2006 course. Pediatricians rated content as superior 25% on average in 2006 and 80% on average in 2008; child neurologists rated content as superior 40% on average in 2006 and 85% in 2008).

Email surveys sent after the 2008 course demonstrated that 45% of the pediatricians responding felt the differentiated sessions offered them information they had incorporated into their practice. 90% of the child neurologists responded that they had changed their practice based upon material in the differentiated sessions. This model of CME may be more generally applicable with disparate groups of adult learners, and took minimal extra effort from faculty.
DEVELOPING AN EDUCATIONAL CURRICULUM FOR A DIVERSE GROUP OF 
TRAINEE IN THE FIELD OF PEDIATRIC ANESTHESIA

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At the Department of Anesthesiology, Perioperative and Pain Medicine at Children's Hospital 
Boston, each year we train more than 100 anesthesia residents and fellows in pediatric 
anesthesiology knowledge and skills. Taking into consideration the different levels of our 
trainees, we need to provide developmental-appropriate educational curricula. My goal with 
this project is to restructure our educational program by adapting it to generational needs, 
leveraging evolving training and practice requirements, and using new methods of teaching, 
assessment and quality improvement of the educational process.

A. GOALS:

1. Identify educational key points for each of the trainee groups using as a resource the 
   Program Directors of residents that train at CHB and formal recommendations from American 
   Society of Anesthesiology and Society of Pediatric Anesthesia.

2. Revise goals and expectations for each trainee group

   FOR RESIDENTS:

   1. Facilitate the recording of all existing lectures on Basic Principles of Pediatric 
      Anesthesia on BREEZE.
   2. Create a post-training assessment test to help evaluate resident clinical 
      competency.
   3. Promote further resident learning with additional sessions, employing alternative 
      methods of teaching - case discussions, morning reports, board questions and 
      simulated oral board exams.

   FOR FELLOWS:

   1. Develop a block rotation-based curriculum to enhance depth of knowledge and 
      facilitate the formation of expert Consultants in Pediatric Anesthesiology.
   2. Organize elective rotations for fellows, directed by leaders in our field, oriented 
      toward specific areas of Pediatric Anesthesia, involving not only clinical training, but 
      also quality and safety improvement.
   3. Provide opportunity for the Fellows to become educators for the other trainees by 
      assuming active role in leading/facilitating case conferences and simulated oral board 
      exams.

   FOR STUDENT REGISTERED NURSE ANESTHETISTS:

   1. Involve them in the teaching sessions, interactive seminars and discussions on 
      everyday clinical problems.
   3. Define a way to evaluate the new curricula using suggestions and opinions from all 
      participants.

B. IMPORTANCE: Our Department traditionally excels at providing outstanding clinical 
education for all trainees. With scientific and technological progress in our field, the 
extpectations for us as educators and for the trainees are always evolving and increasing. The 
revised goals and responsibilities are to help build competent well-rounded anesthesiologists 
(for residents) and expert Consultants in the field of Pediatric Anesthesia (for fellows). As the 
largest pediatric anesthesiology fellowship program in the country, we annually graduate more 
than 10% of the fellowship–pediatric anesthesiologists. We are keenly aware of the impact our 
trainees have on the world of pediatric anesthesiology and we feel a great deal of responsibility 
to “get it right.”

38 ~ Posters – Continuing Medical Education
IS IT TIME TO UNMASK ANESTHESIA IN THE MEDICAL SCHOOL CURRICULUM? A SURVEY OF 4TH YEAR STUDENTS

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Education in anesthesiology is not a prominent feature of medical school curricula. Indeed many anesthesia residents and faculty describe their path to anesthesia as serendipitous. We were interested in what factors influenced 4th year students to choose a career in anesthesiology.

**Methods:** Between November 2008 and January 2009, we invited all students interviewing with our residency program to complete an anonymous IRB exempt survey exploring reasons for choosing a career in anesthesiology. The survey included 7 questions about personal influences and 11 questions focused on medical school experiences. Survey data was analyzed after completion of all interviews; statistical analysis was performed using one sample Chi-square testing with significance level set at p <0.05.

**Results:** Seventy-seven (61%) of the 126 interviewed students completed the survey. 62% made their career decisions in the 3rd year, and 26% in the 4th. Only 64% of medical students were at a school supporting an anesthesia interest group. 41 students (53%) indicated there was a major event that led them towards an anesthesia career: 50% (20/41) of these “events” were their actual anesthesia rotations. Other important events described included research (4/41), pharmacology experience or exposure (3/41), and personal or family member experiences with anesthesia (8/41). Overall, the dominant influence on career choice was anesthesia rotations; this was cited by 94% of students. Other significant influences were clinical scenarios (53%), other students (14%), anesthesia faculty/dean (17%), lecturers (6%), and other (8%). 37% were significantly influenced by family members or influences outside of medical school (p<0.001). During medical school, 84% of respondents received anesthesiology instruction in pharmacology, 49% either replied no or were not sure if any of the preclinical faculty were anesthesiologists, and 40% of anesthesia rotations were part of another rotation. Regarding career choice and advice, 66% described medical school advisors as very encouraging vs. 34% who were somewhat or not at all encouraging (p<0.001). 10% stated that faculty had tried to dissuade them from a career in anesthesiology. When asked about recommendations for a change in the curriculum, 94% of students recommended mandatory or additional rotations in anesthesia.

**Conclusions:** Our results suggest that students who apply to anesthesiology are heavily influenced by their experience on anesthesia rotations. This is despite the fact that 40% of anesthesia rotations were not an independent part of the curriculum and some medical advisors tried to dissuade students from entering anesthesia. Respondents universally recommended more exposure to anesthesia and mandatory rotations for future students. Each year approximately 80% of NRMP anesthesia positions are filled with US medical school graduates who have just completed their senior year; however, 20% are filled by either US graduates with additional experience and training, or international students. We believe that with improved and consistent exposure, more students may identify an interest in anesthesiology.

**Future directions:** As a profession, we need to work with medical schools to increase mandatory anesthesia rotations, and enhance mentorship of students so that we may unmask the field of anesthesia as a career choice.
MEDICAL EDUCATION SERIES: PREPARING FELLOWS TO TEACH GERIATRICS

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Purpose: At our institution, geriatric medicine fellows have traditionally provided geriatric education to a variety of healthcare providers. However, the fellows have received little formal teaching in the basic tenants of medical education. To address the healthcare needs of the rapidly growing geriatric population, the Institute of Medicine report Retooling for an Aging America: Building the Health Care Workforce challenged geriatricians to increase basic competence standards for all healthcare providers. To begin addressing this imperative, we chose to train our fellows in the fundamentals of medical education. We believe this will prepare the fellows to provide meaningful geriatric education to diverse healthcare providers.

Methods: A medical education curriculum was developed and presented to six first-year geriatric medicine fellows over five sessions. Topics covered included adult education, micro skills of teaching, feedback, assessment, and leadership/affecting change. Fellows participated in educational activities including preparatory reading, didactics, case discussions, and small group activities. At the beginning and end of the curriculum, fellows completed pre and post assessments of self rated knowledge, self rated comfort, and willingness to learn utilizing a Likert scale (0 = none and 5 = high).

Results: All fellows completed the curriculum. There was significant improvement in their self rated knowledge and self rated comfort for all measures including adult learning theory, micro teaching, providing effective feedback, utilizing feedback in the teaching-learning cycle, understanding assessment instruments, and choosing appropriate assessment instruments. Scores on willingness to learn were high, 4.28, on a 0 to 5 scale.

Conclusions: First-year geriatric medicine fellows participating in a medical education curriculum had substantial improvement in their self rated knowledge and self rated comfort regarding a variety of medical education topics. As the elderly population skyrockets, it is increasingly important to train skilled geriatric educators to teach basic geriatric principles all healthcare providers.
CHALLENGES OF GERIATRIC EDUCATION IN SURGICAL SUBSPECIALTY RESIDENTS

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Purpose: As the volume of geriatric surgical patients increases, geriatric education of resident physicians in surgical subspecialties is recognized as vital to improve competence and patient care. Our goal was to increase knowledge regarding postoperative pain management in hospitalized elders.

Methods: A geriatric inpatient pain management curriculum was developed for resident physicians from general surgery and anesthesiology. To ensure relevance, curriculum content was reviewed by senior educators from the subspecialties. Mandatory educational sessions were endorsed by specialty faculty.

Results: Eight educational sessions utilizing didactics, case discussions, and Jeopardy games were presented to 112 learners. Despite mandatory attendance requirements, only 50% of learners attended the sessions. Pre and post assessments were only completed by 40% of learners. Pre knowledge assessment using multiple choice questions demonstrated low baseline geriatric knowledge among learners: only 42.9% chose scheduled acetaminophen as first line analgesic therapy and 0% recognized symptoms evaluated by the PAINAD scale. In contrast, learners reported moderate self rated knowledge and comfort regarding geriatric pain management issues. Post knowledge assessment demonstrated little improvement even among learners who attended multiple learning sessions during which material was presented several times in a variety of manners. For example, no first-year residents correctly answered a multiple choice question regarding bedside evaluation of delirium despite repeated presentations of this information.

Conclusions: Our results demonstrate that surgical subspecialty resident physicians have a poor knowledge base regarding geriatric inpatient pain management. Furthermore, there was little improvement in knowledge despite multiple educational sessions. This suggests that a standard educational curriculum taught in a traditional manner is not appropriate in this learner group. Possible impediments include: failure to recognize the relevance of geriatric education in patient care responsibilities, inability to implement what is learned due to individual practice patterns of attending physicians, lack of repeated exposure to geriatric education time, and discordance with the learning style of generation Y learners. If successful geriatric education is to be implemented for residents in the surgical subspecialties, these barriers must be explored and addressed.
POST-CALL WALK ROUNDS AS AN EFFECTIVE EDUCATIONAL INTERVENTION FOR HOUSESTAFF

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Objectives:
1. To survey the residents on the ward medical service and evaluate the impact and perception of post-call walk rounds.
2. To gather data to assess if these responses differed depending on whether or not the resident was on a Clinician Educator lead team.

Background: The Inpatient Clinician Educator service at the Massachusetts General Hospital (MGH) adopted, as a part of an internal quality metric, the performance of post call walk rounds, during which the ward attendings discuss overnight events and address management issues with the post call intern in an informal one on one setting for about 20-30 minutes each morning before formal attending rounds.

While widely believed to be an important part of the residents’ education and an excellent way for the housestaff to have their questions answered and for the attendings to better know their residents, we had no real data supporting this claim. Thus we undertook this project to try to better assess the effectiveness and importance of post call walk rounds.

Methods: Upon the completion of their ward medical service (Bigelow) rotation, the interns receive an email asking for them to tell us the frequency with which they participated in post-call walk rounds and to comment, using a five point Likert scale, on the educational value of post-call walk rounds and on the utility of post-call walk rounds for clarifying overnight patient management issues.

Results/Conclusion: Post-call walk rounds are a highly appreciated and educational endeavor based on residents’ reviews when focused on learning issues. Moreover, not only have we found that interns on Clinician Educator led teams are embarking on post call walk rounds much more frequently, we also learned that the utility and educational value of these rounds seem to be much more highly regarded by interns on clinician educator run services (Average rating for educational value 4.26 versus 3.43, average rating for clarifying overnight issues 4.15 versus 3.29, n =26 for Clinician Educator led team, n=20 for non-Clinician Educator led teams). When this time is used most appropriately and tailored to the interns’ overnight experiences and patient management questions, the impact and impression is more significant. Our data argues that post-call walk rounds with experienced attending teachers are a straight-forward and effective addition to intern education. We would encourage others to incorporate this activity into the structure of their residents’ education.
DEVELOPMENT OF PEER-LED CASE CONFERENCE SERIES AS SUPPLEMENTAL TEACHING MODALITY FOR PEDIATRIC RESIDENTS

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Background
Literature has shown that residents desire a more active, primary role in educational conferences. Morning report is regarded by internal medicine and pediatric residency programs as an integral component of graduate medical training and can be essential in translating bedside patient care into lasting medical knowledge and development of professionalism, both ACGME minimum competencies.

Objective
In our residency there are limited opportunities for first year residents to function as teachers. Development of an intern-led, case-based conference series may augment educational and leadership opportunities during the first year. We hoped to address the feasibility of instituting such an innovation within the current rotational structure.

Methods
We created a weekly, 45 minute case-based conference series in conjunction with program directors and chief residents. Residents and medical students on general pediatrics ward teams and elective rotations were invited to attend. Cases focused on disease presentations and management dilemmas commonly encountered in residency, and incorporated evidence-based topics related to the case. Senior faculty were invited to attend as experts and provided additional insight. A program director was present to give one on one feedback to the presenter after the session.

Results
Our preliminary results demonstrate that we were able to successfully implement the morning rounds format into our current structure while still meeting duty hour guidelines. Cases were well attended, often drawing early morning attendance by residents on electives. Incorporated evidence based discussions ranged from interpretation of traumatic LPs to complexities in management of systemic onset juvenile rheumatoid arthritis. Informal feedback from residents and faculty, as well as commitment to a continuance of the format the following year, suggest this as a much needed and appreciated intervention.

Conclusions
We have shown that development and sustainability of an intern-led morning report is both feasible and valued as a part of the educational curriculum. Further evaluation should focus on whether knowledge gained in this format was both retained and later applied to future cases. In addition, opportunities exist to use this forum as an avenue for professional development for residents inclined to academic educational roles. Finally, faculty feedback can be standardized to aid leadership development and presentation skills.
IMPROVING QUALITY AND QUANTITY OF FEEDBACK DELIVERED TO ANESTHESIOLOGY RESIDENTS: NEEDS ASSESSMENT AND FUTURE PLANS

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The anesthesiology residents at Beth Israel Deaconess Medical Center have been dissatisfied with attending provision of formative feedback. On our 2008 year end program survey, 38% of residents rated faculty provision of feedback to residents as “poor” or “fair”. When asked about the extent to which evaluations have been helpful in improving [their] competence and performance, 28% responded “poor” or “fair”, and only 34% “very good” or “excellent”. These low marks are in stark contrast to those given for general faculty teaching skills, treatment of residents, and accessibility/approachability. Therefore, it appears that we have generally good faculty with generally poor feedback skills, and an inadequate feedback system.

Residents and faculty were invited to participate in an anonymous online survey designed to assess satisfaction with current feedback approaches, barriers to feedback, and proposals for a new feedback tool. A literature search for existing tools was completed as well. The feedback document will be piloted for use initially by a small group of volunteer faculty, and refined as needed. Upon completion of the pilot, the tool will be converted to an electronic format, and the faculty at large will receive instruction on the delivery of feedback in general, and the specific use of the new feedback form. Completed feedback forms will be reviewed by the residents with their mentors quarterly, and used to create learning and performance goals.

34 of 54 residents and 19 of 60 staff submitted responses to the online survey. The majority of residents responded that they rarely get sufficient face to face feedback, but that the feedback is useful in improving their competence and performance at least sometimes. Almost 90% responded that they were comfortable receiving face to face feedback, including negative feedback, “always” or “frequently”. This is in contrast to the faculty, of whom 53% feel comfortable giving feedback “sometimes”, 41% “always” or “frequently”. Both groups felt that this feedback was best scheduled for a specific day each week, and should be recorded in a web-based format. Residents preferred an open-ended feedback tool, whereas attendings preferred an evaluation tool based upon specific ACGME competencies. Residents felt that time and attending discomfort with delivering negative feedback were the predominant barriers to face to face feedback. Faculty echoed this discomfort, citing fear of negative repercussions on attending evaluations and working relationships with the residents if feedback is not well received.

Residents and faculty agree that the quantity and quality of formative feedback should be improved and identify faculty discomfort and time availability as the predominant barriers. Therefore, faculty instruction and buy-in, and administrative leadership are critical if this new feedback initiative is to succeed. Unanswered questions include: Can consistent use of a new feedback tool alter the current faculty aversion to delivery of negative feedback? Can completed feedback forms be used successfully by residents and their mentors as part of reflective goal-setting? Can we demonstrate positive short-term (increased resident satisfaction with feedback) and long term (improved resident performance in the core competency areas, residents and graduates more welcoming of feedback) outcomes?
ETHICS AND PROFESSIONALISM EDUCATION FOR PEDIATRIC RESIDENTS: A SURVEY OF RESIDENCY TRAINING PROGRAM DIRECTORS

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Background: Competency in confronting dilemmas related to ethics and professionalism can develop over time with deliberate teaching efforts during residency training. The Accreditation Council for Graduate Medical Education (ACGME), requires residency training programs to teach “professionalism” and to require “a commitment to ethical principles,” but offers little guidance as to how to achieve these goals.

Objectives: We surveyed directors of pediatric residency training programs to explore the teaching and assessment strategies used to ensure learning in ethics and to comply with the ACGME core competency of Professionalism.

Methods: Pediatric residency training program directors were identified using a list provided by the Association of Pediatric Program Directors (APPD). After pilot testing, an electronic version of the instrument was then sent to all eligible program directors (N=187) in two consecutive e-mails. Hard copy surveys were then sent to non-responders.

Results: Surveys were completed by 98 program directors (52%). When selecting interns, the majority of program directors reported that interviewers explicitly consider professionalism of the applicant (52%) and that professionalism is considered when ranking applicants (77%). However, few reported that Dean’s Letters (17%) or the selection process in general (36%) are helpful in judging an applicant’s professionalism.

Most directors convey to new interns expectations for professionalism in writing (64%) or during orientation (92%). However, when presented with 14 professional experiences that could foster learning in ethics and professionalism, at least 50% of the program directors reported that “None or Few” of their residents engage in 12 of these experiences during residency training. Two exceptions included caring for patients in an impoverished community and team building retreats. In addition, a minority (27%) of program directors have a written curriculum in ethics or professionalism. When evaluating professionalism in residents, the most frequently used assessment strategies include 360 degree evaluation, written evaluations from supervising clinicians or peers, and questionnaires completed by patients and families. However, these four evaluation methods were rated as “very useful” by only a modest proportion (25-52%) of the program directors who report using them to evaluate residents’ professionalism.

Conclusions: Pediatric residency program directors explicitly consider professionalism during intern selection and commonly convey to new interns expectations for professionalism. However, during training, residents do not commonly participate in many of the experiences that might foster learning in ethics and professionalism included in our survey. In addition, program directors express only moderate satisfaction with the strategies they currently use to evaluate professionalism among residents. These data provide a strong rationale for developing novel curricula and assessment methods to foster high quality education in ethics and professionalism for pediatric residents.
PRELIMINARY EXPERIENCE FROM AN INTERNATIONAL SURGICAL
ROTATION OF A HMS FELLOW

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Introduction
Recent surgical publications (1,2) have emphasized the value of an international surgical experience for U.S. surgical residents and junior faculty. We describe the case of such an international surgical experience of an MGH surgical fellow who spent one month in Athens, Greece.

Case Description
Between 1998 and the present time, several HMS students have spent a month of surgical rotation at Hygeia Hospital in Athens Greece under the direct supervision of one of us (D.L.). This year an MGH endocrine surgical fellow spent one month of the required 2 years fellowship in Endocrine Surgery in Greece. She was given the opportunity to operate on a number of cases of thyroid, parathyroid and adrenal surgery, as well as to actively participate in the academic activities of the Greek Hospital including a formal Grand Rounds presentation to the hospital staff.

Discussion
Although there is an increasing demand from US surgical residents and Program Directors for facilitating interested residents and/or junior staff to gain international experience in surgery, there are a number of obstacles that exist. The tight schedule and current limitations after the implementation of the 80 hr work week, the lack of accreditation of such international training by the Accreditation Council of Graduate Medical Education (ACGME), the lack of organized and structured overseas training and supervision, as well as financial and security issues are some of the current barriers to the expansion of such international surgical opportunities.

In our case, all of these problems were optimally addressed ahead of time, resulting in a successful educational outcome. Furthermore, upon completion of the one-month rotation, the HMS fellow considered her experience as beneficial, in that she acquired significant clinical and operative experience in a different setting as practiced by other surgeons, and had exposure to operative approaches that are not that common at the MGH. Finally, during her one-month stay in Athens, she experienced a different cultural environment, significantly contributing to her experience and maturation as a surgeon.

Summary
Our successful case of graduate surgical training outside the U.S. indicates the feasibility of the growing demand from the U.S. surgical community for an international surgical experience for residents and staff. Perhaps the creation of an independent international surgery program within the department of General Surgery may facilitate this demand.

COMBATING FATIGUE IN GRADUATE MEDICAL EDUCATION

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Objective: Recently, the Institute of Medicine published “Resident Duty Hours: Enhancing Sleep Supervision and Safety” which asserts to better protect patients against fatigue related errors and further limit resident work-hours. The purpose of this investigation is to critically assess fatigue in Partners Graduate Medical Education rotations using the Fatigue Assessment and Scheduling Tool (F.A.S.T.). We will then seek to identify any associated fatigued time intervals, implement counter-measures and use F.A.S.T to determine if one can eliminate predicted impairment from fatigue.

Methods: Optimized work schedules from 3 “typical” rotations were imputed to identify specific time intervals, if any, a resident is predicted to be impaired by fatigue: day shift, trauma coverage, and nightfloat. Impairment periods were defined as an effectiveness less than or equal to 70; which is equivalent to a BAC (Blood Alcohol Content) of .08 (legal intoxication). Fatigue countermeasures were then applied to predicted impairment time interval to determine the plasticity of predicted impairment.

Results: Rotation 1 had no periods where residents are predicted to be impaired by fatigue. In rotation 2, residents were significantly impaired only during the early morning hours of overnight 24 call each week. Rotation 3, “Nightfloat”, demonstrated significant impairment nearly 25-50% of time while providing care. Importantly, “Fatigue Optimization Scheduling” for Nightfloat resulted in zero time-periods of impairment.

Conclusions: The F.A.S.T. program enables us to identify, quantify, and then modify resident fatigue. We have shown there is a significant amount of impairment by fatigue in residents at specific intervals with certain scheduling. Importantly, a resident’s predicted impairment can be eliminated if properly addressed. Resident fatigue is a collection of work-hours, sleep debt, and circadian rhythm disruption. By recognizing the causes and mitigating risks, we can implement measures to eliminate fatigue and minimize further risk thereby providing simple solutions to a difficult problem.
WHAT IS YOUR UNDERSTANDING OF YOUR WIFE’S ILLNESS?

Improving Communication in the ICU through Formalized Resident Education

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Background: Communication is vital to providing meaningful and effective health care. This is particularly true within the Intensive Care Unit (ICU) where family and staff must discuss difficult topics with life threatening consequences. Research demonstrates that providing a consistent message and allowing sufficient time for the meeting improves satisfaction\(^1\). Studies of patient surrogates demonstrate family members do not universally want recommendations from doctors about life support decisions\(^2\). Yet, there are few formal curricula taught in medical school or residency training to address these and related issues pertinent to communications with families.

Methods: Utilizing small group discussions, role play, and simulation, this project aims to educate medicine residents about conducting family meetings in a compassionate and effective way. We conducted a needs assessment of house staff and faculty thereby identifying deficiencies. The results revealed that current resident education is inadequate. Using the Kalamazoo Consensus Statement on medical communication as a framework, medicine residents rotating through the ICU participate in a 3-session module which includes two interactive workshops and one simulation session\(^3\). The first two sessions are taught by ICU faculty and focus on skills for effective communication; didactics and simple role plays are employed. Residents are taught how to coordinate a family meeting and ensure a consistent message among care providers. Participants learn useful phrases for family meetings which more experienced ICU physicians have found to be helpful. After the initial two sessions, the last module occurs in the Simulation and Skills Center at BIDMC. In order to create a realistic scenario, residents are first asked to care for a critically ill high fidelity simulated patient. After the clinical interaction, residents lead a family meeting to inform relatives of the patient’s condition. Family members are portrayed by trained individuals familiar with the curriculum goals. After the simulated family meeting, a debriefing occurs to provide real time feedback to the participating residents. A second family meeting is then conducted following a decline in the patient’s status. This meeting emphasizes communication strategies for addressing goals of care. At the program’s conclusion resident are given a card summarizing key skills for quick review prior to future family meetings.

Outcomes: Project outcomes consist of three measures. First, residents will provide feedback for project improvement one month post-intervention. Second, ICU faculty will be surveyed annually to monitor for perceived improvement. Lastly, family members of ICU patients will be surveyed to quantify communication quality improvement.

NEEDS ASSESSMENT FOR A CURRICULUM TO PREPARE MEDICINE-PEDIATRICS INTERNS FOR THEIR ROLES AS SECOND YEAR RESIDENTS

Principle Investigator: Colleen Monaghan, MD
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Principle Aims:
1. Establish if there is a perceived need amongst Medicine-Pediatrics (Med-Peds) residents for a Med-Peds specific curriculum to prepare Med-Peds interns for the transition to the resident role.
2. Assess opinions from Med-Peds residents as to what are essential components of the content and structure of such a curriculum.

Background: The responsibilities and roles of a house-officer change dramatically from internship to second year of residency. Many Internal Medicine and Pediatric categorical residencies offer workshops to prepare interns for the challenges associated with this change in roles. Med-Peds residents face unique challenges with this transition because they have only completed six months of training in each discipline before they move into roles that include supervision and increased teaching and patient care responsibilities. It is unclear if residents feel that workshops offered by categorical residencies are sufficient preparation or if they have a need for a Med-Peds specific curriculum.

Methods: 92 Program Directors from Med-Peds residencies (members of the national program director website) were asked to forward an email with an online survey link to their PGY-1 and PGY-2 residents which solicited resident opinions about the need for a Med-Peds specific curriculum for the preparation of interns to transition to the resident role. Residents were also asked who should lead the curriculum and what topics should be covered. Completion of surveys was voluntary and anonymous.

Results: 145 Med-Peds interns and residents (of 671) responded to the survey.
- 92.4% of residents felt the program was somewhat or very important
- Resident opinion on who should lead the program:
  - 68% selected 2nd year residents
  - 81% selected senior residents
  - 40% selected program directors
- The most commonly selected topics to include in the program:
  - Contrast between being a 2nd year in Medicine vs. Pediatrics (80%)
  - How to balance supervision vs. independence of your interns (79%)
  - Leading a team (77%)
  - Tips for running rounds (77%)
  - Managing codes (72%)
  - Knowledge base fears (71%)

Conclusions: The overwhelming majority of interns and residents identified a need for a Med-Peds specific curriculum to prepare interns for the change in roles when moving to second year. While residents are interested in teaching in traditional leadership areas often covered in categorical program workshops, such as how run rounds, they are also interested in areas more specific to Med-Peds, such as the contrast in roles as a PGY-2 in medicine vs. pediatrics and fears about the adequacy of their knowledge base. These data will be used to design a curriculum for Med-Peds residencies to use to help prepare PGY-1 residents for this shift in responsibilities.
COORDINATING ONCOLOGY AND PRIMARY CARE FOR CANCER SURVIVORS: TESTING OF THREE MODELS OF CARE IN GENERAL MEDICINE SETTINGS

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The Dana-Farber Cancer Institute, the Brigham & Women’s Hospital’s FISH Center, Beth Israel Deaconess Medical Center, and Harvard Vanguard Medical Associates each care for a large number of cancer survivors during and for many years after their treatment. Individually these institutions have been preparing to provide different models of cancer survivorship care. The purpose of this collaborative effort is to develop, implement and pilot test three models of care within primary care settings and to collectively learn more about providing optimal care for cancer survivors. The three models are distinct, but in each, there are opportunities to affect the care of the cancer survivors and also educate primary care providers about survivorship issues.

1) Model 1 - Cancer survivors are seen for a survivorship visit by a trained general internist and/or nurse practitioner in an Internal Medicine practice using a pre-prepared end of treatment summary and care plan. This internist then coordinates their follow-up care with their own primary care providers who do not have any specific training in cancer survivorship.

2) Model 2 - Cancer survivors participate in a survivorship visit with a specially trained nurse practitioner at a cancer center who coordinates their ongoing care with a primary care provider who has basic training in cancer survivorship and receives the end of treatment summary and care plan.

3) Model 3 - Cancer survivors receive care in a group care model where a specially trained general internist will meet with a group of cancer survivor in a group medical care model and then provide a consultative note to their own primary care providers who have no training in cancer survivorship.

The poster will inform medical students and primary care providers about the growing importance of cancer survivorship in primary care settings and describe the multi-institutional project. The pilot project will include a pre- and post- intervention study design to determine if patients who receive the cancer survivorship care have a better understanding of their cancer diagnosis and treatment, follow-up plans, which providers to call about what specific symptoms and problems, the possible late and long term issues facing them (quality of life) and satisfaction with care. We will compare these outcomes across the three models. We will also collect data regarding the feasibility of enrolling patients into each of these models and the effort required to prepare the survivorship care plans.

In addition to learning about the feasibility and effect of the three models, we expect to use our experience to educate and train medical students and/or residents doing clinical rotations at the participating practice sites.
DEVELOPMENT OF A GENETICS CURRICULUM FOR AN INTERNAL MEDICINE RESIDENCY PROGRAM

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BACKGROUND: Translating recent advances in genetics and genomics into clinical applications will require the participation of well-informed physicians. Although genetics has a strong foothold in the research and pre-clinical setting, relatively little genetics exposure is encountered during the clinical training of medicine residents.

OBJECTIVE: Our aim is to leverage the exceptional concentration of genetics expertise in local institutions to enhance medicine residents’ understanding of genetic principles and increase their exposure to clinically-relevant genetic topics. We aim to coordinate resources across programs and institutions to incorporate a multifaceted genetics curriculum into the existing educational infrastructure of the residency training program and to foster the ongoing mentorship of residents interested in genetics.

METHODS/RESULTS:

Genetics Community: We created a genetics community by identifying residents with strong genetics background or those interested in genetics and facilitating their access to the vast genetic resources throughout the Harvard Medical System. Many residents have taken advantage of these opportunities and mentorship by attending local genetics conferences or participating in genetics research both during and after residency.

Didactic Sessions: By recruiting local and national genetics experts, we have been able to strategically incorporate genetics into every formal educational venue in the residency program. Genetic topics are being covered in noon conference lectures, Medicine Grand Rounds, and the Tools of Human Investigation Course (THI) - a required course that introduces residents to the foundations of clinical research. In addition, select residents have been encouraged to participate in the national Workshop for Clinical Investigators on the Genetics of Complex Disorders held at the Broad Institute.

Educational Resources: We developed a genetics curriculum syllabus that is distributed to all residents during the THI course. The syllabus serves as an introduction to basic genetic concepts and provided web-based genetic resources for clinicians. We also developed and compiled a searchable database of genetics articles that can be queried by specialty to encourage residents to discuss genetic topics during their JAR talks.

Patient-Based Experiences: In addition to training high-impact teachers and highlighting genetic concepts (monogenic disorders, pharmacogenetics, etc.) encountered on the medicine wards during direct patient care or in case conferences, we also established a genetics elective where residents can rotate through various genetic clinics and gain exposure to genetic counseling.

Assessment: Efforts to evaluate residents’ attitudes/knowledge of genetics are underway.

CONCLUSIONS: By garnering the vast local institutional resources, we have been able to enhance medicine residents’ exposure to genetics during their clinical training.
A WORKSHOP FOR CLINICAL INVESTIGATORS ON THE GENETICS OF COMPLEX DISORDERS

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BACKGROUND: Recent advances in genetics offer new insights into diseases disease pathophysiology and have the potential to reshape the clinical landscape. Yet, translating these discoveries into clinical applications remains a major challenge and requires the participation of individuals involved in patient-centered research. Currently, many clinical researchers have limited experience with genetics-based research.

OBJECTIVE: Our aim was to develop a course to enhance translational researchers’ understanding of current genetic methodologies used to study complex disorders.

METHODS:

Recruitment: Announcements for the course were sent out to fellowship program directors of thirty-three large research medical institutions. Applications were independently evaluated according to a scoring system that emphasized clinical training and ongoing participation in a translational genetics research project.

Course: The 3-day course included a mix of lectures, symposia, computer workshops, panel discussions and clinical vignettes designed to highlight genetics applications in the study and treatment of common medical conditions. Broad topics included human genetic variations, GWAS genome-wide association studies, genomic analysis, clinical translation, careers in medical human genetics, population genetics, and a discussion on genes and race.

Evaluation: Upon completion of the course, participants were asked to complete a survey describing their baseline level of genetics training and evaluating the effectiveness of the course.

RESULTS: 27 applicants were selected to participate in the workshop. All participants were in the early stages of their careers (4 assistant professors or instructors, 11 fellows, and 12 residents, doctoral students, or research associates) and came from local (8), national (16), and international (3) institutions. All but three had clinical training. Participants were involved in genetics research in various medical specialties ranging from cardiology to psychiatry. Despite actively participating in genetics research, 60% identified themselves as “Beginners” in terms of their level of genetics experience. Only one was self-identified as “Advanced” and the rest were in the “Intermediate” category. The lectures, clinical vignettes, roundtable discussions, and software lab were rated as “Great or Outstanding” by 82%, 84%, 74%, and 62% of participants, respectively. Of all participants, 100% would recommend the workshop to a colleague, 96% felt that the course improved their understanding of complex human genetics, 81% benefited from networking with potential collaborators, and 74% stated that the course influenced the way they plan to conduct their research. We are planning to contact participants 1 year after completing the course to assess the workshop’s impact on their subsequent accomplishments and career decisions.

CONCLUSIONS: We designed a multifaceted 3-day program that enhanced young clinical researchers’ understanding of complex human genetics with the potential of positively influencing their research and career choices.
A SIMPLE TOOL FOR FACILITATING PATIENT-BASED LEARNING AND IMPROVING FEEDBACK

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**BACKGROUND:** A significant component of both medical education and residency training occurs in the inpatient setting. Much of the effectiveness of patient-based learning is due to the emotional and intellectual connections that not only give value to the many lessons that arise in the process of caring for patients, but also keep trainees interested in the patients’ clinical outcomes. Yet, because of a combination of pressures (decreased length of stay, work hour regulations, clinic schedules, etc.), residents often miss opportunities to witness important developments on their patients’ hospital course. Busy schedules also prevent trainees from being able to follow-up on non-emergent questions generated in the course of the rotation.

**OBJECTIVE:** The aim was to develop an instrument that would trigger both the supervisor’s and the residents’ memories of the patients that they had recently cared for to 1) maximize the clinical lessons learned in the process of patient care, 2) improve the quality of feedback, and 3) provide a useful resource with which to focus future learning.

**METHODS/RESULTS:** Each time one attends on the medicine wards, one compiles a database of all the patients admitted to his/her service over the course of the month. Included in this Excel file are:

- Date of admission
- Name of admitting resident +/- medical student, or if inherited from previous team
- Patient demographics – Name, age, medical record number, assigned room number
- Chief Complaint
- Clinical summary highlighting various lessons gleaned from each patient’s past medical history, clinical presentation, or hospital course including differential diagnoses discussed on rounds or practical management issues that would be difficult to gain solely from reading the literature
- Additional columns identifying patients with issues pertaining to attending individual expertise (for example, endocrine or genetic issues)

Every two weeks, during the formal feedback time, each member of the team receives a copy of the list. Either with the entire team or in one-on-one sessions, the attending briefly reviews the clinical course and important lessons learned from each patient admitted during that time frame. By incorporating many mnemonic aids (room numbers, etc), the list allows participants to visualize the patients and utilize prior emotional connections to enhance learning. During these sessions, the attending can maximize his/her specific expertise by highlight subtle points raised by the team’s particular patient panel. The list also facilitates feedback by allowing the attending to focus on the patients admitted by the individual trainees and provide specific comments about the trainees’ performance. Finally, having an accessible record of the patients they have seen, gives trainees an opportunity to not only follow-up outstanding results but also to remember some of the questions that arose during the month to focus future reading.

**CONCLUSIONS:** A simple low-tech tool can be used to maximize patient-based learning and improve feedback.
RESIDENTS AS TEACHERS: A CLINICIAN EDUCATOR ELECTIVE AT MGH

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Background: In the current academic environment, it has become increasingly important to train medical residents as clinical teachers. A large portion of house officers pursue subspecialty training becoming role models and mentors to their underclassmen and peers and later may become teaching faculty in academic centers. In addition, a number of trainees are finding new job opportunities in the growing field of clinical education. Nonetheless, although residency training provides us with ample clinical knowledge, procedural skills and good communication habits it rarely prepares us as educators or trains us to deal with the specifics of career advancement in an academic environment (McLaughlin, SA, Acad Emerg Med. 2005 Apr;12(4):302e1-5).

Intervention: In an effort to enhance training of residents as educators, we have created an elective rotation in the Medicine program at MGH to develop didactic skills and evaluate teaching techniques through peer observation and reflection. The two week experience provides participating residents an opportunity to gain a better understanding of clinical teaching rounds, acquire new skills to conduct teaching rounds in an efficient and learner-centered manner as well as understand the constraints of clinical teaching and the impact on the education of current trainees. Residents have an opportunity to observe and participate on daily teaching rounds in the General Medicine Ward services under the supervision of faculty members of the Inpatient Clinician Educator (ICE) Service. Each resident is paired with a primary supervising faculty who serves as mentor and supervisor during the rotation and offers guidance on career development in clinical education. The experience is complimented by a scheduled daily reading assignment and discussion session of a prepared curriculum on educational literature. Daily feedback sessions allow assessment of progress, self-reflection, and appraisal of performance as well as feedback on the teaching techniques observed during clinical rounds. At the conclusion of the rotation the residents have an opportunity to demonstrate some of the acquired skills and evaluate their progress with the formal presentation of a prepared topic in the form of a short teaching intervention/lecture to the members of the Service (Special Project). The presentation is attended and feedback given by the participating faculty members of the ICE Service.

Outcomes and Results: We evaluated the experience by individual residents for its ability to 1) enhance understanding of clinical teaching skills and techniques, 2) stimulate self-reflection on teaching abilities, 3) gain knowledge of the educational literature and 4) improve peer observation skills and 5) have a durable impact on resident’s use of various teaching techniques. Formal feedback sessions were scheduled with all residents at the conclusion of the rotation and comments recorded. In addition, a survey was sent to all residents after 6 months or more of completing the rotation to evaluate long-lasting effects on teaching. Results are presented in both narrative and tabulated form.
DISCHARGE FACILITATOR ON MEDICAL WARDS IMPROVES RESIDENT EDUCATION AND PATIENT SAFETY

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Context: Multiple studies have raised concerns regarding patient safety at the time of discharge from the hospital. Restrictions on resident work hours have heightened these concerns because a safe patient discharge can require a considerable amount of planning, communication and time. This exacerbates the challenge residents’ face in balancing excellent patient care and education.

Objective: Incorporate a discharge facilitator (DF) into the internal medicine resident team to improve patient safety, patient and resident satisfaction, and time for education.

Design: For 5.5 months beginning in November 2008, a DF (nurse practitioner) was assigned to one of the general medical teams consisting of one junior resident and four interns who rotate on service for 2-4 weeks at a time. Residents were given a brief orientation on how best to work with the discharge facilitator. An identically structured general medicine team without a discharge facilitator was used as a comparison group.

Setting: Massachusetts General Hospital, General Medicine Wards
Participants: Medicine Residents and Attendings, Medical Patients, DF
Intervention: The DF rounded with the team in the mornings to learn about the patients. She identified patients approaching discharge and scheduled all follow-up appointments and tests after discussion with both the team and patient. She helped to complete discharge summaries, discharge orders, medicine reconciliation and prescriptions. She also facilitated communication between the inpatient team and outpatient providers. At the time of discharge, she noted all pending tests and radiology studies and tracked them for the team. She provided patients with her contact information and triaged their post-discharge calls to the appropriate person. Because of the work of the discharge facilitator, residents were encouraged to focus on the communication aspect of discharge whether it was the hospital course of the discharge summary, talking with the outpatient physician or explaining plans to patients.

Main Outcome Measures: 1. Discharge Summaries done within 24 hours. 2. Patient satisfaction with discharge process. 3. Time of attending rounds and time of housestaff sign-out rounds. 4. Resident time saved on discharge work. 5. Attending satisfaction with the discharge.

Results: A total of 1000 patients were admitted to the two medical teams over 6 months (495 to intervention team, 505 to control team). The intervention team had 68.1% of discharge summaries completed in 24 hours compared to 48.6% on the control team. 96.3% of patients were very satisfied with the discharge process on the intervention team compared to 76.8% of patients on the control team. Attending rounds on the intervention team finished a mean of 25 minutes earlier (due to fewer interruptions) and sign-out rounds started 46 minutes earlier. 45% of residents on the intervention team spent less than 4 hours/week on patient discharge compared to only 27% on the control team. 100% of the attendings on the intervention team felt that the DF allowed the team to spend more time on teaching and patient care.

Conclusions: A discharge facilitator incorporated into the medicine resident teams improved patient, attending, and resident satisfaction with the discharge process and increased time spent for patient care and education, while decreasing interruptions to rounds.
OFFICE BASED ANESTHESIA: EDUCATING RESIDENTS AND PRACTITIONERS ABOUT CORE SAFETY PRINCIPLES

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Purpose: The purpose of this exhibit is to provide an overview of the latest safety initiatives in anesthesia practice, commensurate with advances in surgical technology and procedures in the rapidly growing field of office-based anesthesia. To specifically emphasize core principles of office-based anesthesia practice, including patient selection, anesthetic techniques, policies, regulations, and the personnel.

Background: Office-based anesthesia (OBA) refers to the practice of ambulatory anesthesia in the office setting. OBA is a relatively new and growing field with increasing requests to provide anesthesia services for practitioners who have their own outpatient office-based operating facilities. Such facilities generally have little regulation at the local, state, or federal level - only 22 of 50 states have any regulations regarding OBA. The tremendous growth of OBA has been accompanied by concerns for patient safety. This concern has been escalated by media reports of tragedies that may have been precipitated because the physician’s office lacked the same resources (i.e., personnel, equipment, drugs, administrative policies and facilities) that are present in an ambulatory surgical center or hospital. In an attempt to maintain quality and safety standards for office-based anesthesia, the American Society of Anesthesiology (ASA) recently outlined guidelines for an effective system of quality assurance, types of patients suitable for office-based surgery, basic qualifications of office based surgery personnel, monitoring and equipment standards, and the ability for transfers to hospitals in emergency situations.

Educational Objectives: This exhibit reviews the current safety core principles of office-based anesthesia practice. Specifically, it addresses the following

1. Statistics to outline exponential growth and popularity of the field
2. The integral role of the anesthesiologist in setting up and managing office-based facilities and members who comprise the anesthesia care team,
3. Latest ASA guidelines statements and publications
4. Evidence-based review to support safe patient and procedure selection, anesthetic choices and the closed claims project overview
5. The principles of crisis management, emergent patient resuscitation and transfer, simulation training, and quality assurance.
6. An innovative OBA curriculum for resident physicians in anesthesiology training program to acquire the skills and knowledge needed to deliver a safe and appropriate anesthetic to patients undergoing surgery in an office-based setting..
7. In 2007, our first HMS OBA CME course, focused practitioners on various clinical and business aspects to establish a safe office environment. The next course, is Sept 25-26, 2010.
8. The Institute for Safety in Office Based Surgery (OBS) is an independent, non-profit organization recently founded in 2009. Our mission is to promote patient safety in an office-based surgery through physician and patient education, expert consultation, and research support.
SHOULD WE SEARCH ONLINE FOR PATIENT INFORMATION? A CURRICULUM ON INTERNET BOUNDARIES FOR PSYCHIATRIC RESIDENTS

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The Internet has changed the way we practice medicine and psychiatry. With the increasing integration of online interactions into our daily lives, Internet searches by patients and physicians now include looking online for personal information about one another. The practice of physicians’ searching online for information about patients—which we call patient-targeted googling (PTG)—poses a new challenge for physicians to define and maintain appropriate professional boundaries with patients.

Although PTG occurs among all types of physicians, psychiatrists face particularly complex questions when considering Internet boundaries, due to the unique nature of their relationships with patients, e.g., focused on intimate personal details and often dealing with analysis of the relationship as a key part of treatment. Psychiatrists need to consider the intention of Internet searches, the anticipated effect of gaining information online, and its potential value or risk to the treatment before searching online for a patient. Based on our clinical experiences, we have published a pragmatic model for physicians to consider before engaging in PTG, focused on the practical results of searches and aimed at minimizing the risk of exploiting patients.

We now report on a curriculum for psychiatric residents to address the impact that emerging information technologies have on patient care. The goal of this curriculum is to familiarize residents with the complex ethical issues generated by the use of the Internet in clinical practice and to provide guidance to trainees when they consider searching online for a patient. We are piloting the curriculum in the Massachusetts General Hospital/McLean Hospital Adult Psychiatry Residency Training Program. The curriculum centers on an interactive discussion of three composite clinical cases that have been formulated to address a number of complex questions: Are psychiatrists ethically justified to learn about their patients on the Internet? Should physicians obtain consent prior to conducting searches? How might Internet searches alter the standard psychotherapeutic stance of working only with information the patient brings into the room? Should a clinician disclose discovered information to the patient? How should the clinician document such information in the medical record? Should physicians interact with patients in online social networking sites, such as Myspace or Facebook? The curriculum presents our pragmatic model for PTG as a framework for considering these issues and additionally includes didactic material on information technology, professional boundaries, and clinical ethics.

We hope this curriculum will encourage residents to think in a structured way about the establishment of appropriate boundaries on the Internet. The poster includes a summary of the pragmatic model taught to residents, along with outlines of sessions of the curriculum and data from participant feedback.
THE HEALTH POLICY SEMINAR FOR RESIDENTS: AN INNOVATIVE CURRICULUM TO INCREASE RESIDENT UNDERSTANDING OF THE U.S. HEALTHCARE SYSTEM

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BACKGROUND: Gaining a basic understanding of U.S. health policy is an important component of the ACGME’s "Systems-Based Practice" core competency. Unfortunately, health policy is often underemphasized in Graduate Medical Education. Physicians with an increased understanding of the U.S. health care system may be more prepared for clinical practice, and better equipped to advocate for their profession.

PROGRAM DESCRIPTION: In order to improve our residents’ understanding of health policy, we initiated the Health Policy Seminar for Residents in 2008 at the Massachusetts General Hospital (MGH). The seminar provides an overview of ten core health policy themes, including health care financing, managed care, Medicare and Medicaid, quality and safety, and health care disparities. Thirty residents, mostly from the MGH Department of Medicine, have participated in the two-week seminar. Seminar content is delivered via a series of small group sessions led by local and national health policy experts. Participants are also given a syllabus containing key articles in health policy. Residents are also educated on health care advocacy, and work together in small groups researching a current health policy issue. The seminar then culminates in a two-day trip to Washington D.C., where residents meet with health policy leaders and staff members of the Massachusetts Congressional delegation. There they have a chance to present their issue research in the format of an advocacy presentation on Capitol Hill.

FINDINGS: We gathered data on the Health Policy Seminar for Residents by surveying resident participants. All participants agreed that an in-depth understanding of the U.S. healthcare system is an important part of resident education. All but one felt their residency program had inadequately emphasized health policy prior to their participation in the seminar. Prior to the seminar only 27.6% of residents felt they had a strong understanding of issues surrounding universal access to health care in the U.S.; this improved to 96.0% after the seminar (p=<0.01). Also, only 17.2% reported a strong understanding of the 2006 Massachusetts health care reform legislation prior to the seminar, which improved to 84.0% after the seminar (p=<0.01). Significant increases in knowledge self-assessment were also seen for many of the other issues addressed during the seminar.

CONCLUSIONS: Pre- and post-seminar surveys demonstrated that residents highly value education in health policy, and confirmed our hypothesis that issues in health policy are underemphasized in residency training. Innovative curriculum designs such as this seminar can be developed to increase resident understanding of the U.S. health care system in preparation for practice in today’s complex health care environment.
AN INTERFACULTY PROGRAM IN DISABILITY EDUCATION FOR PHYSIATRY RESIDENTS AT SPAULDING REHABILITATION HOSPITAL

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Background: Individuals with disabilities continue to face both attitudinal and physical barriers to accessing health care and social services in our society. This lack of access adversely impacts health and quality of life. Specialists in Physical Medicine and Rehabilitation (PM&R; physiatry) are uniquely trained to manage primary and secondary medical conditions resulting from disabling injury and disease, in both inpatient and outpatient settings. Given the populations they treat, physiatrists are in a position to raise the standards of health care quality and resource access for individuals with disabilities.

Need: Knowledge about disability legislation and civil rights, the lived experience of disability, disability ethics, and resource availability can enable physiatrists to counsel patients and families effectively in making life choices. Yet, specific training in these areas is not uniformly offered in physiatry residency programs, including the program at HMS. Formal focused training would allow HMS and HMS-trained physiatrists to set high patient-centered standards for education and clinical care in the field of physiatry.

Goals: 1) To integrate an interfaculty program in disability education into the existing HMS physiatry training program educational structure. 2) To provide opportunities for physiatry residents to learn from physician and non-physician experts about topics that directly affect patient care. 3) To provide physiatry residents with an introduction to and understanding of their roles in the societal systems that share in care for our patients.

Methods/Implementation: A model mini-course was designed to meet the needs of the HMS physiatry residency program, utilizing educational time within the program’s existing structure. The twelve-hour interactive course, “The Context of Care for People with Disabilities,” included expert facilitators from HMS, Harvard Law School, the Harvard Graduate School of Education, patients, advocates, and local government officials. ACGME-based learning objectives, a set of readings, fact-based worksheets, and written feedback forms were also created. The interfaculty, interdisciplinary course was delivered as a requirement for all residents in the spring of 2009. Learning formats included panels, a mock ethics forum, and a video viewing/discussion. Residents also had opportunities to consider how they might create accessible medical practices of their own.

Discussion and Next Steps: This course within the HMS physiatry residency program was consistent with the emphasis at HMS on cultural competence in clinical care. Informal feedback strongly suggests that the course empowered residents to educate and advocate for their patients with disabilities, and train colleagues and students to do the same. The course will be offered in 2010, with a restructuring of two sessions to optimize clinical relevance. Formal feedback is currently under review. The course provides education not consistently offered elsewhere in the training curriculum, and can thus be a model for training residents to provide exceptional care for individuals with disabilities.
DESIGN AND IMPLEMENTATION OF A MEDICAL CONSULTATION CURRICULUM AND ITS IMPACT ON RESIDENT EDUCATION

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Background: The medical consultation rotation is a cornerstone of clinical education for most medical residents. It is usually completed during the third year of training and it is considered one of the most challenging tests of their clinical education. Although a variety of clinical questions and medical conditions are routinely evaluated by residents and faculty during this rotation, the educational component of the experience relies heavily on the nature of the consults obtained and often leaves the educational experience deprived of structure and uniform clinical learning. In order to improve the balance of education received and enhance informed clinical decision making at the point of patient care, we have developed a didactic curriculum to be used by residents rotating in the medical consultation service in our hospital. To evaluate its impact on residents’ clinical education and the objectives of the rotation, we have surveyed a sample population of the residents who have completed the rotation over the past two years. The results will be presented.

Intervention: Taking into account the most common reasons for consultation requested by the non-medical services in our hospital, we have designed the curriculum to address two major areas of consultative medicine: perioperative medical evaluations and non-perioperative medical consultation. Each curriculum module provides the residents with clinical cases and the best-available evidence-based literature for review and in-depth analysis. The curriculum is reviewed and updated by the authors twice annually for accuracy and completeness and to integrate recently published data.

Methods: The medicine consult service is staffed by two faculty members who are available for questions 24hrs a day, 7 days a week during the two-week rotation. Two senior medical residents are responsible for providing consultative medical service to the non-medical services during each rotation. Clinical teaching rounds are conducted daily by the faculty, who accompany the residents to the patients’ bedsides. On a daily basis, faculty and residents meet for an hour of interactive curriculum-based teaching. When applicable, active consultation cases are used in the discussion.

Results: The results of narrative, formative, and summative evaluations of the Medicine Consult Service will be presented. In addition, we will present results of a survey of residents completing the rotation and using the interactive curriculum over the last two years. The survey is designed to evaluate the curriculum’s impact on the following major objectives: 1) Its ability to provide best-evidence that is applicable to medical consultation and practice, 2) Its impact on consultative practice, and 3) Its long-lasting effect on how residents view, review, and apply available best-evidence to clinical practice.

Overall, we are very satisfied with the effect that this innovative approach has had in our clinical teaching service and hope it may serve as a model for future design of other consultative services in residency training programs.
DEVELOPMENT OF A COMPREHENSIVE PERIOPERATIVE MEDICINE EXPOSURE FOR 3RD YEAR MEDICAL STUDENTS

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In the early days of anesthesia, the goal was merely to produce temporary unconsciousness for surgery. Today, the role of the modern Anesthesiologist has expanded to the entire perioperative period, including preoperative assessment, intraoperative management and postoperative care and pain management. Given these dramatic changes in anesthesiologists’ roles, the traditional one-week anesthesia elective in the OR may not provide the necessary skills that a future physician should understand in order to be a well-rounded provider. We sought to develop a new Perioperative Medicine Selective as part of the 3rd year Core Clerkship in Surgery to provide a more comprehensive exposure to the field of anesthesia and the range of issues associated with the management of patients in the perioperative period.

Objectives for the Perioperative Medicine Selective:

**PACU** - 2 days. The student will learn about postoperative fluid, electrolyte, access, and pain management issues, evaluating respiratory status and managing hemodynamics.

**Preoperative Assessment Clinic** - 1 day. The students will become familiar with ACC/AHA guidelines for preoperative cardiovascular assessment, ASA preoperative assessment guidelines, obstructive sleep apnea screening and guidelines, NPO guidelines, preoperative medication management, and comprehensive history and physical skills. They will gain familiarity with both surgical and anesthetic preoperative evaluations and how these two are similar and different. They will learn how to elicit history from patients and obtain medical records from other facilities to piece together a complete picture of the patient’s health status and help to develop an anesthetic plan. These skills will be useful in any rotation or future residencies.

**Regional Anesthesia** - 1 day. Basic anatomy will be reviewed, and the student will learn about advanced techniques of nerve blocks and postoperative analgesia.

**Acute Pain Service** - 2 days will be spent learning about the comprehensive management of postoperative pain via regional techniques, IV, and oral medications. Knowledge of pain management transcends specialty boundaries and will be of use to any student.

**Medical Simulation** - 1 day will be spent engaging in medical simulation and skills training in a non-threatening realistic clinical environment.

**Longitudinal Experience** - The student will select one complex patient from the preoperative clinic and follow them for a day through their surgery to understand how the preoperative assessment impacts surgical and anesthetic management and postoperative outcomes.

**Elective days** - Two remaining days the student can use to customize their experience in the OR, ICU, Labor and Delivery Suite or Pain clinic.

**Assessment:** Faculty will evaluate student performance during the various components of the rotation. In addition, the student will complete a scholarly project on perioperative medicine which will be evaluated by the selective coordinator.
THE HIDDEN CURRICULUM: A THEMATIC ANALYSIS OF MEDICAL STUDENT NARRATIVES

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Introduction: The strongest influences on physician development may not be those transmitted through the formally-endorsed curricula of medical schools. Rather, there is increasing awareness of a powerful “hidden curriculum” shaping the values, roles and identity a physician develops over the course of training. Students are acute observers of the ways in which more senior doctors treat patients and other members of the health care team. They absorb their teachers’ attitudes toward “difficult patients,” ways of coping with suffering or loss, and relative emphasis placed on personal versus work obligations. Students adopt the language, posture and manner of dress of those around them. They also internalize messages imparted by the organizational structure of their learning environment. Simply stated, medical students are socialized into the physicians they become by immersion in the culture and hierarchy of medicine.

We aimed to study student perceptions of the hidden curriculum (HC) in order to better understand its content and its potential future reform. Third year medical students are ideal participant-observers in a study on the hidden curriculum as they still operate largely by the assumptions that govern lay-person interactions, yet are an accepted part of the medical team.

Methods: Thematic analysis of reflection papers on the hidden curriculum written by 30 third-year Harvard Medical School students.

Results: Four overarching or ‘meta’ themes were apparent in almost all of the papers:
1) Medicine as Culture (with distinct subcultures, rules, vocabulary, customs and ritual); 2) Importance of Haphazard Interactions in the Learning Environment (such as assignment to a particular resident/attending/team); 3) Role Modeling (positive and negative, and the powerful effects of both); and 4) Real vs. Ideal (coming to terms with the gap between these versions of medicine, and the frequent misalignment between the formal and hidden curricula). Each paper was coded with up to 4 themes based on predominant content, and we identified the 9 most common themes: Power-hierarchy issues in training and patient care (50%); patient dehumanization (30%); “hidden” assessment of performance, suppression of normal emotional reactions to tragedy, struggling with the limits of medicine, and recognizing personal emerging accountability in medical training (27% each); the elusive search for personal/ professional balance, and “faking it” as a young doctor (23% each); and experiences derived from the power of human connection (20%).

Discussion/Implications for Field: Student written reflections on the HC are a rich resource for gaining a deeper understanding of the HC and how it shapes young trainees. These results may ultimately be used to inform, revise and humanize clinical medical education.
PSYCHIATRIC MEDICAL STUDENT EDUCATION IN THE HARVARD MEDICAL SCHOOL CAMBRIDGE INTEGRATED CLERKSHIP


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Introduction
Poster summarizes how the Psychiatry component of the Cambridge Integrated Clerkship (CIC) at the Cambridge Health Alliance (CHA) addresses key challenges in psychiatric medical student education.

Three key challenges in psychiatric medical student education
1. Lack of integration of psychiatry with other fields
2. Stigma (toward patients and psychiatry as a field)
3. Science/Humanism dualism

A longitudinal integrated ambulatory-based psychiatry clerkship with close faculty precepting addresses these key challenges.

Description of Program
1. Longitudinal ambulatory clinics: new patients in initial evaluations build cohort of patients followed through year with single attending preceptor.
2. Acute Immersion: inpatient and psychiatric emergency services
3. Didactic tutorials: mood disorders, schizophrenia and psychotic disorders, personality disorders, anxiety disorders, substance use disorders.
4. Patient-Doctor Course: reflection / discussion focused on Pt-Dr relationship
5. Focused clinical experiences: Motivational Interviewing, Geriatrics / Dementia-Delirium, optional Child/Adolescent.
6. Psychotherapy: individual or group psychotherapy - possible with longitudinal structure and single preceptor.

Findings
1. Better integration of psychiatry with other fields: Integration across the year: simultaneous learning in all fields; Students follow their patients through different specialty settings
2. Decreased Stigma: students see “patient as whole person” get better: Longitudinal care: students see episodes of illness through to getting better; Broad outpatient exposure: from very ill to relatively healthy patients; Close work with a single attending demystifies psychiatric care
3. Comprehensive, less dualistic perspective: clinical care and medical setting recognizes broad sociocultural context, incorporates scientific and humanistic perspectives
4. Relationships are the means by which the 3 challenges are addressed:
   Student-Doctor: close mentoring relationship develops, fosters reflection
   Student-Patient: students see patients over course of illness, in fullness as people
   Patient-Doctor: students see psychiatrists treat patients they have known for years
   Student-Student: students learn with same group over year, develop camaraderie
HANDS-ON ENDOSCOPIC PROCEDURES DURING GASTROINTESTINAL CLINICAL SIMULATION

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Background: In 2007 and 2008, second-year students in the gastrointestinal (GI) pathophysiology course participated in optional case-based simulation sessions in the teaching laboratory of the Harvard Gilbert Program in Medical Simulation. Learning objectives focused on relevant pathophysiology and clinical decision-making at the bedside of a mannequin, and in the subsequent debriefing session. We speculated that the addition of a procedural component, in 2009, to the simulation would broaden the learning experience. Aims: 1) To gauge student interest in the opportunity to use an endoscope; 2) To determine whether this combined simulation experience (endoscopic task trainer and full-body mannequin) improves gastrointestinal pathophysiology final exam scores. Methods: The study was approved by the Office of Research Subject Protection at Harvard Medical School. Second-year students signed up voluntarily online for a simulation session. Students worked at the bedside of a dynamic robot-mannequin (Medical Education Technology, Inc. (METI), Sarasota, FL) with a GI complaint in a realistic, whole-body patient simulator environment. After a verbal consent process, all 25 students (six in three sessions and seven in one session) agreed to be part of the study and completed an anonymous questionnaire asking, “How important in your decision to participate was the chance to use an endoscope?” (Very Important, Important, Not Very Important, or Unimportant). Each of four groups participated in an evaluation of a patient with either an upper, or lower GI bleed. After the students developed a differential diagnosis, and a diagnostic and therapeutic plan, each student performed an upper endoscopy or colonoscopy with a replica of a Pentax endoscope (Tokyo, Japan) using a realistic procedural simulator (GI Mentor from Simbionix, Inc., Cleveland, OH) at the Carl J. Shapiro Simulation and Skills Center. One gastrointestinal instructor taught basic endoscopic skills to one student who identified anatomical landmarks and bleeding sources, while the second expert reviewed the differential diagnosis, pathophysiology, and treatment options with the other students in an adjacent work area. Results: Students filled all slots within five minutes of the e-mail announcement of simulation with a hands-on procedural component. Sixty percent felt that the opportunity to use an endoscope was an important or very important reason for attending the session, and seventy-two percent indicated that a reason for participating was to help solidify and apply the pathophysiology concepts. Students who participated in the simulation sessions had overall final exam scores (92.10, SD 4.87) that were not significantly different from students who did not participate (90.17, SD 7.16) (P = 0.10). However, the final exam was not specifically designed to test the material covered in the simulation sessions. Summary: 1) Students in a second-year pathophysiology course were eager to participate in simulation sessions that provided an opportunity for hands-on procedural skills. 2) Students who participated in the simulation laboratory had similar overall final exam scores compared to students who did not participate.
INCORPORATING A TEAMWORK TRAINING WORKSHOP INTO THE 3RD YEAR MEDICAL STUDENT CURRICULUM

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OBJECTIVE: Teamwork Training curricula have been developed in a variety of medical specialties in order to help reduce medical errors and improve patient safety. The literature however is lacking with regard to how Teamwork Training may be applied in the years of Undergraduate Medical Education. The purpose of this study is to evaluate the effect of a 3rd year medical student Teamwork Training Workshop on students’ attitudes about the importance of their role as part of the medical team and the contributions that they can make at this early stage of their career in medicine.

METHODS: There are 47 Harvard Medical Students who are enrolled in the Massachusetts General Hospital Principle Clinical Experience (“PCE”) for the duration of their 3rd Year. A 90-minute Teamwork Training Workshop was integrated into their PCE Curriculum at the start of 3rd Year. All students were asked to fill out a short questionnaire prior to the Workshop. Participation was completely voluntary and consent was obtained by the student’s own completion of the questionnaires. Similarly, a post-curricular questionnaire with the same questions from the initial survey was completed by students at the end of the Workshop. Feedback was also elicited regarding how we might improve the Workshop in future years to better suit their educational needs.

RESULTS: 94% of MGH PCE Students (N=44) participated in our Workshop and completed questionnaires. A 5-Point Likert Scale was utilized to assess student responses. When asked how comfortable they feel working in a team environment, the students replied, on average, that they felt very comfortable (mean 4.00 - SD 0.78). This comfort level was not significantly changed following workshop training (mean 4.16; SD 0.64; p=0.09). Also, when asked how important students felt that teamwork was in providing quality care to their patients, they felt it was extremely important (4.80 – SD 0.46) and this view did not change following the workshop. However, when asked if they agreed that as 3rd Year Medical Students they can make an important contribution to their clinical teams, students perceptions were neutral to somewhat agree (mean 3.73 – SD 0.90). This perception was significantly improved after the Workshop (mean 4.16 – SD 0.75 – p=0.01). Students’ attitudes regarding how helpful Teamwork Training would be to their preparation for the wards significantly improved after the Workshop (mean 3.45 before training to 3.86 after training; p=0.01).

CONCLUSIONS: It is evident that teamwork is the cornerstone of providing quality medical care to our patients. The results of our study show that overall students already feel very comfortable working in teams. However, Teamwork Training can help 3rd Year Medical Students realize just how important a role they can play on the medical team and encourage them to actively participate in the care of their patients. The importance of teamwork is a tenet that should be emphasized at the start of one’s career in medicine, and we believe this type of Workshop is a useful addition to the 3rd Year Clinical Curriculum.
NEW HMS ELECTIVE: CLINICAL TOPICS IN GLOBAL HEALTH (ME715.J)

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There is a clear and pressing need for clinicians trained in the prevention and management of diseases found in developing countries. The future generation of U.S.-trained clinicians will necessarily play an important role in addressing this need. Fortunately, interest and participation in global health by students and physicians-in-training have been increasing at remarkable rates. Evidence shows that such global health experiences benefit trainees by exposing them to a wide spectrum of disease states and health systems, improving physical exam skills, decreasing reliance on lab tests and imaging, enhancing awareness of costs and resource allocation, and fostering cultural sensitivity. Beyond the immediate benefit of clinical skills and service, trainees who have participated in global health electives are more likely to work in underserved communities (domestically and overseas), pursue public health careers, and perform community service. Unfortunately, studies also show that the number of global health training opportunities are not keeping pace with the level of trainee interest.

Our newly approved HMS elective, Clinical Topics in Global Health, will be offered for the first time in the spring of 2010. The course will introduce students to the evidence-based knowledge and skills they will need to be effective clinicians in resource-limited settings. Ten evening sessions, led by Harvard faculty who practice clinically in developing countries in Africa, will orient students to the most important global health problems, explore each of these conditions with particular focus on clinical practice, and provide practical guidance for students interested in pursuing further training or careers in global health. Topics covered will include the leading causes of morbidity and mortality in developing countries, including malnutrition, malaria, diarrheal illness, perinatal disease, HIV/AIDS, TB, and chronic non-communicable diseases. Teaching methods will be tailored to each clinical topic and will include lectures, practical skills sessions, case discussions, key readings, and invited guest speakers.

Over the next 1-2 years, we intend to develop a two-week elective in global health for residents. The ten seminars from Clinical Topics in Global Health will be complemented by advanced skills sessions to include essential procedures, microscopy, and bedside ultrasound techniques.

We are supported in this work by mentorship from across Harvard’s global health and medical education disciplines, including Dr. Paul Farmer and Dr. Joseph Rhatigan (Partners In Health and Division of Global Health Equity), Dr. Michael VanRooyen and Dr. Gregg Greenough (Harvard Humanitarian Initiative), Dr. David Bangsberg (MGH Center for Global Health), and Dr. Jo Shapiro (HMS Academy).
INTEGRATED CASES FOR THE PRE-CLINICAL CURRICULUM

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Problem addressed by the project:
There has been significant progress towards the goal of achieving synergy and integration between the biomedical and social science courses at HMS, and there is continued evolution towards case-based teaching in the preclinical curriculum. However, there is little sharing of cases between courses, thus losing potential opportunities to link diverse aspects that influence health of patients, or to reinforce previously learned concepts in a different context. Integrated cases that span multiple courses could offer this opportunity.

Objectives:
1. Develop integrated cases that illustrate various biological and social science concepts
   a. Create cases and case-based scenarios based on chronic conditions and disabilities
   b. Seek input from preclinical Course Directors and faculty and adapt case-based scenarios to ensure that learning objectives for the various courses are reflected
   c. Supplement the paper case with relevant video clips, images, radiographs, labs
   d. Develop supplementary material including guiding questions, tutor guides, etc
2. Foster utilization of these cases across multiple biomedical and social science courses in Years 1 and 2 in collaboration with course faculty, as well as in Integration Weeks

Methods:
As an example, a case based on a person with quadriplegia following a spinal cord injury could be adapted to highlight multiple concepts in various preclinical courses including:
- Integrated Human Physiology: Effect of muscle paralysis on respiratory function and lung volumes, autonomic control of peripheral circulation, autonomic control and effect of impairment on gastrointestinal, genitourinary, and reproductive physiology
- Medical Ethics: Issues of patient competence and autonomy in decision making when discussing non-compliance with treatment, truth telling while preserving hope (e.g. in giving a prognosis), quality of life, reproductive ethics, stem cell debate
- Human Body: Organization of the nervous system, radiological anatomy
- Molecular and Cellular Basis of Medicine: Mechanisms of secondary cell injury and death, and potential interventions to counteract those following spinal cord injury
- Principles of Pharmacology: Factors that affect pharmacokinetics, e.g. effect of gut motility and impairments on bioavailability of drugs, autonomic pharmacology
- Human Nervous System and Behavior: Function of the motor and sensory tracts, spinal dermatomes and myotomes, autonomic nervous system
- Introduction to Social Medicine: The socioeconomic consequences of disability
- Health Care Policy: Access to care, Americans with Disabilities Act, Medicaid, economics of care, healthcare fragmentation and effect on chronic care coordination
- PD I/II: Positioning patients with paralysis for physical examination (e.g. turning or sitting them up); importance of assessing the "whole person" (function, environment)

Evaluation: This is a work in progress that is anticipated to be completed in the coming year. Formative and summative evaluation will be conducted as part of the project.

This project is supported by the Curtis Proust Academy Fellowship at HMS
PROBLEMS VS. SYSTEMS: HOW DOES THE INTERNAL MEDICINE CLERKSHIP INFLUENCE MEDICAL STUDENTS NOTE-WRITING?

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Background: Learning to write inpatient notes is an integral part of the internal medicine (IM) clerkship. Anecdotal evidence suggests variation in students’ assessment/plan (a/p) section; students tend to follow either a system-based or problem-based a/p format. Educational commentators have written about value of writing notes in a problem-based format as a tool for teaching clinical reasoning. Little is known about the influences on, preferences for, and perceived value of a particular a/p section format.

Objective: We sought to determine how students wrote notes prior to and during the IM rotation, the influences on format choice, and which format students find most valuable.

Methods: We conducted a pre- and post-clerkship survey of third-year medical students entering the IM clerkship. Notes written by students on these patients were reviewed by investigators; the a/p section was classified as problem-based, systems-based, or mixed. The study was approved by both the HMS and Partners Institutional Review Boards.

Results: Thirty-one out of thirty-eight eligible students participated in the study. In the pre-clerkship survey, 40% of students preferred a problem-based format, 25% preferred a system-based format, 15% specified their own unique format, and 20% had no preference. Former preceptors (48%) and prior clerkships (42%) were the strongest influences on format. Prior pediatrics (29%) and surgery (26%) clerkships were the strongest clerkship influences, with neurology (13%) and obstetrics/gynecology (3%) clerkships showing less influence on format. Of 125 notes reviewed, 12%, 63.2%, 24.8% were classified as systems-based, problem-based, and mixed problem-systems a/p, respectively. In the post-clerkship survey, 52% and 97% of students reported being instructed to write a system-based and problem-based a/p, respectively, at some point during the clerkship. Residents, followed by attending physicians were identified as the supervisors most influential in determining a/p format. Students who wrote systems-based notes more frequently reported trouble determining where to place particular elements of the assessment and plan compared with students who wrote problem-based notes (23% vs 6%). At the end of the IM clerkship, 75% of students preferred a problem-based format; 0% preferred a system-based format. 10% preferred a mixed problems-systems format, and 5% specified another approach.

Conclusions: Students enter the internal medicine clerkship with a variety of preferences for note format. The majority exit the clerkship with a preference for a problem-based format. This occurs despite conflicting instruction from supervisors about note format.

INTEGRATION OF 2ND YEAR HMS PHARMACOLOGY CURRICULUM

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The Problem
Due to recent HMS curriculum overhaul, IN705.0 Principles of Pharmacology was shortened from 5 to 2 weeks long. Unfortunately, many of the essential pharmacology topics cannot be covered in enough depth in 2 weeks, and some are not being covered at all. No significant, unified effort has been made to integrate pharmacology topics with the Pathophysiology blocks, there is no formal mechanism to ensure that pharmacology is actually taught and integrated well, and there is a lack of continuous assessment of the longitudinal curriculum.

Project Results To-Date
1. We created a comprehensive list of all pharmacology topics important for 2nd year HMS course instruction.
2. We contacted all Pathophysiology Block directors to ascertain which pharmacology topics are being covered in their blocks, and to what extent.
3. We reviewed all lecture slides, case discussions and special presentations available online for each block, looking for pharmacology topics covered (or not).
4. We created a 2nd year pharmacology master syllabus (see Figure) for each block that shows exactly when a particular pharmacology topic is being covered.
5. The pharmacology “master syllabus” will be given to all incoming 2nd year HMS students to guide their learning throughout the year.
6. Work in progress includes helping block directors with teaching pharmacology concepts not currently covered, writing pharmacology exam questions, and ensuring that key topics are included in case discussions and individual lectures.
7. We plan to facilitate a pharmacology review lecture for each block - it is already being done in the Neurophysiology block.

Master Syllabus Example: Pulmonary Pharmacology Syllabus

| Week One                                                                                      |
|                                                                                               |
| Time | Thurs 11/6 | Fri 11/7 | Mon 11/10 | Tues 11/11 | Wed 11/1 2 |
| 08:30 to 9:30 | Asthma | Clinical aspects of beta agonists, leukotriene modifiers, inhaled and systemic steroids, monoclonal antibodies | COPD: anticholinergic (clinical use and mechanism of action), beta agonists, varenicline (nicotine replacement inhaled steroid) | Pneumonia: Antibiotics for community acquired and nosocomial pneumonia: Third minicase/simula (11/13) also discusses treatment for influenza and PCP as well. Emphasizes the way host defenses influence treatment | Tutorial |
| 10:00 to 11:15 | Asthma | More on above agents, including additional discussion of mechanism of action | | | Case Presentatio |

Chemotherapy for thoracic malignancy; lecture brief discussion of standard chemotherapy agents. Emphasis on recent targeted therapies (e.g., monoclonals like EGFR inhibitors).
A LONGITUDINAL CLINICAL NUTRITION CURRICULUM FOR THE THIRD YEAR PRINCIPLE CLINICAL EXPERIENCE

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Background: Studies have demonstrated that poor nutrition is associated with the development and progression of numerous medical conditions including cardiovascular disease and diabetes, as well as a significant increase in all-cause mortality. Formal nutrition teaching occurs in the Human Systems Course throughout the second year; however, there is no formal nutrition curriculum in the clinical years. Studies suggest that the retention of knowledge in nutrition is significantly improved when it is taught in both the preclinical and clinical years. Thus, we hypothesized that a 3rd year curriculum would significantly enhance the knowledge and comfort of students in applying nutritional principles in clinical practice.

Objectives: To develop and incorporate a clinical nutrition curriculum in the Principle Clinical Experience (PCE) longitudinally throughout the third year of medical school.

Participants: 55 PCE students and 8 case conference faculty at Beth Israel Deaconess Medical Center in the 2009-2010 academic year.

Assessment: A questionnaire was designed to assess students’ knowledge of nutrition and self-efficacy for nutritional counseling. This survey was administered at baseline and will be administered again at the end of this academic year.

Methods: A focused nutrition curriculum has been added to the PCE curriculum in the following ways: case conferences have included nutrition teaching points, the challenge track will present a nutrition case, the book club elective has added a nutrition-themed book, and an obesity longitudinal elective has been offered in which students follow an obese patient planning to undergo bariatric surgery throughout the year. The nutrition curriculum includes a facilitator guide that was created for case conference faculty on seven core nutrition topics: basic nutrition, cardiovascular disease, diabetes, osteoporosis and bone health, eating disorders, pregnancy and lactation, and obesity. Case conference topics are monitored by a core nutrition faculty member. When a relevant topic is chosen, case conference faculty are contacted and provided with a 1-2 page nutrition guide and/or brief teaching pearls. Faculty members were asked to incorporate 1-3 main teaching points on nutrition during the discussion of the case when appropriate. A faculty development session was held to introduce the faculty to the new curriculum.

Conclusions: The study is currently ongoing; however, we hypothesize that faculty will be receptive to the curriculum since it does not add to their workload and provides added value to their teaching. We hypothesize that based on the increase exposure to nutrition in the clinical years, students’ knowledge and self-efficacy for nutritional counseling will increase.
## INDEX BY AUTHOR

<table>
<thead>
<tr>
<th>Author</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Abookire S</td>
<td>35</td>
</tr>
<tr>
<td>Ahn C</td>
<td>31</td>
</tr>
<tr>
<td>Albanese M</td>
<td>63</td>
</tr>
<tr>
<td>Allen W</td>
<td>32</td>
</tr>
<tr>
<td>Almeida JM</td>
<td>70</td>
</tr>
<tr>
<td>Altshuler D</td>
<td>51, 52</td>
</tr>
<tr>
<td>Armstrong EG</td>
<td>26</td>
</tr>
<tr>
<td>Atkins KM</td>
<td>8, 28</td>
</tr>
<tr>
<td>Babushok D</td>
<td>29</td>
</tr>
<tr>
<td>Bae L</td>
<td>12</td>
</tr>
<tr>
<td>Baker H</td>
<td>26</td>
</tr>
<tr>
<td>Baker J</td>
<td>17</td>
</tr>
<tr>
<td>Balasundaram K</td>
<td>35</td>
</tr>
<tr>
<td>Barnett SR</td>
<td>39, 41</td>
</tr>
<tr>
<td>Batalden M</td>
<td>62</td>
</tr>
<tr>
<td>Bazari H</td>
<td>29, 51</td>
</tr>
<tr>
<td>Bell SK</td>
<td>4, 62</td>
</tr>
<tr>
<td>Berkow R</td>
<td>26</td>
</tr>
<tr>
<td>Bhan I</td>
<td>20</td>
</tr>
<tr>
<td>Blesius CR</td>
<td>17</td>
</tr>
<tr>
<td>Block S</td>
<td>3</td>
</tr>
<tr>
<td>Bonilla P</td>
<td>63</td>
</tr>
<tr>
<td>Botts A</td>
<td>40, 41</td>
</tr>
<tr>
<td>Boyd JW</td>
<td>63</td>
</tr>
<tr>
<td>Breen E</td>
<td>2</td>
</tr>
<tr>
<td>Brendel DH</td>
<td>57</td>
</tr>
<tr>
<td>Brett-Fleegler M</td>
<td>6, 23</td>
</tr>
<tr>
<td>Brodsky D</td>
<td>8, 28</td>
</tr>
<tr>
<td>Bullock C</td>
<td>63</td>
</tr>
<tr>
<td>Camacho MA</td>
<td>13</td>
</tr>
<tr>
<td>Cancedda C</td>
<td>14</td>
</tr>
<tr>
<td>Chernicky DW</td>
<td>27, 30</td>
</tr>
<tr>
<td>Chiappa V</td>
<td>42</td>
</tr>
<tr>
<td>Chopra S</td>
<td>36</td>
</tr>
<tr>
<td>Ciccarese P</td>
<td>15</td>
</tr>
<tr>
<td>Clark T</td>
<td>15</td>
</tr>
<tr>
<td>Clark W</td>
<td>9</td>
</tr>
<tr>
<td>Clinton BK</td>
<td>17, 57</td>
</tr>
<tr>
<td>Clouse ME</td>
<td>13</td>
</tr>
<tr>
<td>Cohn M</td>
<td>64</td>
</tr>
<tr>
<td>Corbett E</td>
<td>26</td>
</tr>
<tr>
<td>Corn SB</td>
<td>10</td>
</tr>
<tr>
<td>Cort A</td>
<td>11</td>
</tr>
<tr>
<td>Crotty B</td>
<td>18</td>
</tr>
<tr>
<td>Crowly W</td>
<td>51</td>
</tr>
<tr>
<td>Daetwyler C</td>
<td>9</td>
</tr>
<tr>
<td>Dalal AK</td>
<td>68</td>
</tr>
<tr>
<td>Day CS</td>
<td>31</td>
</tr>
<tr>
<td>De Bakker PIW</td>
<td>52</td>
</tr>
<tr>
<td>Demay M</td>
<td>51</td>
</tr>
<tr>
<td>Denninger J</td>
<td>17</td>
</tr>
<tr>
<td>Derevianko A</td>
<td>64</td>
</tr>
<tr>
<td>Dillon E</td>
<td>35</td>
</tr>
<tr>
<td>Doherty EG</td>
<td>24</td>
</tr>
<tr>
<td>Dvorak R</td>
<td>63</td>
</tr>
<tr>
<td>Ebelbaum C</td>
<td>63</td>
</tr>
<tr>
<td>Eppich W</td>
<td>6, 23</td>
</tr>
<tr>
<td>Fabiny AR</td>
<td>7, 25</td>
</tr>
<tr>
<td>Farrell SE</td>
<td>1, 7, 25</td>
</tr>
<tr>
<td>Finn K</td>
<td>55</td>
</tr>
<tr>
<td>Fisher L</td>
<td>61</td>
</tr>
<tr>
<td>Fleegler E</td>
<td>6, 23</td>
</tr>
<tr>
<td>Flores JC</td>
<td>51, 52</td>
</tr>
<tr>
<td>Freeman M</td>
<td>51</td>
</tr>
<tr>
<td>Gandhi R</td>
<td>11</td>
</tr>
<tr>
<td>Gauthier E</td>
<td>4, 62, 63</td>
</tr>
<tr>
<td>Gimbel B</td>
<td>19</td>
</tr>
<tr>
<td>Givon L</td>
<td>63</td>
</tr>
<tr>
<td>Gordon P</td>
<td>35</td>
</tr>
<tr>
<td>Gordon JA</td>
<td>64</td>
</tr>
<tr>
<td>Gorridio T</td>
<td>12</td>
</tr>
<tr>
<td>Green-Hopkins I</td>
<td>43</td>
</tr>
<tr>
<td>Griswold T</td>
<td>63</td>
</tr>
<tr>
<td>Gross AF</td>
<td>17</td>
</tr>
<tr>
<td>Guterman EL</td>
<td>64</td>
</tr>
<tr>
<td>Haber D</td>
<td>51</td>
</tr>
<tr>
<td>Hayden EM</td>
<td>64</td>
</tr>
<tr>
<td>Henry D</td>
<td>43</td>
</tr>
<tr>
<td>Hess J</td>
<td>32</td>
</tr>
<tr>
<td>Hodin R</td>
<td>46</td>
</tr>
<tr>
<td>Holmes L</td>
<td>51</td>
</tr>
<tr>
<td>Hron J</td>
<td>43</td>
</tr>
<tr>
<td>Huang C</td>
<td>22</td>
</tr>
<tr>
<td>Hunt D</td>
<td>29, 51</td>
</tr>
<tr>
<td>Irish J</td>
<td>48</td>
</tr>
<tr>
<td>Jackson A</td>
<td>30</td>
</tr>
<tr>
<td>Joffe S</td>
<td>45</td>
</tr>
<tr>
<td>Johansson A</td>
<td>8, 28</td>
</tr>
</tbody>
</table>

*Index ~ 71*
# INDEX BY AUTHOR

<table>
<thead>
<tr>
<th>Author</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Johnston K</td>
<td>50</td>
</tr>
<tr>
<td>Jones SB</td>
<td>39, 44, 61</td>
</tr>
<tr>
<td>Joseph R</td>
<td>63</td>
</tr>
<tr>
<td>Kadzielski J</td>
<td>47</td>
</tr>
<tr>
<td>Kanter S</td>
<td>26</td>
</tr>
<tr>
<td>Kappler SM</td>
<td>64</td>
</tr>
<tr>
<td>Karson A</td>
<td>55</td>
</tr>
<tr>
<td>Kerfoot BP</td>
<td>26, 36</td>
</tr>
<tr>
<td>Kesselheim JC</td>
<td>7, 25, 45</td>
</tr>
<tr>
<td>Khachadoorian-Elia HR</td>
<td>65</td>
</tr>
<tr>
<td>Khan AN</td>
<td>13</td>
</tr>
<tr>
<td>Khosa F</td>
<td>13</td>
</tr>
<tr>
<td>Kinoshita J</td>
<td>15</td>
</tr>
<tr>
<td>Kirdar J</td>
<td>26</td>
</tr>
<tr>
<td>Krauthamer MB</td>
<td>58</td>
</tr>
<tr>
<td>Krupat E</td>
<td>1, 7, 25, 26, 27, 30, 64</td>
</tr>
<tr>
<td>Kueppenbender K</td>
<td>63</td>
</tr>
<tr>
<td>Lage DE</td>
<td>31</td>
</tr>
<tr>
<td>Lee PT</td>
<td>66</td>
</tr>
<tr>
<td>Lewis KH</td>
<td>58</td>
</tr>
<tr>
<td>Linos D</td>
<td>46</td>
</tr>
<tr>
<td>Locke S</td>
<td>12</td>
</tr>
<tr>
<td>Logiudice R</td>
<td>35</td>
</tr>
<tr>
<td>Long A</td>
<td>36</td>
</tr>
<tr>
<td>Lown B</td>
<td>48</td>
</tr>
<tr>
<td>McCormick F</td>
<td>47</td>
</tr>
<tr>
<td>McKenzie M</td>
<td>48</td>
</tr>
<tr>
<td>McMahon GT</td>
<td>26</td>
</tr>
<tr>
<td>Miller K</td>
<td>50</td>
</tr>
<tr>
<td>Mitchell JD</td>
<td>39, 61</td>
</tr>
<tr>
<td>Monaghan C</td>
<td>49</td>
</tr>
<tr>
<td>Mostaghiimi A</td>
<td>18</td>
</tr>
<tr>
<td>Nekhlyudov L</td>
<td>50</td>
</tr>
<tr>
<td>Nelson BD</td>
<td>66</td>
</tr>
<tr>
<td>Newman L</td>
<td>8, 28</td>
</tr>
<tr>
<td>Novack D</td>
<td>9</td>
</tr>
<tr>
<td>Ocana M</td>
<td>15</td>
</tr>
<tr>
<td>Padmanabhan V</td>
<td>29</td>
</tr>
<tr>
<td>Pallais JC</td>
<td>29, 51, 52, 53</td>
</tr>
<tr>
<td>Pallin DJ</td>
<td>22</td>
</tr>
<tr>
<td>Park EM</td>
<td>19</td>
</tr>
<tr>
<td>Pawlowski JB</td>
<td>64, 69</td>
</tr>
<tr>
<td>Peet E</td>
<td>30</td>
</tr>
<tr>
<td>Pelletier SR</td>
<td>7, 25, 27, 30, 64</td>
</tr>
<tr>
<td>Pian-Smith MCM</td>
<td>21</td>
</tr>
<tr>
<td>Potter J</td>
<td>50</td>
</tr>
<tr>
<td>Pozner CN</td>
<td>22</td>
</tr>
<tr>
<td>Puig A</td>
<td>54, 60</td>
</tr>
<tr>
<td>Raju S</td>
<td>55</td>
</tr>
<tr>
<td>Rao S</td>
<td>50</td>
</tr>
<tr>
<td>Roberts DH</td>
<td>8, 28, 48, 70</td>
</tr>
<tr>
<td>Robson J</td>
<td>43</td>
</tr>
<tr>
<td>Rock L</td>
<td>48</td>
</tr>
<tr>
<td>Romeo S</td>
<td>12</td>
</tr>
<tr>
<td>Rosow C</td>
<td>69</td>
</tr>
<tr>
<td>Rudolph J</td>
<td>6, 23</td>
</tr>
<tr>
<td>Rutledge R</td>
<td>20</td>
</tr>
<tr>
<td>Sabharwal S</td>
<td>67</td>
</tr>
<tr>
<td>Saghir A</td>
<td>13</td>
</tr>
<tr>
<td>Schwartzstein RM</td>
<td>2, 8, 28, 48, 70</td>
</tr>
<tr>
<td>Segal BS</td>
<td>10</td>
</tr>
<tr>
<td>Shaffer K</td>
<td>26</td>
</tr>
<tr>
<td>Shapiro FE</td>
<td>56</td>
</tr>
<tr>
<td>Sharma N</td>
<td>49</td>
</tr>
<tr>
<td>Shaw T</td>
<td>36</td>
</tr>
<tr>
<td>Shields HM</td>
<td>64</td>
</tr>
<tr>
<td>Ship AN</td>
<td>33</td>
</tr>
<tr>
<td>Shhtasel D</td>
<td>63</td>
</tr>
<tr>
<td>Siegelman J</td>
<td>22</td>
</tr>
<tr>
<td>Silverman BC</td>
<td>57</td>
</tr>
<tr>
<td>Simon R</td>
<td>6, 23</td>
</tr>
<tr>
<td>Stoklosa J</td>
<td>17</td>
</tr>
<tr>
<td>Strichartz G</td>
<td>69</td>
</tr>
<tr>
<td>Surber C</td>
<td>19</td>
</tr>
<tr>
<td>Sutton-Skinner K</td>
<td>12</td>
</tr>
<tr>
<td>Tess AV</td>
<td>70</td>
</tr>
<tr>
<td>Thakuria J</td>
<td>51</td>
</tr>
<tr>
<td>Thompson RW</td>
<td>58</td>
</tr>
<tr>
<td>Thorndike MEL</td>
<td>68</td>
</tr>
<tr>
<td>Tyagi G</td>
<td>13</td>
</tr>
<tr>
<td>Urion DK</td>
<td>37</td>
</tr>
<tr>
<td>Urman R</td>
<td>69</td>
</tr>
<tr>
<td>Venkatan S</td>
<td>64</td>
</tr>
<tr>
<td>Vlassakova B</td>
<td>38</td>
</tr>
<tr>
<td>Vollmer Jr. C</td>
<td>8, 28</td>
</tr>
<tr>
<td>Waisel D</td>
<td>38</td>
</tr>
<tr>
<td>Wei M</td>
<td>17</td>
</tr>
<tr>
<td>Weinstein AR</td>
<td>70</td>
</tr>
</tbody>
</table>
## INDEX BY AUTHOR

<table>
<thead>
<tr>
<th>Author</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Weintraub R</td>
<td>14</td>
</tr>
<tr>
<td>Weiss D</td>
<td>59</td>
</tr>
<tr>
<td>Werden MR</td>
<td>12</td>
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<tr>
<td>Wertheim B</td>
<td>20</td>
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<tr>
<td>Wexler D</td>
<td>51</td>
</tr>
<tr>
<td>Wolfe D</td>
<td>19</td>
</tr>
<tr>
<td>Wong GT</td>
<td>15</td>
</tr>
<tr>
<td>Wosu UA</td>
<td>65</td>
</tr>
<tr>
<td>Wright DE</td>
<td>20, 60</td>
</tr>
<tr>
<td>Wu E</td>
<td>15</td>
</tr>
<tr>
<td>York-Best CM</td>
<td>65</td>
</tr>
<tr>
<td>Zukotynski K</td>
<td>16</td>
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</table>