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O&A is published five times a year by the OEA. We welcome your feedback and ideas for future articles.

Please direct your comments to Ann Maderer by phone: 617-636-2191, or email, ann.maderer@tufts.edu.

TUSM SECOND-YEAR SUMMARY

The class of 2013, the first class to experience the new TUSM curriculum, wrapped up their second year coursework on March 16. As you read this, they are preparing for USMLE Step 1 and then will start their Core Clerkships on May 9, approximately two months earlier than in previous years. The new second year appears to have been highly successful. Of the 13 courses in second year, 11 were rated at 3.87 or higher (1-5 scale, one worst, 5 best) and only one of the courses was rated less than 3.5.

The second year featured three completely new courses including Introduction to Clinical Reasoning (ICR), Dermatology and CAP (Competency based Apprenticeship in Primary Care - see faculty list on page four). The remaining courses were "organ"-based (Pulmonary, Cardiovascular, Renal, Hematology-Oncology, Microbiology-Infectious Diseases, Rheumatology, Gastroenterology, Endocrine and Reproductive). Most of the courses, for the first time at TUSM, fully integrated Physiology, Pathophysiology, Pharmacology and Pathology – indeed, courses were co-directed by clinicians and scientists. Many of the courses employed sessions co-taught by Pathophysiologists and Pathologists often using the approach of a Clinical Pathological Conference (Pulmonary, Renal, Cardiovascular, GI, Endocrine) or as small group co-leaders (Endocrine). Nutrition, previously a first year course, was taught synchronously with Gastroenterology.

The ICR met for nine, two-hour sessions (approximately every 2-3 weeks) during the second year (**see objectives in box, page two**) with each session focused on a chief complaint (e.g., chest pain, abdominal pain, back pain, etc.). In preparation for each session, students analyzed a virtual patient on TUSM and then discussed two additional cases with expert clinical faculty in the live session. In addition to strengthening clinical reasoning skills and introducing students to pitfalls in diagnostic thinking, the cases served to integrate material covered throughout the second year. For example, in the final session, with two cases of patients presenting with altered mental status, students discussed diagnoses that ranged across first and second year courses including hypercarbia (Pulmonary), hypercalcemia (Endocrine), meningitis/urinary tract infection (Microbiology-Infectious Diseases), intracranial hemorrhage/stroke (Neuroscience), Alzheimers (Introduction to Clinical Psychiatry), myocardial infarction (Cardiovascular), and uremia (Renal). (*continued on page two*)



(continued from page one) During their last week, students underwent a one station OSCE (Objective Structured Clinical Examination) with a standardized patient, that simultaneously assessed clinical skills (history taking, physical examination, communication and interpersonal skills, counseling skills as part of the CAP assessment) and clinical reasoning skills (as part of the ICR assessment). The latter required students to develop a differential diagnosis for their patient ranking diagnoses in terms of probability and documenting the evidence from the history and physical examination to support (or refute) each. Students then listed their proposed diagnostic workup providing justification for each test. The capacity to successfully engage in this type of analysis indicates improved preparation for third year. In addition, the United States Medical Licensing Examination (USMLE) appears poised (in the near future) to require students to demonstrate these skills in clinical reasoning on the Step II Clinical Skills exam.



Faculty Medical Education Journal Club

In this new edition of our Faculty Medical Education Journal Club, you will learn about:

Twelve tips for implementing tools for direct observation of medical trainees' clinical skills during patient encounters

Karen E. Hauer, Eric S. Holmboe, and Jennifer R. Kogan Medical Teacher 2011; 33: 27-33

Also recommended:

Rethinking the basis of medical knowledge
Ayelet Kuper & Marcel D'Eon Medical Education 2011; 45: 36-43

Please contact Ann (ann.maderer@tufts.edu, 617-636-2191) if you would like to receive a copy of either article.

Introduction to Clinical Reasoning: Learning Objectives

- Understand the meaning of an illness script
- List and understand the process of analytical reasoning
- Understand the concept of pattern recognition (intuitive reasoning) and its role in diagnostic reasoning
- Define the term heuristic, understand the major types (availability, representational, anchoring, premature closure), and how these can lead to diagnostic error
- Translate patient words into medical terminology
- Define and understand sensitivity and specificity
- Understand the concept of pre-test probability and approaches to estimating it
- Understand how pre-test probability affects the utility of a given diagnostic test
- Understand the concept of post-test probability
- Define likelihood ratios and understand their use in clinical reasoning
- Learn the epidemiology, symptoms and signs of common disease
- Know the common differential diagnoses for the chief complaints that are discussed
- Become familiar with resources that can provide differential diagnosis lists
- Construct an illness script for two common diseases
- Formulate an accurate problem representation
- Create a complete problem list based on the history, physical, laboratory and radiological findings
- Determine pre-test probabilities for the differential diagnoses for each case
- Find likelihood ratios for the tests that you are considering and apply them to calculate posttest probability
- Always consider deadly diagnoses prior to choosing a working diagnosis
- Search for clinical data that are inconsistent with your leading diagnosis
- Defend the choice of your working diagnosis through epidemiological, clinical, and pathophysiological evidence
- Apply pathophysiology to improve your understanding of patient presentations
- Apply pathophysiology to aid in memorizing/understanding the treatment of common diseases
- Apply the concepts of testing and treatment thresholds to case-based examples, specifically learn how post-test probability, risks, and benefits all factor into testing and treatment decisions
- Construct illness scripts for common diseases using epidemiology and symptoms and signs
- Develop algorithms for approaching common chief complaints
- Compare and contrast routinely in your differential diagnoses
- Apply primary evidence from the literature to the diagnosis and management of patients
- Recognize the critical nature of epidemiology in diagnosis
- Know how pre-test probability determines whether a test is worth performing
- Strive to use a hypothesis-driven (i.e. active) mental approach to the history, physical, and data
- Recognize the importance of repetitive mental practice of differential diagnoses for given symptoms and illness scripts to enhance the ability for recall in appropriate clinical settings

Innovations in Education Intramural Grants 2011

We are delighted to announce the awardees for the eighth annual **Innovations in Education Intramural Grants** program. After much deliberation, the Selection Committee chose seven proposals from a total of thirty applications, the largest number of applications ever submitted to the program. Full descriptions of the following projects are available at: <http://www.tufts.edu/med/about/faculty/educationalgrants/overview/educationalgrantawardees.html>

Julia Aquino, MD
Tufts Medical Center
Improving 3rd Year Medical Students' Family Centered Verbal Presentation Skills through a Novel Role Play Curriculum

Karen Bresnahan, MD
Mary Brown, MD
Tufts Medical Center/Floating Hospital for Children
The Child Development Curriculum in the 3rd Year Pediatric Clerkship

George "Joe" Dreher, MD
Maine Medical Center
Mindful Practice and Stress Reduction Training Through Medical Student-Led Stress Management Groups

Lindsay Fox, MD
Matthew Trokel, MD
Tufts Medical Center/Floating Hospital for Children
Pediatric Airway and Resuscitation Training

Lisa Gualtieri, PhD, ScM
Dept of Public Health and Community Medicine, TUSM
The Integration of Social Media into Courses at TUSM

Paul Han, MD, MPH
Maine Medical Center
Development and evaluation of a novel risk communication curriculum for medical students

Rebecca S. Lufler, PhD*
Dept of Anatomy and Cellular Biology, TUSM
Integrating Teaching and Clinical Anatomy into the Fourth Year Medical Curriculum

*see interview with Dr. Lufler on page five



IDEAs 2011

In recognition of the importance of diversity education at Tufts, Dean Joyce Sackey, MD launched the **Innovations in Diversity Education Awards (IDEAS)** program. Four awards were chosen from ten competitive applications. Full descriptions of the following projects are available at: <http://www.tufts.edu/med/about/faculty/educationalgrants/innovationsdiversityawardsoverview/ideasawardees.html>

Amy Chi, MD, Tufts Medical Center and
Elisabeth E. Bennett, PhD, Baystate Medical Center
Cultural Assessment and Online Modules of Diversity in End of Life Care

Avra Goldman, MD; Cambridge Health Alliance
Randy Wertheimer, MD; Cambridge Health Alliance; Dept of Family Medicine, TUSM
Group Visits in Diverse Populations

Flavia Perea, PhD, MEd
Dept of Public Health and Community Medicine, TUSM
An Advanced Course on Health Disparities and the Social Determinants of Health

Deb Sepulveda, MD, Kalli Varaklis, MD and Erin Reardon, MD
Maine Medical Center
Applying and Integrating Education for Cultural and Linguistic Competence: Utilizing Scripted Counseling techniques

NEGEA Presentations

The **AAMC Northeast Group on Educational Affairs (NEGEA)** conference took place on March 11-13, 2011 in Washington, DC. TUSM faculty and students presented their work.

Short Communications:

A Four-Part Model of Informal Learning: Implications for Pathology Education.
Bennett, E; Henneberry, J.

Virtual Human Resource Development for International Medical Education: A Conceptual Analysis. Bennett, E; Hurst, J.

Role-Modeling Compassionate Care: An Innovative Resident-As-Teacher Initiative.
Blanco, M.A., Campfield, T., Cohen-Osher, M., Healy, A., Kalish, R., Michalakes, L., Nestelbaum, Z. and Summergrad, P.

Preparing Medical Students to Work With Geriatric Patients: Pre-Clerkship Students' and Residents' Perceptions of Intergenerational Relationships. Blanco, M.A. and Friedman, B.

Workshops:

How to Enhance the Educational Value of Students Field Experiences in Global Health.
Sackey, J. and Pearlmutter, M.

Promoting Effective Proposal Writing and Collaborative. Blanco, M.A. and Lee, M.Y.

Posters:

Gender Differences in New Residents' Perceptions of Their Preparation to Teach.
Bennett, E.; Blanchard, R.

From the Classroom to the Clinic: A Review of the Literature Investigating Experiences of Medical Students with Learning Disabilities during their Clinical Years. Blanchard, R.; Willers, M.; Bennett, E.

A Boston-Bolivia Educational Collaboration: Innovative Bidirectional Benefit for Medical Residents. Martin, D.

Fundamental Residency Redesign: The Structure and Function of Competency-Based Progression. Picchioni, M.; Borden, S.

Can a simple educational intervention to residents effect lab ordering practice?
Tanouye, R.; Agarwal, A.; Zampini, A.; Unterborn, J.

Thank You 2011-2012 CAP Faculty

During the Competency Based Apprenticeship in Primary Care (CAP), 1st and 2nd year students spent one full day per week in a primary care setting (family medicine, internal medicine, pediatrics) working closely with TUSM faculty to refine skills in history taking, communication, and physical diagnosis while learning about delivery of care in the ambulatory setting. Second year students in the Maine Track spend two full days a week every other week at CAP sites in Maine.

Mark	Allara	Katie	Gerstle	Maureen	Norman
Walter	Alt	Jeff	Gold	Frank	Osborn
Ainex	Baez	Grace	Goncero	Barrie	Paster
Marissa	Baltus	Kristen	Goodell	Geoff	Pechinsky
Robert	Baratz	Michael	Guidi	Judy	Pinsker
Elizabeth	Bassler	Shuchi	Gupta	Lynn	Porter
Chris	Bechara	Dave	Hackett	Sini	Poulose
Jerry	Blaine	Marty	Iser	Catherine	Rae-Lyon
Bari-Sue	Brodsky	Julie	Johnston	John	Ragucci
Charlie	Brown	Peter	Kassis	Laxmi	Ramesh
Geoffrey	Burns	Alexander	Katz	John	Raser
Stephen	Buttenwieser	Clara	Keegan	Joseph	Rencic
Jeffrey	Byrne	Carmel	Kelly	Ronda	Rockett
Wayne	Byrnes	John	Kidd	Christine	Rooney
Marcelo	Campos	Lynn	Kim	Joseph	Rothchild
Niamh	Carroll	Amanda	Klein	Stanley	Sagov
Cristina	Cataldo	Rebecca	Krasnof	Dilip	Sathambakar
Aniket	Chakrabarti	Amy	Lee	Marc	Sibella
Madhavi	Challagulla	Tomas	Lichauco	Rachel	Siegel
Natalie	Chambers	Tom	Lincoln	Yvonne	Smikle
Dan	Chandler	Diane	London	Laura	Snydman
Mike	Coffey	Naomi	London	Mark	Su
Kathleen	Courtney	Shirin	Madjzoub-Celebi	Lisa	Sweeney
David	Cunningham	Kiame	Mahaniah	Kay	Thompson
Heather	Davidson	Sonal	Mankodi	Mike	Tremblay
Serena	Dee	Linnea	Meyer	Elly	Tsai
Martin	Devine	Barry	Miller	Cathy	VandenHeuve
Christopher	Edwards	David	Morin	Cindy	Walendziewic
Rob	Faust	Ann	Morvai	Tina	Waugh
Christen	Fragala	Sarah	Murai	Rose	Weld
Erica	Frank	Elizabeth	Nilson	Amy	Wiegandt
Jeremiah	Frank	Keith	Nokes	Elisabeth	Wilder
Robert	Gagnon			Jane	Yu

Faculty Focus: Rebecca Lufler, PhD

Lecturer, Department of Anatomy and Cellular Biology

You joined the Anatomy faculty this fall. What motivated you to do so?

I was motivated to join the Anatomy Faculty at Tufts by the plethora of teaching opportunities available and the supportive environment for medical education research. I could tell that the teaching faculty was a close knit group and very supportive of each other. Additionally, the Office of Educational Affairs not only supports medical education research, but also encourages and promotes it. Because of my passion for teaching in the anatomical sciences and my desire to conduct educational research, I felt that Tufts was a great fit for me.

You are the product of the Vesalius Program at Boston University. What is unique about the program? How has it shaped you as educator?

The Vesalius Program is a teacher-training program that provides graduate students with formal instruction in pedagogical methods and theory, along with guided teaching experiences. Many graduate programs require students to teach as Teaching Assistants or Fellows, however few provide an actual course on how to teach effectively. The course covers learning styles, presentation skills for different settings (small group, lab, and lecture), formative and summative assessment, self and peer evaluation, and generating a lesson plan. The guided teaching experiences are also unique in that students are able to work with a teaching mentor to teach in a course offered at the medical school. The teaching practicum solidifies all of the concepts that are acquired in the course in real time.

The Vesalius Program has provided me with invaluable teaching experience. I constantly apply what I learned in the program to my teaching in lectures, lab, and review sessions. The course is offered to all students within the medical school, so everyone has different experience and backgrounds. This made me concentrate on how effectively I was presenting the material to a mixed audience. I will never forget having to teach the class, including the faculty, how to correctly do a squat in a 5-minute presentation!

Tell us about your research in medical education?

I am interested in the effects of visual-spatial ability on learning and performance in medical school. Data that I collected for my dissertation indicated that visual-spatial ability was positively associated with performance in medical gross anatomy, and was also a stronger predictor of success than MCAT scores. I am investigating if students with high visual-spatial ability, as measured by the Mental Rotations Test, perform better in pre-clinical medical courses that require the ability to mentally manipulate structures in three dimensions than those with low visual-spatial ability. I will also be including MCAT scores in statistical analyses to determine if they are in fact a predictor of success in medical school and how MCAT scores may potentially interact with visual-spatial ability.

I am also collaborating with the Director of Surgical Simulation at The Lahey Clinic to investigate the effects of the surgical rotation and surgical simulation training on visual-spatial ability of third and fourth year medical students. Students' changes in visual-spatial ability during the surgical rotation will be compared to those of students rotating in medicine. Finally, I would like to add to these studies and determine if visual-spatial ability can be used as a predictor of residency self-selection.



UPCOMING FACULTY DEVELOPMENT WORKSHOP

Team-Based Learning: How to Use this Instructional Strategy to Promote Learner's Active Learning While Maximizing Faculty Teaching

Date: June, 10, 2011, 9am-12 pm, TUSM, Sackler 114

Workshop is free of charge and held at 145 Harrison Avenue, Boston. To register or to obtain a list of our workshops offered at TUSM affiliated hospitals, or to schedule an additional workshop at a TUSM affiliated hospital, contact Sharon Freeman, sharon.freeman@tufts.edu, 617-636-0891.

Student Spotlight: Meena Bolourchi, M13



You ran a very successful group tutoring experience for M14 this year. How were these sessions arranged? What was your approach during these sessions?

After I completed the Masters of Biomedical Science (MBS) program in 2009, I was asked to tutor some of the MBS courses for future students. During my first year of medical school, I held review sessions and tutored primarily MBS students for Immunology, Histology, and Anatomy. Gradually, first year medical students also started attending since the course material was very similar. At first there were only about 20 students coming, but by the end there were about 75 students attending regularly.

Last summer, I was asked to come back and teach the Histology course for the pre-matriculant summer program (PSP). Since I only had 6 sessions to teach the course, I modified my slides to keep it simple and direct. I prepared the slides such that they contained all the information that students needed to know, including arrows to the important

structures in the images. Typically, I started each review session with a “mystery” image, and asked the students to guess what organ it was from and why. Then I would weave back that original image into the presentation later on. I interjected review questions both from the previous sessions and within that same session, so the material was inherently repetitive and cumulative to build confidence and help with the learning process. Due to positive student feedback and the desire to teach again, I scheduled weekly review sessions through the OEA throughout the Histology course this year as well. In the end, the attendance for the M14 and MBS students combined reached to over 150 students!

As part of the Educational Strategic Plan all TUSM students will eventually engage in some pedagogic experience (e.g. facilitating PBL, Interviewing; teaching in physical diagnosis, anatomy, tutoring, participating in an educational seminar series, taking the 4th year medical education elective). What benefits do you see students deriving from this approach? How did you benefit from your tutoring experience?

Tutoring has been a wonderful experience for me. On the one hand, the transformation I have seen in the students, from frustrated and nervous to confident and successful with the material, is incredibly rewarding. On the other hand, giving lectures in front of a large crowd in Sackler auditorium, has helped me build self-confidence and learn the material more concretely than I ever thought. Also, tutoring has allowed me to learn the art of presenting complex materials as simple yet comprehensive ideas.

Tell us a bit about yourself, including future plans.

I'm a triple Jumbo (Tufts undergrad, MBS, and M13), a wedding photographer, a Persian dance choreographer/instructor, and an aspiring physician. I am considering surgery and/or pediatrics as my possible fields of medicine, but whichever I choose, I know that teaching will be part of it.