



Welcome to
**THE JOHN McCAHAN
EDUCATION DAY**

Dear Colleagues,

Taking a full day to recognize developments in health sciences education on Boston University's Medical Campus allows faculty, students and staff to develop new educational approaches from which to draw in their teaching and training of the 3,300 students on this campus.

Surely one of our greatest challenges is learning how to most effectively guide students with multiple learning styles to mastery of the increasing curriculum content required for professional or research training. Students frequently compare the graduate and professional educational process to "drinking from a fire hose". Furthermore we also must be able to evaluate whether we are achieving our educational goals of graduating outstanding clinicians and scientists.

Health science educators today are engaged in redefining and revising the required knowledge base, skill set, attitudes and experiences of health professionals at all levels of training, while devising outcome metrics for meaningful feedback to individuals, schools, training programs and the system as a whole, a premise advanced by our keynote speaker, H. Thomas Aretz, M.D.

Educators from all three Medical Campus Schools (Medicine, Dental Medicine, and Public Health) have collaborated in planning this exposition of education in the health sciences. Today educators should celebrate educational scholarship, learn and discuss new approaches, and develop collaborations with like-minded colleagues.

Welcome to the Second Annual John McCahan Education Day.

A handwritten signature in black ink, appearing to read "Karen Antman".

Karen H. Antman, M.D.
Dean, Boston University School of Medicine
Provost, Boston University Medical Campus

ACKNOWLEDGMENTS

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The John McCahan Education Day Planning Committee:

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Dean's Office, BUSDM
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Office of the Dean, BUSPH
Educational Media Center/Instructional Services
Office of Facilities Management and Planning

John McCahan Education Day
Showcasing Health Sciences Education at the BU Medical Campus
June 21, 2007
Hiebert Lounge

SCHEDULE OF EVENTS

- 9:00-9:15 a.m. **Welcome**
Adrienne E. Rogers, M.D.
Associate Dean for Academic Affairs, *ad interim*
Boston University School of Medicine
Sharon A. Levine, M.D.
Chair, Medical Education Day Planning Committee
Associate Dean for Academic Affairs,
Boston University School of Medicine
- 9:15-10:00 a.m. **Keynote Lecture**
"Managing Change in Health Professions Education –
Experiences From the Trenches"
H. Thomas Aretz, M.D.
Vice President, Global Programs
Harvard Medical International
- 10:15-11:45 a.m. **Workshop Session I**
See workshop listing p. 6 for location
- 11:45 a.m.-1:45 p.m. **Poster Presentations**
Lunch
- 2:00-3:30 p.m. **Workshop Session II**
See workshop listing p. 7 for location
- 3:45-4:45 p.m. **Award Presentations**
Sharon A. Levine, M.D.
Best Trainee Abstract: Kristen Lindgren, B.A.
Best Faculty Abstract: Serena Chao, M.D., M.Sc.
Dean's Award for Teaching Recognition: Christine
Phillips, M.D.
- Oral Presentations**
Kristen Lindgren, B.A, "A Novel Approach to Teaching
the Spinal Cord in Medical Neurosciences", abstract #7

Serena Chao, M.D., M.Sc., "Comparison of On-line
Curriculum to Lecture Format in Teaching Delirium to 4th
Year Medical Students", abstract #11
- 4:45-5:00 p.m. **Concluding Remarks**
Sharon A. Levine, M.D.

John F. McCahan, M.D.

Dr. John McCahan served as the Associate Dean for Academic Affairs at Boston University School of Medicine from 1976 until June 1, 2006. From November 2003 through May 2005 he also led the School of Medicine as the Acting Dean.

Dr. McCahan received his B.A and M.D. degrees from the University of Pennsylvania. He subsequently trained in internal medicine at the Upstate Medical Center, Pennsylvania Hospital and Guy's Hospital, London. Following two years of service in the United States Public Health Service at the National Communicable Disease Center in Atlanta, he joined the staff at Lincoln Hospital in the Bronx and the faculty at Albert Einstein College of Medicine. He was appointed Director of the Department of Medicine at Lincoln Hospital in 1972. During this period Dr. McCahan was centrally involved in student and post-graduate training programs and became particularly invested in the care of the poor and the provision of health care services to underserved populations.

Following his recruitment to Boston University in 1975 as Associate Professor of Medicine, Dr. McCahan continued clinical practice with underserved populations through the Home Medical Service (now the Geriatrics Home Service). He regularly preceptored fourth-year students on home visits to frail elders. He developed a teaching program in family medicine and became a Professor of Family Medicine following the establishment of that department in 1997.

After his appointment as Associate Dean for Academic Affairs in 1976, Dr. McCahan oversaw numerous revisions and reforms of the M.D. curriculum. Most recently, he guided a major change in curriculum governance and chaired the Medical Education Committee, created in this reorganization. Throughout his career he has had a particular interest in the patient-doctor interaction and the teaching methodologies that result in effective clinical skills. He has actively taught, studied, and administered a variety of educational formats from large group lectures to one-on-one teaching, feedback, and evaluation. In recognition of his excellence as an educator, Dr. McCahan received the Frederick Jackson Teaching Award and faculty membership in AOA.

In addition to serving as chairman of numerous administrative and educational committees, Dr. McCahan was the principal investigator of several grants and contracts, including a PHS-BHP Grant to Establish a Department of Family Medicine; a PHS-BHP Predoctoral Training Grant in Family Medicine; and a Community Partnerships with Health Professions Education Initiative, W.K. Kellogg Foundation. He served as BUSM liaison and author of the Boston section of a plan for a statewide Area Health Education Center program. Throughout the years he earned the admiration of his colleagues for his ability to articulate and implement a clear vision of modern medical education.

H. Thomas Aretz, M.D.

Dr. Aretz is currently the Vice President of Global Programs at Harvard Medical International and Associate Professor of Pathology at Harvard Medical School. Dr. Aretz received his M.D. from Harvard Medical School, completed a Residency in Anatomic and Clinical Pathology and Fellowship in Cardiovascular Pathology at Massachusetts General Hospital. He has held academic appointments at Harvard Medical School since 1978 and has served as pathologist for the Lahey Clinic, the Deaconess Hospital, and most recently Massachusetts General Hospital as Director of Cardiovascular Pathology from 1996-2003.

Actively involved in the education of residents, fellows, and medical students since 1978, Dr. Aretz was recruited in 1992 to direct the cardiovascular portion of the second-year New Pathway curriculum at Harvard Medical School. He successfully led the expansion of this course to become the 11-week Module 1 of the Human Systems course, which included cardiovascular, respiratory, hematological and dermatological pathophysiology integrated with pharmacology and microbiology. His leadership in the implementation of this course included the development of multiple teaching methodologies including cases, multi-station exercises, and innovative web-based teaching strategies. His outstanding contributions as a medical educator were recognized with numerous awards including the Excellence in Teaching Award from MGH Pathology Residents (1997), the Faculty Prize for Excellence in Teaching Award for the second year curriculum at Harvard Medical School (1993 and 1999), and the Excellence in Teaching Award as a Preclinical Instructor (Class of 2001 at graduation).

In the last ten years Dr. Aretz has increasingly focused his work on the design of medical curriculum and the organizational structures to support curricular change around the world. These efforts intensified in 1999 when Dr. Aretz joined Harvard Medical International as Medical Director for International Education. In this capacity and most recently as Vice President of Global Programs, he has served as team leader for reform of the medical curriculum for a number of institutions including the Technical University of Dresden, Heidelberg University, Hong Kong University, Tokyo Medical and Dental University, Sri Ramachandra Medical College, and Xing Jian Medical University. He has also participated in development of medical curriculum for new schools in the Philippines, Dominican Republic, Kingdom of Saudi Arabia, Turkey and Lebanon as well as the planning of postgraduate educational programs, health care policy, and continuing medical education around the world.

WORKSHOP TOPICS AND LOCATIONS

SESSION I 10:15-11:45 A.M.

L-1105

Searching for Evidence-Based Information, Lauren Maggio MS, Keven Jeffery, MLIS, David Flynn, MS (LIS)

For a family medicine physician to keep current with the 7,827 relevant articles published each month s/he would need to dedicate 627.5 hours to reading articles. Utilizing a case-based approach, this hands-on workshop introduces information resources and expert search techniques and strategies for managing this abundance of medical literature. Topics will include navigating the Library's time-saving evidence-based resources (such as the Cochrane Database of Systematic Reviews); formulating searchable clinical questions; and creating PubMed and MEDLINE/Ovid search strategies. Additional time will be allotted to answering questions and for working on individual research topics. This session will meet in a computer lab.

L-213

Planning for Competency-based Education: Concepts and Applications, Deborah Fournier, PhD, MS, Sharon Levine, MD, Angela Jackson, MD

Medical educators within schools of medicine and dental medicine are faced with designing, developing, and implementing competency-based education programs. The workshop will focus on an overview of the basic tenets of competency-based education, which are grounded in the research on mastery learning. Participants will learn about the major functional components needed to design and develop competency-based education programs, with an emphasis on assessing learner performance. Small interactive groups will grapple with applying components in varying cases. Participants will be given a resource manual that contains research articles, tools and materials that are designed to support their continued learning long after the workshop has concluded. The resource manual aims to support the transfer of learning in the workshop to faculty activities in committees and task groups.

L-211

Promoting Interdisciplinary Teaching and Learning through Online Case Based Teaching, Wayne LaMorte, MD, MPH, Rob Schadt, EdD

Public health problems are inherently interdisciplinary, yet students tend to learn from a one-dimensional perspective that is artificial and fails to illustrate the complexities of real problems and the manner in which expertise from multiple disciplines is integrated to provide real solutions. We are striving for a paradigm shift by bringing together faculty from different departments to develop realistic online public health cases that better prepare our students for the problems they will encounter in the field. In this session participants will work thorough parts of these cases and discuss with us how to most effectively promote interdisciplinary curriculum development.

L-204

A Systems Approach to Effective Teaching, Ascher Segall, MD, DrPH, Hannelore Vanderschmidt, PhD, Domenic Screnci, EdD

This workshop is designed for members of the BU medical community who would like to enhance their teaching capabilities. It will be based on the design for learning model pioneered by the Center for Educational Development in Health at Boston University. The model is competency based and systematic. Participants will become familiar with the basic concepts that underlie the model and ways in which it can be used to develop instruction that is both effective and responsive to the learning needs of students. "Hands on" experience in applying the model to a short segment of instruction will be offered.

R-108**Mentoring: Leadership, Learning, Legacy, Paula K. Friedman, DDS, MSD, MPH**

Mentoring is an effective way to enhance education, research, and service--the tripartite mission of our Academic Health Center. This workshop will review mentoring systems, practices, and experiences, and invite participants to discuss what infrastructure best supports the mentoring process. Mentoring is multidirectional and can be interdisciplinary. How can we optimize the mentoring resources that are available to us to improve student recruitment, retention, and performance; faculty development; increase diversity; and cultivate research and researchers?

L-1112**CourseInfo: Going Beyond Lectures, Labs, and Quizzes -- A Look at Reporting, Electronic Communications, Security, Aesthetics, and Other Functionality, Joy Y. Deligianides, MS**

Ever wonder who uses your CourseInfo site? How? And When? Are you trying to redesign your CourseInfo site to enhance the learning experience of your students? Are you looking for innovative ways to communicate with your audience? This session will address reporting, security, aesthetical navigation, and electronic communications (including the calendar feature). Learn advanced features about CourseInfo. Discover your audience and its patterns. Learn how to manage virtual chatrooms, electronic bulletin boards, and digital mailboxes. Expand the learning environment. Having an existing CourseInfo site is recommended but not required. This session will meet in a computer lab.

L-1110**E-Learning in Medical Education: Creating a Dynamic Program, John Wiecha, MD, MPH, Jillian McGuire, MA**

This workshop will introduce web-based learning (WBL), including the current spectrum of medical education activities using the Internet. The evidence for effectiveness of WBL will be reviewed. Participants will gain an understanding of how creating curriculum for the web requires unique instructional design approaches. The pros and cons of self-directed vs. faculty-moderated designs, and strategies for integrating multimedia, will be addressed. Currently available learning systems at BUSM will be compared. This seminar will be held in a computer learning room, with opportunities provided for experiencing and critiquing examples of web-based curricula.

SESSION II 2:00-3:30 P.M.**L-1105**

Searching for Evidence-Based Information See Listing in SESSION I

L-213

Planning for Competency-based Education: Concepts and Applications

See Listing in SESSION I

L-204

A Systems Approach to Effective Teaching See Listing in SESSION I

R-108

Mentoring: Leadership, Learning, Legacy See Listing in SESSION I

L-1112

Designing, Implementing, and Evaluating On-Line Surveys for Research and for Academics, Joy Y. Deligianides, MS

Discover a new way of collecting data on the Medical Campus. Learn how to create and implement on-line surveys quickly and easily. Learn how to evaluate results of surveys and how to refine future surveys. The results of surveys come in three formats and can be integrated into other applications, such as SPSS and Microsoft Access. This is a service free of charge and available through the BUMC web server. Find out how other members of the BUMC community have already used on-line surveys through this system.

ABSTRACT THEMES FOR POSTER PRESENTATIONS

Innovations in Health Sciences Education (IHSE)

This category showcases innovative scholarly works in health sciences education designed to stimulate collaboration and creative thinking. Projects can be presented prior to the completion of full evaluation. Examples of projects include development, implementation, or evaluation of educational tools, course curricula, simulations, or innovative educational collaborations.

Abstracts 1–10

Interactive Resources in Health Sciences Education (IRHSE)

This category demonstrates the creative use of interactive technology to augment learning. Appropriate sites for submission include course or clerkship web sites, electronic clinical case simulations, online didactics, computer-based faculty development resources and electronic evaluation instruments. Submitted projects should be non-commercial although industry funding is permitted if the content and control of the project resides solely with the faculty authors.

Abstracts 11 - 20

Research in Health Sciences Education (RHSE)

This category showcases ongoing research in health sciences education at BUMC and includes presentation of findings which may add new knowledge to the field of health sciences education. Submissions may include topics such as: new knowledge in curriculum development, faculty development and innovative evaluation data suggesting that an educational intervention may make a difference. Both quantitative and qualitative research may be submitted as well as research in progress.

Abstracts 21 - 27

Innovations in Health Sciences Education (IHSE)

PROMOTING SUBSTANCE ABUSE EDUCATION AMONG GENERALISTS: THE CHIEF RESIDENT IMMERSION TRAINING (CRIT) PROGRAM

1

DP ALFORD¹, M AMODEO², J ASHBA³, JS SAMET¹

¹Clinical Addiction Research and Education (CARE) Unit; Section of General Internal Medicine; Boston Medical Center; Boston University School of Medicine; Boston Public Health Commission, ²Boston University School of Social Work; ³Data Coordinating Center, Boston University School of Public Health. (Funded by NIDA: R25 DA13582)

Statement of Problem: Medical education about substance abuse is inadequate.

Objective: To increase Chief Residents'(CR)substance abuse(SA) knowledge, attitudes, and skills in order to facilitate teaching these issues to their trainees.

Program Description: In this 4-day, intensive Chief Resident Immersion Training (CRIT) program, CRs are taught state-of-the-art clinical knowledge in screening, diagnosis and management of SA disorders using case-based presentations, small group workshops, skills practice, and experiential learning. CRs, with CRIT faculty mentoring, designed an

Action Plan (AP) a SA education project, based on participant's interest, course content and institutional needs. By means of pre- and post-CRIT assessments, we evaluated CRIT's impact on a CR's knowledge and teaching related to SA and AP implementation.

Results: In 3 CRIT programs we trained 63 CRs from 44 residency programs. Evaluation of the 3-year cohort revealed the following: SA knowledge score - 68% pre-CRIT, 79% post-CRIT ($p<0.0001$); at 6 month follow up ($n=59/63$; 94%), statistically significant increases were observed compared to pre-CRIT baseline responses in: self-reported SA-related clinical knowledge and skills, and preparedness, confidence and likelihood of teaching SA. As a result of CRIT, 91% reported being "more" or "much more" likely to incorporate SA content in teaching. At 6 month follow up, 50% had completed at least 40% of their AP; resulting in new SA-dedicated education event (37%) and new or expanded SA curriculum (24%). The most common AP implementation barriers were competing priorities (71%) and time constraints (67%) and the most common AP facilitators were CRIT materials (78%) and available mentoring (44%). Evaluation limitations include subject self-report, potential desirability response bias, study size and absence of a non-intervention control group.

Conclusions: The Chief Resident Immersion Training (CRIT) program in Addiction Medicine for incoming Chief Residents increased knowledge, and teaching related to SA. The CRIT model is an effective educational approach for disseminating SA to medical trainees.

THE DISSECTOR PROJECT

2

R CHASE^{1,2}, M MERCADO^{1,2}, T HOAGLAND²

¹BUSM II, ² Department of Anatomy and Neurobiology, Boston University School of Medicine

Statement of Problem: Commercially available dissection manuals are challenging to use because they rarely progress sequentially the way you want them to and they are relatively devoid of clinical correlations and high-yield anatomy facts.

Objectives of Program: Assemble a team of faculty and students to design, write, and illustrate a dissection manual that compliments the gross anatomy course at BUSM. Additionally, the use of clinical correlations are used to place the anatomical knowledge in a context where its relevance is clear to future physicians.

Description of Program: In the summer of 2005, ten students volunteered to work on this project that Dr. Hoagland started at the University of Notre Dame. A student focus group reviewed eight dissection manuals and discussed the optimal format. The Summer of 2006 was spent refining and editing, and adding numerous illustrations. Findings to Date/Evaluation: Formative assessment: students appreciate the high-yield USMLE Step 1 information throughout the lab manual. They also found the mnemonics and tables of information useful in preparing for exams. Summative assessment: end of year evaluations of gross anatomy showed a modest increase (2.3%) in dissection manual rating from last year. Interestingly, the mean practical exam scores also increased from 80.9% in 2005 to 83.7% in 2006. Key Lessons Learned: An in-house dissection manual is an excellent investment. This project shows that involving medical students in pedagogical refinement is important to curricular enhancement. Additionally, when content taught is reinforced via clinical correlations the relevance is obvious and more memorable to medical students.

INNOVATIVE GROSS ANATOMY COURSE CHANGES INCREASE STUDENT LEARNING WHILE DECREASING IN-CLASS CONTACT TIME

T. HOAGLAND Department of Anatomy and Neurobiology, Boston University School of Medicine

Statement of Problem: Education research experts have shown that active learning is far superior to passive, and comprehension improves when information is presented in a context where its relevance is apparent. Additionally, medical students have not had enough time to independently explore course content. In response, we modified the gross anatomy course in the following ways: decreased the time students are in class, increased clinician involvement and clinical correlations (vertical integration), developed web-based learning modules, increased radiology content and wrote our own dissection manual.

Methods: In 2001, we began to determine the most important gross anatomy content that medical students need to know and ensured this information was taught and reinforced via clinical correlations. Medical students convened from all four years of BUSM and gave feedback pertaining to the curriculum. We analyzed U.S. medical school data to ascertain best curriculum practices from gross anatomy courses. Clinicians were involved more. Active learning and self-directed inquiry were foci. Finally, teamwork, professionalism and interpersonal skills were fostered.

Findings to Date/Evaluation: Office of Medical Education course evaluations were compared from 2001 and 2006. Categories that showed increased performance were: clarity of learning objectives (18.4%); organization of course (11.9%); course syllabus (15.4%); examinations (19.0%); lecture, lab, case content (9.4%); faculty quality (8.1%) and facilities (5.8%). The one category where student evaluation decreased was textbooks (-5.9%). Additionally, exam scores and student final course percentages were compared between classes from 2001 and 2006. There was a significant ($p < 0.05$) increase in all exam scores and final class percentage for 2006 compared to 2001. The final percentage data (mean \pm standard error) is as follows (2001, $n=152$, $81.2\% \pm 0.6$; 2006, $n=179$, $83.3\% \pm 0.6$; $p=.004$). Additionally, total in class hours were decreased almost 25% in 2006 compared to 2001.

Key Lessons Learned: It is possible to decrease total contact time and improve student performance. Medical students learn information better when its clinical significance is apparent and they are actively exploring course content. **Future Directions:** We plan to decrease the total number of lecture hours in gross anatomy while augmenting small group interactions in the laboratory.

USING PHONE LOGS TO IMPROVE THE CARE OF NURSING HOME PATIENTS BY FAMILY MEDICINE RESIDENTS

L. GOLDMAN Department of Family Medicine, Boston University School of Medicine, Boston, MA.

The 85-year-old age group is the fastest growing demographic in the US. Today's family medicine resident will need the skills to provide high quality care to long-term care patients. Most long-term care facilities rely on telephone management of acute medical issues involving their often-frail patients. We designed a nursing home practice for our residents to include first call for nights and weekends. Phone notes were recorded in the EHR. We reviewed 100 phone notes for documentation and quality measures, and then conducted an analysis of the results. Results were used for immediate feedback, to design a teaching intervention on telephone management for faculty and residents, and in the implementation of guidelines for nursing home coverage that was used by the residents and faculty alike.

INPATIENT - OUTPATIENT MORNING REPORT: BROADENING THE VIEW

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¹Department of Medicine, Boston University School of Medicine²Department of Medicine-Geriatrics Section, Boston University Medical Center

Background: With emphasis on decreasing length of stay, residents often see only a single "snapshot" of the patient during hospitalization. Details of the initial presentation, social history, and the psychosocial impact of illness are often reviewed only superficially. Diagnostic evaluations and courses of treatment are initiated in house, but often completed after discharge. Morning Report discussions rarely focus on the impact of management decisions upon the transition of care to home. Residents spend significant time preparing discharge summaries, often not understanding of the importance for the ongoing care of the patient. Inpatient-Outpatient Morning Report (IOMR) changes the focus of discussion: the discussion begins on discharge, and the discharge summary is reviewed and discussed by the residents.

Goals: 1) To understand the importance of the discharge summary in the future management of patients, 2) To understand the importance of collaboration with allied services, 3) To understand the importance of functional status for elderly patients, 4) To understand the importance of the patient's environment when developing and operationalizing management plans, 5) To provide a model for residents to obtain feedback regarding their inpatient management decisions, 6) To improve quality of discharge summaries and stimulate practice-based learning.

Methods: Residents, a chief resident and faculty make a home visit to a newly discharged inpatient to review medications, clinical course and the effect of the environment on care. The team takes photos of the patient in his/her surroundings. With IOMR, the case discussion begins with a very brief summary of the hospital course and outstanding issues identified by the ward team. The discharge summary is distributed for discussion.

Evaluation: Residents enjoy this new format and complete a "worksheet" during each conference, critiquing the discharge plan implemented, which becomes part of their "portfolio". We hope to demonstrate an improvement in the quality of the discharge summaries as well.

CHIEF RESIDENT IMMERSION TRAINING IN GERIATRICS

S.A. LEVINE¹, S. CHAO¹, B. BRETT³, A. JACKSON¹, L. GOLDMAN², A. BURROWS¹, L.B. CARUSO¹.

¹Department of Medicine, Boston Medical Center and Boston University School of Medicine ²Department of Family Medicine, Boston Medical Center and Boston University School of Medicine, ³Brett Consulting.

Objective: Chief residents (CRs) are influential in the training of residents and students, but they typically have limited geriatrics education. Formal training may bridge gaps in knowledge and support CRs in their efforts to promote positive attitudes toward the elderly, which they can transmit effectively to trainees. In addition, few CRs are formally prepared for their roles as teachers and leaders. In a two-day, off-site format, we aimed to address these challenges by fostering collaboration among disciplines in the management of complex older patients.

Methods: An interdisciplinary faculty team from Geriatrics, Internal Medicine, and Family Medicine designed and facilitated a curriculum based on a needs assessment of CRs obtained via a focus group and questionnaire. The curriculum included an unfolding, interactive surgical case, evidence-based mini-lectures on geriatrics topics, seminars to enhance teaching/leadership skills, and 1-to-1 mentoring to help CRs develop a plan for a geriatric care or education project. Evaluation included pre/post self-report surveys & knowledge tests, and interviews & surveys at 6 and 11 months.

Results: Over 2 years, 25 CRs, from 10 departments, participated. In 2006, knowledge increased pre to post from 48% correct responses to 70%. Confidence in teaching geriatrics increased significantly ($p < .05$) in 6 topics in 2005 and 9 in 2006. In 2005, 10 of 12 CRs completed action projects. At 11 months, CRs reported improved care of older patients, better personnel management, more/better geriatrics teaching, and more cross-talk with other CRs.

Conclusion: A retreat improved CRs' geriatrics knowledge, increased confidence to teach geriatrics, enhanced skills needed for the role of CR, fostered collegiality, and enabled CRs to design an achievable project.

A NOVEL APPROACH TO TEACHING THE SPINAL CORD IN MEDICAL NEUROSCIENCES

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Department of Anatomy and Neurobiology, Boston University School of Medicine

**7
(ORAL)**

BACKGROUND: A firm understanding of the internal structures of the spinal cord is fundamental in the medical neurosciences. This material is typically taught via cross-sections and identification of structures on each slide. Students are also exposed to slides in neuroanatomy labs, although this experience is similar to that of lectures. This is often frustrating and overwhelming for students, and many fail to appreciate the relationships between structures during these exercises.

OBJECTIVE: In this study, we gathered students' impressions of a novel approach to teaching the spinal cord with a hands-on activity.

METHODS: Two laboratories in the 2007 Medical Neurosciences course at BUSM participated in this exercise (n = 50 students). Each pathway of the spinal cord was presented separately and followed throughout its entirety in the spinal cord and brainstem on cross-sections. Students simultaneously built a color-coded clay model of the spinal cord and added each pathway as it was presented. At the end of the course, students were given an evaluation form to rate the modeling activity.

RESULTS: 37 students returned evaluation forms. 89% (33/37) rated the activity as either somewhat useful, very useful, or extremely useful. 73% (27/37) felt this activity was effective in helping them learn the spinal cord tracts. 89% (33/37) felt that this activity should be continued as part of the lab curriculum. In addition, several students commented that this activity made going through the slides more interesting and engaging.

DISCUSSION: Students found the modeling activity to be a helpful tool in learning spinal cord tracts and enjoyed the combination of slides and a hands-on activity. These results suggest that students appreciate labs more when material is presented differently than in lectures. In the future, we hope to expand this activity to help students appreciate the 3D relationships between these structures and evaluate its effectiveness.

SOCS: STRUCTURED OBSERVATION OF CLINICAL SKILLS DURING THE THIRD YEAR MEDICINE CLERKSHIP

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Department of Medicine, Boston University School of Medicine.

STATEMENT OF QUESTION: Can a useful and practical tool be devised to increase direct observation and feedback of clinical skills on the medicine service, and will it be acceptable to students, residents and faculty?

OBJECTIVE OF PROGRAM: In accordance with LCME requirements, and as a result of student input on the paucity of direct observation of history and physical exam skills while on their clinical rotations, the Department of Medicine implemented a program of structured observation of clinical skills (SOCS) for third year medical students during their medicine clerkship. The goals were: 1. To promote greater proficiency among BU medical students in the core clinical skills of interviewing and physical examination. 2. To increase direct observation and feedback on the core clinical skills of medical students by attendings and residents while on the medicine service.

DESCRIPTION OF PROGRAM: A 10-15 minute structured observation card for residents and attendings was devised to better enable them to observe and give immediate feedback to students performing a history or a targeted physical exam during the course of a regular medicine work day. Each student was expected to obtain a minimum of 5 brief SOCS during the course of their 11 week clerkship. Each student was asked to have a minimum of 2 sessions focusing on the HPI, and 2 on a targeted exam. The resident and attending on each inpatient mini-block was expected to observe one SOCS per student. The student was responsible for bringing the SOCS forms to the wards or clinic, and for returning them to the clerkship advisor.

METHODS: A questionnaire was devised to obtain feedback from the students on SOCS in order to assess the feasibility and impact of this initiative on student learning. Both qualitative and likert scale questions were asked that addressed the usefulness and relevance of the SOCS exercise.

RESULTS: The first 2 blocks of students from the 2006-2007 medicine rotation were surveyed, with a response rate of 81.3%. The average number of SOCS completed during the medicine clerkship was 4. --The most useful aspects of the SOCS tool from the students' perspective were: 1. Direct observation by multiple observers was mandatory, and positive feedback and constructive criticism were given in a timely fashion. 2. Focused observation aiming for 2 positive comments and 2 areas for potential improvement was feasible and practical. 3. Observed history taking skills promoted reflection in action, forcing the student to focus and direct the history in real time. 4. Physical exam skills assessment with a focus on relevant and significant findings was greatly valued by the student. --The least useful aspects of the SOCS tool were: 1. Time constraints and getting attendings and residents to complete the exercise. 2. Feedback was sometimes too general or too brief.

CONCLUSIONS: 1. Preliminary student evaluations suggest the SOCS tool is a feasible and useful way to increase direct observation and feedback of clinical skills on the medicine clerkship. 2. Results of a pending questionnaire will assess the attending and resident perspectives on the SOCS experience.

FUTURE DIRECTIONS: Faculty and resident workshops on direct observation and feedback techniques will be targeted in the future to improve the validity and objectivity of SOCS.

ENHANCING THE CASE BASED LEARNING EXPERIENCE IN THE MEDICAL MICROBIOLOGY COURSE BY STUDENT PARTICIPATION IN INFECTIOUS DISEASE CONFERENCES AND PLATE ROUNDS

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STATEMENT OF PROBLEM/ QUESTION: Case-based activities in preclinical courses stimulate student interest and motivation to learn basic science principles, develop clinical reasoning skills, and promote teamwork and self-directed learning skills. How can we provide more clinically-relevant, case-based learning experiences in the Medical Microbiology course?

OBJECTIVES OF PROGRAM/ INTERVENTION: To provide students in the medical microbiology course opportunities to observe how the principles of microbiology they are learning in class are used in the clinical setting for diagnosis and treatment of patients with infectious diseases.

DESCRIPTION OF PROGRAM/ INTERVENTION: To expose students to infectious disease cases in the clinical setting, a collaboration was established between the course manager and the Chief of the Section of Infectious Diseases and the Director of the Clinical Microbiology Laboratory to allow students to attend Infectious Disease (ID) Conferences and Plate Rounds. Attendance was optional, but students could earn an extra point by attending one of these sessions and posting a summary of the case(s) presented with their own “pearl” on the CourseInfo discussion board.

METHODS: Participation was tracked by attendance and CourseInfo postings. Case summaries and pearls were analyzed for content, and student surveys were conducted.

FINDINGS TO DATE/ EVALUATION TO DATE: 35% of the class attended Plate Rounds or ID Conferences and posted a case summary and “pearl” on CourseInfo. Student postings revealed their level of understanding of the presentations and “pearls” provided insight into what they felt were the most interesting things they learned from the sessions. Students reported appreciating exposure to real cases and observing the clinical reasoning of clinicians as they discussed the cases.

KEY LESSONS LEARNED/FUTURE DIRECTIONS: This experience showed that attending ID Conferences and Plate Rounds with clinicians complements and enhances the content and activities in the medical microbiology course. A collaboration between the course manager and the Director of the Clinical Microbiology Laboratory is focusing on developing the Plate Rounds as a formal part of the microbiology course.

MEDICAL RESIDENT PATIENT SAFETY/QUALITY IMPROVEMENT CURRICULUM

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- Problem

Poor quality care is a major cause of morbidity and mortality in the U.S. Given the importance of training clinicians in this issue, the Accreditation Council for Graduate Medical Education requires training in Systems-based care. Residency programs are struggling to implement these curricula.

- Objectives

To integrate quality of care into the medicine residency using an innovative curriculum

To improve Veterans Affairs (VA) care.

- Description of Program

One PGY-3 resident rotated at VA Boston to engage in critical readings, participate in Root Cause Analyses (RCA) and other hospital-level quality programs. Residents audited their own discharges to learn about post-discharge outcomes and identify places for improvement.

- Methods

Evaluations from residents.

- Findings

6 of 14 residents completed evaluations. Residents read an average of 6.3 articles, rating them good to excellent. Half the residents watched a video on RCA and rated it very good. 2 of 3 residents attended committee meetings and rated the educational value as very good to excellent. Residents audited an average of 7.7 charts. Most (83%) rated the educational value as good to excellent and each identified areas for improvement like medication safety or poor follow-up. Audit findings led to a redesigned VA Discharge Summary template. 83% of residents reported improved understanding of quality and safety and suggested the experience would improve their own practice. Feedback included: "Fantastic rotation that exposed me to field I had never been exposed to we feel involved in improving the healthcare system.....I hope to carry over some of the skills I learnt in the future."

- Lessons Learned

Principles of quality can be taught using a brief experiential curriculum. Residents should play a central role in improving inpatient safety and quality.

- Questions / Future directions

Will attitudes persist after the rotation?

Identify new processes of care.

Interactive Resources in Health Sciences Education (IRHSE)

COMPARISON OF ON-LINE CURRICLUM TO LECTURE FORMAT IN TEACHING DELIRIUM TO 4TH YEAR MEDICAL STUDENTS

11
(ORAL)

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Purpose: We have implemented an on-line, case-based, interactive curriculum utilizing videos and text to teach delirium to 4th-year medical students during their required 1-month Geriatrics and Home Medical Care clerkship. This on-line curriculum has replaced a 1-hour live lecture on delirium. We hypothesized that the on-line curriculum would be as effective as lectures in teaching delirium.

Methods: A control group of 56 students received a 1-hour live delirium lecture only. One hundred-eleven intervention group students completed the on-line delirium curriculum only. A short-answer test consisting of two cases was given as a pre- and posttest to both groups. In these cases, students were tested on their ability to recognize delirium, to develop a differential diagnosis list of its potential causes, to evaluate and to manage an agitated delirious patient. A scoring rubric was developed for all questions; optimum answers received 2 points, acceptable answers received 1 point, and wrong answers received minus two points. The total possible maximum test score was 34 points, and the lowest possible score was negative 8 points. A trained rater, with high inter-rater reliability with the PI on a sample of tests, scored all tests.

Results: The mean pre- and posttest scores in the intervention group were 10.49 (S.D. 3.99) and 12.69 (S.D. 4.45), compared to 9.89 (S.D. 3.55) and 11.25 (S.D. 4.54), respectively, in the control group. The intervention group had a statistically significant improvement between the pre- and posttest scores (2.21 point difference; $p=0.000$), as did the control group (1.36 point difference; $p=0.026$). However, there was no statistically significant difference in test score improvement when comparing the two groups.

Conclusions: An interactive case-based on-line curriculum in delirium is as effective as a 1-hour live lecture in teaching delirium. However, neither of these educational methods alone produces robust increases in knowledge.

ON-LINE MEDICAL GENETICS CURRICULUM: DISCUSSION BOARDS AND CASE STUDIES

12

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Boston University medical students study medical genetics at the end of their first year using a combination of interactive lectures, patient case sessions, team-based learning exercises, and on-line discussion boards. The entire course is scheduled during a dense four-week block, and opportunities for longitudinal integration throughout the course are particularly valuable in this context. On-line activities are designed to address two important needs of the students: to provide a forum where they can discuss course concepts and to engage students in application of material they have been absorbing through other channels in the course. The Medical Genetics Discussion Board was created as a place for students to ask questions of peers, answer questions for each other, share study resources, and highlight interesting genetics developments in the literature. In addition to serving as a valuable resource for information exchange among students, it provided feedback to the course manager about topics of special interest and of confusion. An additional Medical Genetics Case Discussion Board was created to encourage students to apply genetic information to clinical situations involving analysis of family history, risk assessment for genetic disorders, interpretation of genetic test results, recommendations for treatment of genetic conditions, and consideration of related ethical issues. These case studies were adapted to allow on-line application of the evidence-based medicine discussion methodology that students master in their Integrated Problems course. Both of these discussion-based resources allowed students to engage in peer learning outside of the classroom and on a flexible schedule. Furthermore, since the discussion boards were monitored by faculty, they improved students' faculty access and ensured that accurate and thorough information was being disseminated to the student group. The impact of these exercises on learning was measured in terms of effect on grades, and student perspectives on learning activities were also assessed.

ICM 1 SPRING SCREEN FOR SUBSTANCE ABUSE MODULE

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Statement of Problem:

The purpose of the module is to provide the knowledge and skills for the initial screening and identification of substance abuse in a patient for first year medical students. The development of this e-learning module was in response to the need to decrease lecture time, increase self directed learning, and to offer a more direct interactive experience for students to demonstrate the process and skills in interviewing about substance abuse.

Objectives of the Module:

By the end of viewing the Substance Abuse Module the ICM 1 student will be able to:

- Recognize the need to screen for substance abuse
- Identify and apply recognized screening techniques for substance abuse
- Express concern to the patient about a positive screen
- Determine the patient's readiness for change
- Reflect on their own attitudes regarding substance abuse

Description of Program:

The ICM 1 Screening for Substance Abuse Module is a self-directed, e-learning interactive module required for viewing in the Introduction to Clinical Medicine 1 Spring course. The full-colored program is animated and contains photographs and video clips of several clinical presentations. The module is accessed through the ICM 1 course info site and takes approximately 45-60 minutes to complete. Each section is interactive with textboxes to respond to questions and for case analysis of video clips. After input of text there is expert response for feedback. The module ends with a quiz, a questionnaire on the module and a reference page for further study. After viewing the module, students are required to do a substance abuse screen on a patient at their ICM 1 clinical site.

Methods:

Study Design

- Participants: 182 first year medical students
- Development of module
 1. Core development group met and decided upon the content after review of literature, available electronic instructional materials and previous lecture materials
 2. Power point created as a storyboard
 3. Video scripts written then video clips recorded and photos taken of case
 4. Narration of audio script created and recorded
 5. Quiz and questionnaire written
 6. Module components given to web designer to compile and place on the web
 7. Content experts reviewed and edited beta version
 8. Student input used to modify module based on their experiences with other ICM teaching modules.

Statistical Methods: Student input into text boxes, quiz and questionnaire are collected and tracked in a database

Findings to Date: This module went 'live' on April 5 and data is pending. Anecdotal response from students on the SAC is overwhelmingly positive.

Key Lessons Learned: The developers learned that it is a very time intensive process to create these modules and takes a range of expertise in terms of web design, animation and filming skills. This is the seventh ICM module created. On the whole students are very tech savvy and respond positively to interactive modules like this rather than purely content based slides. Viewing this on their own time schedule is appreciated by students and they report they concentrate more then in a lecture due to the interactive nature of the module.

Questions/Future Decisions: The ICM 1 module group is continuing to create modules and are in the process of producing, "Taking a Sexual History."

The modules are web based and are linked through Course Info. They contain streaming video and flash animation.

ORGANIZING ELECTRONIC RESOURCES WITH A DATABASE-DRIVEN WEBSITE

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Statement of Problem:

During a website redesign the Library identified the need for improving the presentation of electronic books, journals, databases, and educational materials. Many of these resources were not well-represented in the Library catalog and the growing online collections were a challenge to manage on the existing static website.

Objectives:

The Library sought to implement a database-driven website complete with subject indexing, increasing access and ease of management for electronic resources, along with supporting the Library's educational mission.

Methods:

Electronic resources were evaluated and placed in a relational MySQL database. A set of web-based forms was created using Adobe ColdFusion. Librarians generated a set of broad subject headings based on existing Library subject guides and Medical Subject Headings (MeSH). Each resource was indexed by subject and a set of webpage templates was designed for displaying these resources on the Library website and mobile devices.

Findings to Date:

The Library created a website that provides a central point for updating electronic resources. Staff may update resources 24/7, from off-site, without using HTML. The database-driven website allows immediate repurposing of resources; content supports curriculum-integrated Library activities. The new design allows easier searching of e-resource content by the BUMC community.

Key Lessons Learned:

A database-driven website requires a large initial outlay of staff time during its creation, but it is more flexible and easier to maintain than a static HTML based website.

Future Directions:

Electronic resource management requires constant attention. The Library will enhance the resource databases while working to incorporate Library electronic resource lists into School Portals, CourseInfo, and other curriculum pages using XML.

PORTFOLIOS IN FIXED PROSTHODONTICS

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Statement of Problem: As part of the Competency Based Education initiative, dental students need to be able to self evaluate. After 4 years, is it possible for them to demonstrate their ability to diagnose, treatment plan, and evaluate outcomes of treatment?

Objectives of program: Students were given a presentation template which they could use to organize data, discuss the patients' medical and dental needs, make diagnoses, formulate treatment plans and show outcomes.

Methods: During the predoctoral students' clinical years at the dental school, they were asked to collect data (medical and dental histories, study models of before and after treatment and photographs if possible) on at least a couple of patients who would be receiving Fixed Prosthodontic treatment. These cases would then be presented to and challenged by the Competency trackers for Fixed Prosthodontics. After graduation, cases are then picked from those that were presented and placed on courseinfo for other students to peruse.

Findings and Lessons Learned: This program has been in place for more than 5 years and during that time both the students and the competency trackers needed to be calibrated to improve performance. The presentation template has only been in use for the last 2 years in its present form. It was developed from an earlier presentation given by one of the more talented graduating students. By providing a template, it was easier for the students as well as the competency trackers to be on the same page when looking at diagnosis, treatment planning, treatment and outcomes.

Future: By August 2007, we will have 6 cases online. This year's freshmen instrument kit included a digital intra-oral camera so that future presentations will be better documented and evaluated.

CREATING A COMPUTERIZED POWERPOINT TEMPLATE AS AN INNOVATIVE TOOL FOR TEACHING DENTAL STUDENTS TO DEVELOP A CASE PRESENTATION

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Introduction:

A pilot program was initiated in the fall of 2003 to explore the use of electronic communication as a platform for the development of a standardized computer-based case presentation format. The pilot program provided students with the opportunity to use an intra-oral digital camera and an electronic template to develop and present a comprehensive case presentation on a patient they had treated at their externship site. The case presentations helped students to develop critical thinking skills that were evaluated through faculty assessment.

Materials and Methods:

A group of eleven students was randomly selected for initial training and evaluation. Each of the students selected a case from patients they treated at their externship site.

- a. A customized power point presentation template was developed by the faculty in the Department of General Dentistry.
- b. Intra-oral digital cameras were donated for the students' use.
- c. A demonstration of clinical data gathering and guidelines for the development of the case presentation were presented.
- d. On site support was provided to the students by their externship preceptors.
- e. The students presented their cases at Grand Rounds upon returning from their externship.
- f. Case presentation evaluations assessing the students' clinical reasoning, communication and presentation skills were completed by all attending faculty.
- g. The students evaluated the pilot program in small group sessions and in a written evaluation form.

Results:

The feedback among the students and faculty was overwhelmingly positive facilitating the implementation of the pilot program into the curriculum for all DMD IV students.

Case presentations became a requirement for all students returning from their externship rotation with selected cases chosen for Grand Rounds. The case presentation format became part of the intramural portfolio case presentation as well as serving as a teaching instrument in the treatment planning lecture series.

Conclusion:

The development of innovative teaching methodologies has demonstrated much success with student case presentations and has facilitated greater collaboration across curricular areas. The utilization of advanced technology within the DMD curriculum could spearhead future educational programs that will enhance the students' learning experiences and critical thinking skills.

A CASE-BASED MODULE TO INTRODUCE PEDIATRIC OBESITY ASSESSMENT IN THE MEDICAL SCHOOL CURRICULUM

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Statement of the problem: The Healthy People 2010 and the US Preventive Services Task Force recommend that physicians provide nutritional assessment and counseling to their patients; however, only 10 percent of 4th year students at BUSM feel well prepared.

Objectives of the Intervention: To develop a case-based module on pediatric obesity to be used as foundation for a 4-year integrated medical nutrition curriculum.

Description of the Intervention: The case-based module is an online tool that will be a component of the first-year Introduction to Clinical Medicine course emphasizing history taking in clinical settings. Students will: 1) Learn the prevalence of obesity in children and adults, 2) Identify key risk factors for obesity, 3) Recognize when and how to screen for obesity, 4) Identify common medical complications associated with obesity. As students develop their clinical skills in the 3rd and 4th years, they will revisit this pediatric case with a more advanced focus on physical exam, laboratory tests, and treatment options.

Methods: A group was appointed by the Associate Dean for Academic Affairs, ad interim, Dr. Adrienne Rogers, including six faculty members, one dietician and several medical students to identify areas for improvement in nutrition at the Medical School. An online module was developed integrating case-based learning with informational websites, video clips, and interactive questions providing immediate feedback. This module will be piloted in 2007-2008 and first-year medical students' feedback will be elicited.

Future Directions: We plan to: 1) Vertically integrate nutrition material throughout the medical school curriculum; 2) Evaluate medical students' nutritional assessment and counseling skills. (Support from the PNS award 2006-2008, American Society for Nutrition).

Format currently Microsoft PowerPoint with online video clips linked. Module will be placed completely online via Introduction to Clinical Medicine course information website.

SMOKING CESSATION FOR PREGNANCY AND BEYONDC. POWERS¹, S. MCINTOSH², J. O'DONNELL³, A. GELLER^{1,4}

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Nearly all of the 450,000 pregnant smokers in the US will see an obstetric health care provider during the course of their pregnancy, but few patients are comprehensively screened for tobacco dependence. Most physicians believe that their medical school training has not prepared them to help patients stop smoking.

In 2004, 4th year medical students (n=827) at the National Cancer Institute funded project PACE: Prevention and Cessation Education for Medical Students completed surveys. Of these, 51% stated that they were never instructed how to talk to patients about smoking in clinical courses.

Objectives of Program

1. Assess current tobacco curriculum
- 2 Conduct a trial implementation of smoking cessation module

Description of Program

Using an interactive CD-ROM developed by Dartmouth Medical School and PACE: Smoking Cessation for Pregnancy and Beyond students were instructed in cessation counseling.

Methods

The pilot project was implemented at 3 medical schools. Implementation included didactic teaching and self-study modules.

Findings to Date

Dartmouth Medical School.

OBGYN clerkship students (N= 54) counseled patients and followed-up at visits and by telephone.

Results: 107 patients counseled. 25% of smokers progressed through the stages of change and 46% reported environmental tobacco smoke avoidance.

University of Rochester

OBGYN clerkship students received 2 hours of didactic teaching on the toxic effects of smoking and counseling pregnant women. Optional intensive 4 week program in fourth year community clerkship on counseling pregnant smokers.

Case Western Reserve

First year students learned tobacco cessation counseling with standardized patients and were observed by 4th year students.

EMBRYONIC DEVELOPMENT OF THE TOOTH. THE USE OF COMPUTER ANIMATION IN DENTAL EDUCATION

19

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The Second Year Doctor of Dental Surgery (DDS/DMD) curriculum contains a study of the Development on Teeth. This process, similar to embryonic development elsewhere in the body, involves time dependent changes in oral tissues and structures, starting from a small thickening of the dental epithelium which, ultimately leads to the formation of a unique organ.

Traditional methods of teaching this material include presenting histological slides of the different stages of development. The aim of this work was to develop a computer animated module that explains this process. It consists of the histological slides, along with the corresponding figure/cartoon (in real time), and relevant text to explain key events. This would enable students to visualize how one stage progresses to another.

The goal is to facilitate the use of computer animation as an adjunct or teaching aid to explain hard to comprehend processes, particularly those where a certain degree of imagination is required, so as to enable quicker and better understanding.

The completed module would cover: Tooth development, Enamel, Dentin, Cementum production, Root formation and Tooth Eruption. Such modules could be uploaded on courseinfo websites or other online teaching forums to enable students' access to material from locations other than classrooms.

OPPORTUNITES FOR INTERACTIVE LEARNING

20

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ASSUMPTIONS: We assume that students learn more from working with each other and from interactive teaching than from didactic lectures. We practice what we preach in our School of Public Health course, PH725 Teaching Public Health.

OBJECTIVES: Students will be able to develop a course design in an area of their interest and competence, applying interactive educational methods.

INTERVENTION: Our web-enhanced course offers a variety of tools to the students. We offer them a text book Design for Learning. An online version of the course based on the text is available. Here students can select links to our systematic course design model, to examples of course designs developed by 60 students from earlier cohorts and to summaries of methods of instruction and evaluation. Students have opportunities for face-to-face and email interaction with three instructors from different disciplines: medicine, public health, educational media and technology, and educational psychology.

Inter-active educational methods are also modeled in class: The case method, use of simulation games, small group discussion, and computer-based instruction. Students visit the clinical simulation lab to learn how 'standardized' or 'programmed' patients teach and evaluate clinical skills. Each participant has an opportunity to practice 'up-front' teaching by means of 'micro-teaching' sessions with feedback.

LESSONS LEARNED: Students are more likely to apply inter-active methods in their own teaching if they have had an opportunity to use them, see them modeled or see examples.

FUTURE DIRECTIONS: We plan to revise and strengthen our online course to include links on such subjects as needs analysis, data gathering, test construction, and for looking at other models of course and curriculum design and evaluation.

We would like to explore ways of becoming a resource to public health and medical school departments in curriculum design and evaluation.

A CROSS SECTIONAL MEASUREMENT OF MEDICAL STUDENT EMPATHY

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Background: Empathy is important in the physician-patient relationship. Physician empathy declines with clinical training and differs by specialty.

Objectives: To examine medical student empathy in a university-based medical school and determine whether a relationship exists between student empathy and student preference for “People-oriented” or “Technology-oriented” specialties.

Design, Setting and Participants: A cross-sectional study of students at Boston University School of Medicine in 2006. Incoming students plus each class near the end of the academic year were surveyed.

Main Outcome Measures: The Jefferson Scale of Physician Empathy-Student Version (JSPE-S), a 20-item self-administered questionnaire, has been validated to measure empathy. Possible JSPE-S scores ranged from 20 to 140. Additionally, students indicated age, gender, future career interest and anticipated debt upon graduation.

Results: 658 students participated in the study (81.4% of the school population). The first-year medical student class had the highest empathy scores (118.5), while the fourth-year class had the lowest empathy scores (106.6). Measured empathy differed between the second- and third-year classes (118.2 vs. 112.7, $p < .001$), corresponding to the first year of clinical training. Empathy increased from the incoming to the first-year class (115.5 vs. 118.5, $p = .02$). Students preferring “People-oriented” specialties had higher empathy scores than students preferring “Technology-oriented” specialties (114.6 vs. 111.4, $p = .002$). Female students were more likely than male students to choose “People-oriented” specialties (51.5% vs. 26.9%, $p < .001$). Females had higher JSPE-S scores than males (116.5 vs. 112.1, $p < .001$). Age and debt did not affect empathy scores.

Conclusions: Empathy scores of students in the preclinical years were higher than in the clinical years. Efforts are needed to determine whether differences in empathy scores among the classes are cohort effects or represent changes occurring in the course of medical education. Future research is needed to determine whether clinical training impacts empathy negatively, and, if so, whether interventions can be designed to mitigate this impact and affect specialty preference.

PATIENT SEXUALITY AS A COMPONENT OF UNDERGRADUATE MEDICAL EDUCATIONA.E. HIRSCH¹, L.M. GARCIA^{2,3}, T.S. HESTER^{2,3}, S.E. KAPLAN²¹Departments of Radiation Oncology, ²Obstetrics and Gynecology, Boston University Medical Center,³Boston University School of Medicine

Purpose: To prospectively evaluate and define the state of medical education with regard to patients with gynecologic malignancy and post-treatment sexual function. The purpose evolved to an evaluation of medical student education regarding sexuality and sexual behavior.

Methods: Interviews with graduating medical students were undertaken. The medical school has approximately 150 students in each graduating class. The students largely function within a tertiary care institution with a large indigent patient population. The radiation oncology practice is fully integrated within the broader cancer center framework. To our knowledge, ours is the only radiation oncology program that sees every medical student as part of a global oncology education initiative.

Results: Interviews were conducted with members of the graduating medical school class. Responses varied however it was clear that extremely limited discussion had occurred regarding sexuality following treatment for gynecological malignancy. The study was therefore broadened to assess human sexuality training in medical school. Responses identified one day of dedicated didactic time in the 2nd year Introduction to Clinical Medicine course on how to obtain a sexual history as a component of sexual history and domestic violence risk, as well as one day in the clinic obtaining the sexual history from a patient. During the 3rd year, medical students spend a full six weeks on the required obstetrics/gynecology clerkship and receive one didactic session dedicated to obtaining a gynecologic-oriented unbiased sexual history including questions about dyspareunia and sexual dysfunction. Students pointed out that there is a unique opportunity in this institution to spend time in a transgender clinic meeting patients going through reassignment surgery during the core internal medicine 3rd-year rotation, but this is limited to approximately 10 students per year by random assignment. However, outside of the transgender population there is no exposure to the impact of gender, race, or culture on sexuality. Nor is there any discussion of the role provider gender, race and culture has on the provision of sexual health.

Conclusions: As a sub segment of gynecologic malignant disease, sexual issues appear underrepresented. Our larger look at human sexuality education in medical school suggests that there is a varied exposure likely related to (1) level of student interest and (2) happenstance of clinical rotation assignment and (3) participation in unique learning opportunities. In assessing the overall first through fourth year curriculum, there does not seem to be any specific component directed toward sexuality or sexual health. This could be addressed via curriculum development aimed at sexuality and sexual health integrated though all years of medical school.

DOES THE AVAILABILITY OF LECTURE RECORDINGS CHANGE THE APPROACH TO NOTE TAKING AND IN-CLASS LEARNING BY FIRST YEAR DENTAL STUDENTS?

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INTRODUCTION: In the fall of 2006, the Office of Information Technology (IT) at Boston University's Goldman School of Dental Medicine offered the opportunity to have lectures audio recorded. Lecture recordings were introduced in Anatomical Sciences-I, a didactic course that covers the topics of histology and neuroanatomy, after it was requested by class officers. In addition to objective measures of student usage, the course directors were interested in whether the availability of lecture recordings impacted in-class attention and note taking.

METHODS: A survey with questions designed to specifically assess changes in classroom learning was developed and administered with the standard course evaluations.

RESULTS: There was a 78% response rate (90/115), with 56% of respondents using the lecture recordings. Of these students, 78% reported that their approach to note taking did not change and 89.6% reported that their approach to in classroom learning did not change as a result of having lecture recording available. Of the students that reported a change note taking (22%), the most frequent response indicated that students focused on "listening" rather than "worrying about writing down details." Although students reported no overall change in classroom learning, several students indicated that the lecture recordings offered an opportunity to better understand the "big picture." Finally, a subjective portion of the questionnaire in which students described how the lecture recordings were helpful revealed a recurring theme; students indicated that this tool assisted in their overall understanding of the course content with terms such "clarify", "solidify", "reinforce" and "pull together" appearing repeatedly.

SUMMARY: Although the majority of students reported that their approach to note taking and learning in the classroom did not change as a result of having lecture recordings available, subjective comments indicated that students found the recordings helpful in gaining a better understanding of course content.

Acknowledgement: The authors would like to thank the Office of Information Technology for supporting this project and Dr. Deborah Fournier, Ph.D. in the Office of Educational Research and Evaluation for assisting with survey development and administration.

USE OF LECTURE RECORDINGS BY FIRST YEAR DENTAL STUDENTS: DATA ON USE AND PERCEIVED BENEFITS

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INTRODUCTION: In the fall of 2006, the Office of Information Technology (IT) at Boston University's Goldman School of Dental Medicine offered the opportunity to have lectures audio recorded and posted on a password protected website. Lecture recordings were introduced in Anatomical Sciences-I, a didactic course that covers the topics of histology and neuroanatomy, after it was requested by class officers. The management of the lecture recording was handled entirely by IT.

METHODS: To assess the use of lecture recordings, a survey was developed and administered with the standard course evaluations.

RESULTS: There was a 78% response rate to the survey (90/115). Of the students responding, 56% reported using the lecture recordings. A computer was the primary tool used to listen to the lecture recordings (98%). Few students (6%) reported using a mobile device, such as an IPOD, either alone or in combination with a computer. The data also revealed that 56.8% of the students using the recordings listened to the lecture within one week, whereas 35.3% listened just prior to the examination. Additionally, most students listened to lectures in their entirety; 29.4% listened to all lectures in their entirety and 45.1% listened to selected lectures in their entirety. Lastly, when asked to respond to the statement "my learning was enhanced by the use of the lecture recordings," 93% of users chose either "agree" or "strongly agree." Of the 42% of the students who reported that they did not use the recordings, the most common reason reported was "lack of time."

SUMMARY: More than half of surveyed DMD-I students taking Anatomical Sciences-I reported using lecture recordings in their studies. Of these students, 93% reported that this tool enhanced their learning. Use of lecture recordings is in its early stages and further evaluation of course performance and attendance should be pursued.

Acknowledgement: The authors would like to thank the Office of Information Technology for supporting this project and Dr. Deborah Fournier, Ph.D. in the Office of Educational Research and Evaluation for assisting with survey development and administration.

INTEGRATING RADIATION ONCOLOGY INTO THE MEDICAL SCHOOL CURRICULUM: INITIAL RESULTS OF THE ONCOLOGY EDUCATION INITIATIVE 25

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Introduction: Multidisciplinary cancer care requires integration of teaching across established educational boundaries. As exposure to radiation oncology is limited in the undergraduate medical education curriculum, we introduced an Oncology Education Initiative. We report on the addition of structured multidisciplinary oncology education to the required radiology core clerkship at our Institution.

Methods: We conducted an institutional based cohort study of fourth-year medical students rotating through a required clerkship in radiology at our Institution beginning with the class of 2007. An educational questionnaire measuring perceived quality of oncology education prior to and following exposure to a structured didactic program.

Results: Of the 149 fourth-year students, 82 (55%) have completed the clerkship to date. While 28 of 82 (34%) of students reported having limited exposure to cancer care in the clinical years, 76 of 82 (93%) were motivated to learn more about the subject and 69 of 82 (84%) reported a better understanding of the multidisciplinary nature of cancer care following this oncology education initiative. Seventy-four of 82 (90%) felt that the radiology clerkship was an opportune time to receive radiation oncology teaching. As a result of the initiative, nearly one third of the students not applying for a radiation oncology residency elected to rotate through the department for advanced on-site training in the field.

Discussion: Systematic exposure to multidisciplinary oncology education as part of a radiology core clerkship provides an excellent opportunity for integrated teaching of oncologic principles and patient management. This type of experience addresses an important yet underrepresented component of undergraduate medical education.

ASSESSING PHYSICAL EXAM SKILLS OF NEW MEDICINE INTERNS

26

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Study objective: To evaluate and compare the knowledge of clinical findings with observed physical exam performance in a cohort of incoming Medicine residents at BUSM / BMC.

Method: Forty-five categorical interns entering Medicine residency in June 2006 completed a multiple choice question (MCQ) test to assess their knowledge of clinical findings. A random selection of 20 (44.4%) underwent a faculty-observed objective structured clinical examination (OSCE) using volunteer patients with abnormal physical findings. Examinations were performed during internship orientation. We assessed performance on the MCQ examination and overall OSCE, as well as the five individual OSCE systems by computing mean percentage scores. In addition, we performed correlation analysis to compare clinical signs knowledge on the MCQ exam with performance on the OSCE.

Results: The mean scores were: 58.4% [14.6 out of 25 (SD 11.5)] for the MCQ test and 54.7% [31.7 out of 58 (SD 11.0)] for the overall OSCE. Mean OSCE scores by system were; Cardiovascular 30.0% (SD 21.3), Pulmonary 69.2% (SD 18.2), Abdominal 61.6% (SD 16.6), Neurological 67.0% (SD 14.8) and Musculoskeletal 41.7% (SD 17.1). ANOVA showed a significant difference in OSCE system scores ($p < .001$) with cardiovascular and musculoskeletal scores lower than those for other systems.

We found no significant correlation between MCQ scores and the total OSCE scores ($r = 0.37$, $p = 0.10$).

Key lessons learned: The physical exam performance of new interns were less than optimal and little correlation was noted between knowledge of clinical findings assessed by the MCQ test and physical exam performance assessed by OSCE. We conclude that there is a pressing need for additional clinical skills training in undergraduate years to prepare medical students for internship.

Future directions: We plan to repeat the assessment for this cohort during their senior year of residency after implementation of a physical diagnosis curriculum.

AN INTERACTIVE WEB BASED CURRICULUM ON EVIDENCE BASED MEDICINE: DESIGN AND EFFECTIVENESS

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Background and Objectives: Medical education experts have called for improved training in evidence-based medicine (EBM) and the increased use of e-learning technologies in medical education. In response, we developed an interactive, Web-based curriculum on key aspects of EBM in family medicine.

Methods: Students participating in a 6-week family medicine clerkship (n=238) were randomly assigned to intervention (n=134) or control (n=104) groups. Both groups participated in the traditional clerkship experience, but intervention group students received additional training via an on-line curriculum that included learning modules in MEDLINE searching skills, EBM skills, and the calculation of the number needed to treat (NNT) statistic. The on-line curriculum was evaluated using a case-control design with a test case at the clerkship's end.

Results: Results suggested that the on-line curriculum was effective, with experimental group students outperforming control group participants on a variety of measures, including the number of MEDLINE searches conducted during the clerkship (13 searches versus 3 searches) and the quality of literature search strategies on an evaluation patient case study (2.9 versus 2.1 on a 1=poor to 4=excellent scale). Intervention group students reported greater confidence and enjoyment in searching the biomedical journal literature via MEDLINE and were more likely to identify the best articles (randomized controlled trials or meta-analyses) for the evaluation case from among those retrieved (60% versus 34%). In addition, intervention group students' abilities to correctly calculate the NNT were significantly higher than those of control group participants (73% versus 27%). Intervention group students were more likely than control subjects to report learning from other students during the clerkship.

Conclusions: This study demonstrates that an e-learning approach to educating medical students to effectively search MEDLINE for articles meeting the criteria for evidence-based practice can result in higher-quality literature search strategies, identification of higher-quality evidence, and improved confidence in information retrieval and analysis skills.

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- identify key research questions in health sciences education
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