**Welcome** to the Second Annual Med Ed Day sponsored by the School of Medicine Academy of Master Educators, the School of Medicine Office of Faculty Affairs, the School of Medicine Office of the Vice Dean and the Office of Academic Career Development, Schools of the Health Sciences.

The University of Pittsburgh School of Medicine Academy of Master Educators ([www.ame.pitt.edu](http://www.ame.pitt.edu)) is comprised of senior faculty with expertise in medical education and is designed to:

- Recognize and reward excellence in education
- Advance education through innovation and professional development of faculty
- Support and promote educational scholarship

The Med Ed Day event provides a showcase for educational scholarship and educational innovation across the schools of the health sciences. We anticipate an afternoon of learning and networking opportunity for busy faculty members, fellows, residents and students engaged in outstanding teaching and educational scholarship.

We highly value the work of our educator faculty in designing effective and innovative teaching and learning programs, engaging in educational scholarship and research, and teaching and inspiring the next generations of learners.

This event is free and open to all University of Pittsburgh Health Sciences faculty and students as well as University of Pittsburgh Medical Center Graduate Medical Education fellows, residents and staff.

**Welcome!**
2017 Med Ed Day

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University of Pittsburgh School of Medicine  
Academy of Master Educators Second Annual Med Ed Day  
September 8, 2017 | Thomas E. Starzl Biomedical Science Tower (BST) | University of Pittsburgh

11:30 a.m.  
BST Lobby  
Registration Opens

12 to 1 p.m.  
S100 BST  
Keynote Presentation:  
Mitigating Unconscious Racial Bias in Medicine:  
at the Bedside, in the Lecture Hall, and During the  
Medical School Interview  
Quinn Capers IV, MD, FACC, FSCAI

1:00 to 3:00 p.m.  
BST Lobby  
Poster Session

3:00 to 4:30 p.m.  
MED Talks  
3:00 p.m.  
Delivery at the Cusp of Viability: What Can We Learn from  
 Patients about Enhancing Skills in Shared Decision Making?  
Katherine Himes, MD, MS

3:15 p.m.  
Preparing Our Future Colleagues for an Academic Career  
Zsuzsa Horvath, PhD and Christine Wankiiri-Hale, DMD

3:30 p.m.  
Intraoperative Surgical Teaching and the Role of  
Video Review  
Giselle Hamad, MD, FACS, FASMBS

3:45 p.m.  
Lights, Camera, Action: The Use of Video Review in Teacher  
Education and Professional Development  
Sarah Merriam, MD, MS

4:00 p.m.  
Teaching Medical Decision Making: A New Imperative  
William Follansbee, MD

4:15 p.m.  
Test2Learn: Increasing Fidelity, Engagement, and Learning  
Outcomes in the Classroom through Personal Genomic Testing  
Philip Empey, PharmD, PhD

4:30 to 6:00 p.m.  
AME Networking Reception and Educational Resource Fair
Quinn Capers’ IV, MD, FACC, FSCAI career has expanded from an initial focus on clinical excellence as an interventional cardiologist to include transformative leadership in academic medicine.

Dr. Capers introduced the trans-radial artery technique of coronary stenting to The Ohio State University (OSU) cardiac catheterization laboratory and has led its transformation to a “radial first” lab. This has been associated with a sustained reduction in complications in all patient populations, especially elderly women and heart attack patients. He has personally performed over 4,000 coronary stent procedures, many in heart attack patients, and is an expert at performing these procedures through the radial artery in the patient’s wrist. His physician peers have named him one of America’s “Best Doctors” annually from 2009 to 2016, and his patient satisfaction scores placed in the 90th percentile nationally in 2013, 2014, and 2015.

Prior to 2007, The OSU cardiology fellowship training program had never trained an African American physician. Dr. Capers served as the catalyst and leader of a dramatic turnaround resulting in recent fellowship classes at Ohio State that were 25% African American (compared to 4% of cardiology fellows nationwide). He is the senior author on a peer-reviewed publication describing Ohio State cardiology’s efforts and currently serves as the co-chair of the American College of Cardiology’s Cardiovascular Training Section Working Group on Recruitment Issues.

Named associate dean for admissions in the College of Medicine in 2009, Dr. Capers provides leadership to an admissions committee of 80 MD and PhD faculty members, 50 medical students, 60 faculty application screeners, and a full-time staff, and he is recognized as a leader in medical school admissions nationally and locally. As a workshop facilitator for the AAMC, Capers has visited medical schools across the nation to train admissions committees in the holistic review of medical school applicants. Under his leadership, the admissions team at OSU has achieved the following: 1) the total
number of applications has increased from approximately 4,000 to nearly 7,000 this year; 2) for the first time in the College’s 101 year history, women outnumbered men in the entering classes of 2014, 2015, and 2016---a direct result of Dr. Capers’ task force to study strategies to make OSU more attractive to women. Prior to this, the percentage of women in OSU’s classes were never higher than 45%; 3) the number of applications from underrepresented minority (URM) students has tripled and the percentage in the entering class has gone from 14% to 26% in 2016, making OSU one of the most diverse majority medical schools in the country; and 4) the average Medical College Admissions Test score of the entering class reached a high point of the 94th percentile in 2012 and has remained steady.

Dr. Capers has introduced innovations to reduce bias in the admissions process every year, the most notable being 2012-2013 when all admissions committee members took the Implicit Association Test to uncover hidden racial and gender biases. The year following this exercise, the admissions committee selected the most diverse class in The OSUCOM's history up to that point. He is the primary author on the first study to document the presence and extent of implicit racial bias in medical school admissions. A Dayton, Ohio native, Dr. Capers graduated with honors from Howard University before obtaining his MD from The Ohio State University. He completed his residency in internal medicine and fellowships in vascular biology research, cardiovascular medicine, and interventional cardiology all at Emory University in Atlanta. Capers and his wife, Cheryl, are the proud parents of three children.
Dr. Empey is the associate director for Pharmacogenomics of the Pitt/UPMC Institute of Personalized Medicine and leads the PreCISE-Rx and Test2Learn teams to implement pharmacogenomics clinical, research, and educational initiatives. As a clinician-scientist in the Department of Pharmacy and Therapeutics, Dr. Empey conducts NIH-funded clinical and translational research aimed at understanding the mechanisms of variability in drug response to improve medication-related outcomes in critically ill patients. He received his PharmD from the University of Rhode Island and completed PGY1 and PGY2 residencies in Pharmacy Practice and Critical Care at the University of Kentucky. He earned a PhD in Clinical Pharmaceutical Sciences at the University of Kentucky before completing postdoctoral research training at the University of Pittsburgh.

Dr. Follansbee received his medical degree from the University of Pennsylvania School of Medicine in Philadelphia, and he joined the University of Pittsburgh faculty in 1980. Throughout his distinguished career, Dr. Follansbee has received many honors including being named to every Pittsburgh Magazine “Top Doctors” list since 1992. He is a recipient of the American Heart Association’s Teacher of the Year Award and the Peter J. Safar Pulse of Pittsburgh Award. Dr. Follansbee’s primary research interests are in nuclear cardiology as well as in the cardiovascular manifestations of systemic diseases. He has been a co-investigator of numerous clinical studies and research trials.
**Dr. Hamad** is professor of surgery, Associate Residency Program Director for the Department of Surgery, and Director of Education for the Department of Surgery at UPMC. She completed her residency in general surgery at Virginia Commonwealth University and underwent fellowship training in Minimally Invasive Surgery at UPMC. Her practice is devoted primarily to minimally invasive bariatric and general surgery. She is a Fellow of the American College of Surgeons and a member of the Society of American Gastrointestinal Endoscopic Surgeons, the American Society for Metabolic and Bariatric Surgery, Association for Surgical Education, and the Association of Women Surgeons. Her research interests include postsurgical feedback using video debriefing, resident intraoperative decision-making, and gender disparity in surgical education.

**Dr. Himes** is an assistant professor in the Department of Obstetrics, Gynecology and Reproductive Sciences. She completed her medical school training at Harvard Medical School and residency and fellowship at Magee-Womens Hospital, University of Pittsburgh Medical Center. Her research agenda is informed by her clinical practice as a Maternal Fetal Medicine physician. She is currently investigating effective strategies to support women and families in making high quality decisions in a variety of clinical settings, from periviable birth to postpartum health. In 2017, Dr. Himes became the program director for the Maternal Fetal Medicine Fellowship.
Dr. Horvath is an assistant professor in the Department of Dental Public Health at the University of Pittsburgh School of Dental Medicine. As the Director of Faculty Development in the Office of Faculty Affairs, her responsibilities include overseeing, designing, and implementing faculty development and mentoring programs; offering workshops and courses to faculty in pedagogy and clinical teaching; providing orientations for new faculty; offering instructional design consultations for faculty; and conducting and coaching educational research projects. She created a two-year Academic Career Track Area of Concentration certificate program for pre-doctoral students to train future dental educators.

In addition to directing this program, she offers various elective courses in teaching methods, clinical teaching, and educational research. In her most recent endeavors, she serves as Principal Investigator of the NIH-funded "University of Pittsburgh Center of Excellence in Pain Education: Pain Challenges in Primary Care" federal contract and oversees the development of interactive virtual cases in pain education and their interprofessional implementation in five health sciences schools.

Dr. Merriam graduated from University of Pittsburgh Medical School in 2011 and completed her Internal Medicine Internship and Residency at the University of Pittsburgh and UPMC in 2014. Following her residency training, Dr. Merriam was selected to serve as Chief Medical Resident for the Internal Medicine Residency Program at UPMC from 2014-2015 and subsequently joined the Academic-Clinician Educator Scholars Program of the University of Pittsburgh Institute for Clinical Research Education in July 2015. Dr. Merriam completed her fellowship in May of 2017, earning a Master of Science degree in Medical Education with a clinical concentration in Women’s Health. She began a full-time position as an Academic General Internist at VA Pittsburgh in July 2017.
Dr. Wankiiri-Hale currently serves as Associate Dean for Student Affairs and assistant professor in the Department of Comprehensive Care and Restorative Dentistry at the University of Pittsburgh School of Dental Medicine. Her current roles include mentoring past, current, and future dental students in their education and careers. She has held several positions in academic leadership, including chairing and serving as advisor to the dental admissions and promotions committees. She currently serves as course director for several courses in the predoctoral program including a course on academic leadership and is clinical director of a two-year Academic Career Track Area of Concentration certificate program for students interested in pursuing academic careers. Her research interests include exploring academic career paths in dental medicine, evidence-based practice in dental education, enhancing diversity in dental schools, and dental school admissions related research. She is a member of several professional dental organizations, is an attending faculty member in the predoctoral dental clinics, and practices in the faculty practice clinic.
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Evaluating the Effects of Inter-Professional Curricular Projects on Student Behavior: Use of Machine Learning and Natural Language Processing to Allow High-Throughput Analysis of Student-Generated Care Plans.

Berning A¹, Rogers D¹, Maier J², Maier R²
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Needs and Objectives: In previous work, the Maier group has demonstrated that student emails generated during the third-year Family Medicine clerkship may be reliably coded to assess the effects of interdisciplinary education on student behavior. This represents a novel method of measuring student behavior change in response to interprofessional curricular projects, but such measurement is limited by the time-intensive nature of coding the student work. We therefore proposed developing a computer algorithm capable of scoring student emails using the same criteria as human coders.

Setting and Participants: The emails to be scored are generated from third- and fourth-year medical students participating in simulated Patient Centered Medical Home (PCMH) exercises during the required Family Medicine clerkship.

Description: The program was developed using a standard machine-learning workflow and written in Python. An initial program was developed based on the coding manual used in our previous study, and this initial program was “trained” by running it on a subset of emails that had previously been coded by humans. Discrepancies between the program- and human-produced results were compared and the program was revised, rerun, and reevaluated until high inter-rater reliability was achieved. The final steps, to be completed in July 2017, are final refinement on a larger sample of previously-coded emails and final validation on a second set of such emails.

Discussion: The use of machine learning to generate coding algorithms in text-based analysis is novel in medical education. Despite current limitations, we anticipate producing a program with high coding accuracy. Even if perfect agreement with human coders proves impossible, the program is capable of identifying “difficult” cases for human review while reliably coding less ambiguous cases, thus allowing for significantly faster data analysis. Following successful coding of all currently available student care plans, we will be able to expand our research questions and analyze the data retrospectively for evidence of student behavioral change across time, as well as in response to other inter-professional initiatives in the School of Medicine, such as the implementation inter-professional case conferences or participation in the Longitudinal Alliance Program. Our workflow, if proven successful, could be readily applied to research and evaluation outside of our clerkship. Rapid text-based analysis of student-generated work could prove useful in other third-year clerkships in which students generate care plans or reflective essays.
Implementing a Flipped Classroom Cardiology Curriculum for Internal Medicine Residents
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Needs and Objectives: Cardiology topics comprise 14% of the American Board of Internal Medicine licensing exam. At the University of Pittsburgh Medical Center (UPMC), 168 internal medicine (IM) residents rotate on a cardiology service per year. The educational experiences on and among these services can vary depending on attendings, fellows, and patient exposure. We hypothesized that inpatient cardiology education could be enhanced through a standardized flipped-classroom model, for which there is little data in the IM residency literature. Our goal was to develop a flipped-classroom curriculum that pairs Medical Knowledge Self-Assessment Program (MKSAP®) content with small group case discussions led by cardiologists to improve resident knowledge and preparedness with common cardiology topics. A needs assessment was completed by 43/52 (participation rate 83%) cardiology faculty and fellows to determine four high-yield topics on which to focus the curriculum.

Setting and Participants: Participants included the 54 UPMC IM residents who rotated on the inpatient cardiology services at Presbyterian Hospital over four months.

Description/Evaluation: The residents were divided into a control group (N=28) and an intervention group (N=26) based whether they were in an odd or even block. During control months, faculty and fellows taught as they normally would. For each of four weeks, the intervention group was emailed MKSAP® reading and a case with discussion questions to review on their own. A facilitator guide was provided to the supervising fellow or attending cardiologist who then led the associated weekly small group case discussions. Immediate pre and post surveys were used to evaluate the curriculum for residents’ 1) change in knowledge and preparedness; 2) quantity of teaching; 3) use of MKSAP resources; and 4) attitudes surrounding continuing the curriculum.

Discussion: Results show no difference in knowledge improvement between the control (58% correct pre vs 62% correct post) and intervention group (56% correct pre vs 57% correct post). Mean increase in preparedness on a five-point Likert scale did not differ (3.25 to 3.77 for control vs 3.40 to 3.87 for the intervention group). The number of teaching sessions/week was not different between the two groups (2.02 vs 2.15). Finally, MKSAP use increased only mildly in the intervention group, (38% vs 47%) despite assigned readings and residents in the intervention group reported completing only two of the four assigned cases. Despite the excitement surrounding flipped classrooms within graduate medical education, this flipped-classroom cardiology curriculum did not affect knowledge, preparedness, or number of teaching sessions when compared to “usual care” teaching. Reasons for this include time constraints for learning due to heavy clinical load, low resident and faculty buy in related to differing teaching expectations, and difficulty relating the cases to current patients, based on feedback from post surveys. However, because 87% of the residents recommended continuing the curriculum, so next steps will include finding ways to improve resident and facilitator commitment and communicating clearer expectations to the faculty to continue to enhance cardiology education using the flipped classroom.
Interprofessional Faculty Learning Community: Learning and Teaching Together to Advance Evidence-Based Clinical Education

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Needs/Objectives: Clinical teaching is a cornerstone of education in the health sciences; however, it is also the most challenging component of health education since the physical environments and those professionals functioning in them must meet patient care and educational goals simultaneously. One of the problems in health education is that many faculty members are not trained as educators. This problem has been recognized in the literature and systematic faculty development has been suggested as one solution. While many health science schools provide continuous faculty development support to their faculty, it is important that targeted faculty development accompanies educational initiatives such as interprofessional education. Thus a clear and contemporary need for interprofessional faculty development should precede and accompany interprofessional curricula activities. One form of a systematic faculty development program is faculty learning communities (FLCs), which serve faculty and student learning simultaneously.

Setting/Participants: To address these complex faculty development needs, the Schools of Dental Medicine, Nursing and Pharmacy designed and implemented a new interprofessional course framed as FLC on the topic of the principles of learning in a clinical environment. The course provided clinical faculty with an in-depth training in evidence-based clinical teaching.

Description: The authors offered an eleven session in-depth two-semester-long FLC in the fall 2014 and spring 2015 for clinical faculty at four of the Health Sciences Schools in an interprofessional setting to improve their clinical teaching skills.

Evaluation: A literature review revealed that comprehensive and interprofessional faculty development offerings, such as FLCs, are rare on health sciences campuses. To conduct an assessment of the 2014-15 FLC and measure its effectiveness, data were used from the feedback mechanisms that occurred during the sessions on a regular basis as a part of on-going program evaluation. This study utilized anonymous participant surveys in each session, anonymous end-of-the-course survey, and de-identified data from a follow up focus group discussion.

Discussion: Following the conclusion of each session, evaluations tracked progress and effectiveness and measured the learner's reaction to the educational experience. The end-of-the-course evaluation and the focus group discussion measured self-reported changes in participants' attitudes, knowledge, and skills. Responses to the Likert Scale questions in each session captured overall satisfaction with the learning experience and meeting participants' expectation. Qualitative data analysis of the three-pronged assessment demonstrated effectiveness of the course, specifically the use of teaching strategies, usefulness of instructional materials, and positive changes in participants' teaching activities.

Support: This project was funded by the University of Pittsburgh Provost’s Advisory Council of Excellence teaching innovation award 2014-15.
Think Like a Clinician: An Innovative Clinical Reasoning Curriculum for Clerkship-Level Medical Students
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**Needs and Objectives:** In a recent report, the Health and Medicine Division of the National Academies highlighted the urgent need for better training in decision-making across all medical disciplines. Despite the wide recognition of this need, there is no consensus regarding the best methods to provide this education. We introduced a clinical reasoning curriculum with goals of: 1) familiarizing medical students with the cognitive psychology of decision-making and its implications in medical care and 2) providing an opportunity for focused practice through the use of skill-specific drills.

**Setting and Participants:** All third year medical students at the University of Pittsburgh School of Medicine in their Internal Medicine clerkship between January and June 2017 are eligible to participate.

**Description:** This curriculum includes two components: 1) interactive online modules and 2) a case-based workshop. The online modules utilized in this curriculum were developed by clinician educator faculty at the University of Pittsburgh with support from a grant to Dr. William Follansbee from the Hearst Foundations. The content in these modules include: cognitive psychology of decision making, introduction of heuristics, semantic qualifiers, summary statements, and cognitive biases. These online modules include expert video about key concepts, contain cases, and are interactive with prompts for learners to answer questions. The workshop creates an opportunity for students to operationalize the above knowledge through skill-specific group-based drills in key steps.

**Evaluation:** The curriculum will be evaluated through the use of a knowledge-based quiz on core concepts and vocabulary in clinical reasoning, as well as through evaluation of the demonstration of clinical reasoning in each student’s hospital admission notes during their Internal Medicine clerkship using a previously validated tool.

**Discussion/Reflection/Lessons Learned:** Explicit clinical reasoning education is gaining increasing awareness as a need for physicians-in-training. This curriculum offers clerkship-level medical students an introduction to the cognitive psychology of medical decision making, as well as provides a unique opportunity for skills practice in reasoning utilizing a step-by-step approach. This innovative skill-specific approach to reasoning distills the complex process of making a diagnosis to individual skills needed to make a diagnostic decision. Introduction of these skills at the beginning of their internal medicine clerkship primes students with an approach for clinical reasoning in the subsequent weeks of their clerkship.

**Support:** Funding support from Thomas H. Nimick, Jr., Competitive Research Fund.
Needs and objectives: An essential part of any health department’s infrastructure is the ability to respond to public health emergencies. During an emergency that poses a threat to public health, staff may be required to assume duties outside of their normal day-to-day functions. The Allegheny County Health Department (ACHD) implemented a series of responder safety trainings to prepare staff to assist with or lead an emergency response.

Setting and participants: Employees of ACHD must complete a series of trainings and maintain various certifications, some of which are specific to their normal job function within the health department. ACHD operates at many campuses across Allegheny county and work sites vary requiring various varying safety measures. Key stakeholders involved in ACHD’s training plan are the Emergency Preparedness Department, Workforce Development, and the Safety Committee.

Description: Trainings offered at ACHD are divided into two categories; required and recommended. These trainings include First Aid, Respiratory Protection, Incident Command System, Hazmat, and others. ACHD also offers additional, voluntary trainings to increase capacity amongst its staff and community partners, such as the Medical Reserve Corps. In many cases, these trainings are the result of innovative partnerships with local universities and community organizations. In case of large-scale emergencies or disasters, training schedules for ACHD are tailored for a generalized Incident Command Structure within the department. Recently, ACHD incorporated online trainings to increase access to required trainings. The online courses span many of the required trainings, increasing access. The success of the training program relies on an interdisciplinary, collaborative approach within the organization.

Evaluation: This training program has allowed ACHD to increase the number of employees reached by the trainings. However, by this date, all the required employees have not yet been certified. This training program has also increased the number of programs available online, at different campuses, and on variable topics.

Discussion/Reflection/Lessons Learned: This training program could be used in other health departments or organizations of similar or larger sizes if they have a training requirement. Also, if organizations are interested in integrating Incident Command Structure into the organizational structure of the company, this is one method. There are still barriers to attendance and certification compliance, but with this program, the barriers have decreased and will continue to decrease in the future.
MACRO Finds Unique Way to Educate Pitt Undergraduates in Clinical Research
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Needs and Objectives: Bedside clinical research experience opportunities for University of Pittsburgh undergraduates have been limited, and clinical research requires time-sensitive tasks. MACRO created the Research Associate (RA) Internship Program to provide didactic education and first-hand clinical research exposure, and to train students to perform critical clinical research tasks.

Setting and Participants: All RAs are Pitt undergraduates. RAs provide 24/7 screening, enrollment, and collection services at UPMC Presbyterian, and cover similar responsibilities for sixteen hours a day at UPMC Mercy. RAs are based in the emergency department and trauma bays of each hospital. RAs also electronically screen other UPMC sites, and assist in sample collection and processing.

Description: The RA program started in 2009 with eight students, for a single trauma study. In 2013, MACRO redesigned the program into a formal internship, with input from the Director of Health Professions Advising and the Associate Dean of Admissions for School of Medicine. The internship continued all existing teaching and tasks, and added a lecture series on clinical and research topics, opportunities for standalone research projects, shadowing experiences, and a set of core requirements and testing to demonstrate proficiency in clinical research.

Evaluation: Currently, there are thirty RA interns, all undergraduates at the University of Pittsburgh, serving ~twenty studies. During a typical eight-hour shift, a RA will screen ~twenty emergency department patients, respond to five to ten trauma pages, 15-20 medical pages, process and centrifuge two-four blood specimens, and continue protocol execution of two to three patients enrolled in the prehospital setting. RAs also perform informed consent discussions and enroll patients into four minimal risk studies. Post-graduation, 43% of RAs attend Medical School, 16% graduate school, and 30% continued in research. Since 2009, there has been a fivefold increase in applications to the RA internship program, and the internship now represents ~25% of MACRO’s operations. Qualitatively, RAs gain valuable medical knowledge while performing a wide variety of tasks, and this on the job knowledge is then enhanced with lectures by physicians and other medical personnel. Frequent interaction with staff and physicians also allows RAs to become proficient in communication in a busy clinical setting.

Discussion: Creating a formal internship enhanced the educational value of the RA program. Investing in educational programs for student employees yields dedicated and engaged employees, benefiting both the students and the organization.

Online Resources: https://www.ccm.pitt.edu/macro/ra

Sources of Support: MACRO is primarily self-funded and gratefully acknowledges support by the Pittsburgh CTSI.
Improving In-House Stroke Diagnostic Accuracy and Management
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Needs and Objectives: Inpatient stroke is associated with morbidity and mortality despite onset in a hospital. Implementation of a ‘stroke code’ system can improve evaluation and diagnosis. The aim of this project was to evaluate current procedures to identify areas of improvement in recognition and response.

Setting and Participants: Retrospective analysis completed for in-house ‘stroke codes’ at Presbyterian and Montefiore Hospitals 3/2013 – 9/2016. Time points were analyzed: last known well (LSW) to symptom recognition, stroke code call to assessment, assessment to imaging, imaging to IV tPA/thrombectomy. Most stroke codes occurred after a preceding ‘condition C’, thus stakeholders identified as critical care medicine and the neurology teams.

Description: Greatest delays in evaluation occurred between LSW & code call, code call & imaging. A systematic approach to educate CCM fellows and to facilitate rapid imaging after initial stabilization was undertaken. CCM fellows participated in a one-hour educational lecture on evaluation and potential therapeutic options in stroke presented in a standardized Emergency Neurologic Life Support course. CCM fellows and Neurology residents trained using Rapid Arterial oCclusion Evaluation (RACE) score, an established stroke assessment tool with a high LVO sensitivity; instructional videos and calculator available for real-time use. An algorithm for rapid evaluation including bedside assessment by the stroke team and imaging was implemented as well as potential for direct, early communication between the responding services. Prospective data collection monitored progress and collection of time metrics, and post-code email debriefing of responders.

Evaluation: Twenty-nine codes reviewed. In half the etiology was stroke, TIA, or hemorrhage with the remainder of encephalopathy, seizure, or non-neurologic etiologies. A reduction of 7.3 min from code call to imaging; however, time from LSW to code call didn’t diminish. Similar to retrospective review, the greatest delay occurred between LSW and code call (mean 198 minutes). No patients received IV tPA; most common contraindications of improving symptoms, outside time window, and recent surgery. Three LVOs identified; two underwent thrombectomy at 27 & six minutes after imaging; overall improved from pre-intervention (mean 53 min).

Discussion: Participant knowledge of stroke symptoms was increased. Individual providers infrequently encounter an acute stroke, though debriefing offered closure on diagnosis and intervention, and areas for improvement. Despite inpatient setting, a limitation in treatment is LSW, with poor documentation and recognition of symptom onset. Future education of additional providers, nurses and allied health personnel could improve recognition and evaluation.

Support: No funding obtained to support this project.
The Clinical Reasoning Case Conference: Use of Principles from “Example Based Learning” in a Conference Format
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Needs and objectives: While components of clinical reasoning are infused into standard residency education, explicit instruction regarding these principles is often lacking. Trainees may be expected to intuit the reasoning processes used by their clinical teachers when approaching a patient. The quality of this learning experience can be highly variable when a common language for discussion of clinical reasoning principles does not exist, and when clinical teachers lack the skills to make their reasoning processes explicit. In order to address this educational challenge, we developed an interactive case-based conference with a focus on discussion of clinical reasoning principles, including cognitive bias.

Setting and participants: We developed and delivered this conference on a monthly basis at three training sites within the University of Pittsburgh Internal Medicine residency training program.

Description: Our monthly “Clinical Reasoning Case Conference” includes sequential delivery of clinical information from a real patient case to an expert discussant, who in turn describes their approach to the unknown case in a “think-out-loud” format. The conference is facilitated by a “clinical reasoning expert” faculty member, who, in keeping with principles from example based learning, provides explicit commentary regarding the clinical reasoning processes being used.

Evaluation: Our conference series has become a favorite of faculty and trainees alike. In a convenience sample of 31 attendees in March 2017, 100% of Faculty, 85% of residents, and 80% of medical students rated the conference as “more valuable” than other programmatic educational experiences. Three themes emerged in review of narrative feedback from attendees, including appreciation of: 1. the conference focus on the diagnostic process rather than the final diagnosis, 2. the opportunity to compare one’s own reasoning with that of an expert, and 3. the venue for open discussion of topics such as diagnostic uncertainty and cognitive bias.

Discussion/Reflection/Lessons Learned: Traditional “unknown case conferences” tend to focus on the ability of an expert discussant to reach a difficult or unusual diagnosis, often without an explicit focus on clinical reasoning principles that can be applied more broadly by learners. In our case-based interactive conference series, a focus on the clinical reasoning process and on potential for cognitive bias has contributed to the development of a shared clinical reasoning vocabulary within our program and to the dissemination of clinical reasoning skills for application in the clinical setting for patient care and teaching.
Postpartum Pittsburgh: A Multi-Agency Collaboration to Improve Access to and Quality of Perinatal Mental Healthcare
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**Needs and Objectives:** To establish an Allegheny County Perinatal Behavioral Health Network and website presence as a forum for perinatal prescribers (ie: OB-GYNs, psychiatrists, nurse practitioners, family physicians) to 1) improve clinical skills in the evaluation, diagnosis and treatment of perinatal women with mental health disorders and 2) improve access to educational and mental health resources for these patients.

**Setting and Participants:** Our Core Planning Committee comprised six members in leadership roles at medical institutions in our region to discuss objectives, raise funds, and strategize on implementation. With a $25K grant from Staunton Farm Foundation which was available Nov 1, 2016, we could support personnel to implement our program. The PI elicited input from numerous stakeholders through meetings, phone calls, and emails, and ultimately expanded the Core Planning Committee to twenty members since the program’s inception, selecting from a variety of medical specialties and including community practitioners. Program decisions have been made by majority decision during meetings and by electronic and written surveys. An important lesson learned was that having two advisors who were passionate about this topic and generous with their time, and having a skilled website developer gave the project sufficient momentum to move forward. Having a broader group of interested, inter-professional committee members, who could commit to attending and facilitating the training made the training day a particularly enlightening educational experience.

**Description:** We designed a flipped-classroom training session comprised of two 15-minute didactic videos (available on our website) viewed in advance and followed by a two-hour in-person training comprised of a brief, video content review, facilitated case discussion, and Q & A. The flipped classroom format was chosen to minimize passive educational presentations, and to maximize time that training participants had to actively grapple with the course material and to problem solve alongside other professionals with distinct perspectives. We offered this to an audience of 35 people in March 2017 at the University Club of the University of Pittsburgh. Assigned seats at six-top tables were used to intermix professions and institutions.

**Evaluation:** We attracted training participants from eleven practice settings and having degrees in nursing, medicine, pediatrics, psychiatry, obstetrics, social work, physician assistant, midwifery, and behavioral health research. Our ratings were high to very high on satisfaction, program relevance, likelihood of practice change, and improvement as a member of an inter-professional team. Our website has had close to 500 users over four months without any marketing.

**Discussion/Reflection/Lessons Learned:** This educational process engaged a number of providers, but needs to be replicated to access a larger population of providers to maximize impact on quality of care for perinatal women with mental health needs. We have two additional trainings scheduled at St Clair Hospital and Jefferson Hospital in September 2017. We plan to lengthen future trainings to a ½ day and a full day conference, through the generous funding of Community Care Behavioral Health, during Winter 2017-18 and Fall 2018, respectively. We will market our program through mailings. We are pursuing continued funds to sustain and grow this effort.

**Support:** Staunton Farm Foundation

www.postpartumpgh.org
The UPP-EM Summer Research Immersion – A Comprehensive Introduction to Academic Acute Care Medicine
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**Needs and objectives:** Many pre-medical and medical students participate in structured research programs. Many students may seek experiences primarily to learn broadly about clinical or academic careers as opposed to research careers. We hypothesized that students pursuing summer research in Emergency Medicine (EM) would prefer a more comprehensive experience, including research, clinical care, and educational offerings. Therefore, we developed the Summer Research Immersion (SRI).

**Setting and participants:** Beginning in 2014, the SRI was offered to all students undertaking summer research in EM. Fifty participants enrolled and fifty completed the program. Participants were recruited locally, through University of Pittsburgh interest groups, as well as through interest groups at other institutions. The majority of participants were self-referred by seeking research experience. Thirty (60\%) of participants were medical students, most of which were UPSOM students (22/30, 73\%). We recruited existing research faculty from EM, from the Center for Emergency Medicine, and UPMC Mercy, to facilitate sessions.

**Description:** The SRI adds three components to a traditional short-term student research program. First, participants in the SRI complete weekly journal clubs to review and discuss medical papers. The objectives are to analyze and grade primary literature and to acquire skill in research dissemination. Second, participants complete six core EM skill workshops to learn clinical skills and the pathophysiologic mechanisms involved. Third, participants observe clinical care with EM faculty biweekly. The objective of these sessions is to experience the nature of emergency medical care.

**Evaluation:** Non-UPSOM participants sometimes had school schedules different from UPSOM, which is a barrier to delivery of the program. Due to limited faculty availability, the logistics of scheduling sessions is difficult. Overall, participants highly rate the SRI. The majority of participants felt that the SRI was rewarding (91\%, 21/23) and affected their career goals (68\%, 17/25). Most participants (92\%, 23/25) would recommend the program. Participants commented on the diverse nature of the experiences, especially the clinical exposure, and that a more regimented schedule of events would be useful.

**Discussion/Reflection/Lessons Learned:** The SRI has been a successful program introducing participants to the profession of Academic Acute Care Medicine. Presently, the program has mostly attracted local participants. We hope to expand the pool of participants through marketing, and word of mouth. We hope to expand the pool of faculty to lessen the burden on existing faculty. This program has only been trialed in one department, and generalizability is unknown.

**Support:** None
We’re Better Together: A Curriculum for Enhancing Interprofessional Care in Resident Clinic
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Needs and objectives: Interprofessional, team-based care is essential for optimal patient outcomes, yet residents receive little formal training on collaboration with interprofessional teams in the outpatient setting. To address this need, we developed a structured, longitudinal curriculum promoting collaboration between residents and the interprofessional team in their continuity clinics. Specific aims include: (1) improve residents’ knowledge of team members’ roles and responsibilities, (2) increase residents’ positive attitudes towards team-based care, and (3) increase the number of patient referrals to team members.

Setting and participants: Our curriculum has been implemented for internal medicine residents with continuity clinic at UPMC Montefiore. A comparison cohort of residents in a similar continuity clinic at UPMC Shadyside did not participate in the curriculum. The curriculum is comprised of five 45-minute conference sessions that focus on different members of the interprofessional team, including the clinical pharmacist, psychologist, social worker, care manager, and diabetic/nurse educator. Each session is attended by between four and eight residents, a faculty facilitator, and one of the team members.

Description: Each curricular session is an interactive, case-based discussion of common patient scenarios that require an interprofessional approach to care. The content for each session was developed through collaboration with team members. Through these sessions, residents meet team members and learn about their roles, the resources that they offer, and triggers for patient referral.

Evaluation: We will compare control and intervention resident responses to a survey administered before and after curriculum implementation. The survey will evaluate resident knowledge, attitudes, and self-described behaviors as related to team-based care. On the pre-curricular survey, fewer than 50% of residents at UPMC Montefiore knew the names of the diabetic/nurse educator, care manager, psychologist, or social worker. Residents also reported poor baseline knowledge of resources provided by team members. In addition, we will evaluate residents’ referral rates to interprofessional team members before and after curriculum implementation through chart review in Epic.

Discussion/Reflection/Lessons Learned: There is currently a scarcity of published curricula teaching interprofessionalism in the primary care setting. Our interprofessional curriculum aims to improve residents’ ability to work collaboratively in teams in a large academic outpatient clinic. If our curriculum is proven to be effective, it will have great potential to be disseminated to other internal medicine residencies and could easily be adapted to meet the needs of different outpatient clinic settings.

Support - Funding provided by the Thomas H. Nimick, Jr. Competitive Research Fund
Narrative Medicine for Medical Students
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Needs and Objectives: Narrative medicine is the application of literary analysis and writing skills to the stories encountered in clinical practice. Medical schools have increasingly been incorporating various humanities courses, but the University of Pittsburgh School of Medicine does not currently have a Narrative Medicine curriculum. We designed a mini-elective in Narrative Medicine for first- and second-year medical students. The goal of this course is to introduce students to the concept of Narrative Medicine, to provide an early opportunity to interact with patients, and to introduce writing as a method of reflecting on and interpreting patient interactions.

Setting and Participants: The course was offered to first- and second-year medical students as part of the mini-elective program. Participation was capped at ten students, and eight students participated. Sessions took place in a classroom at the School of Medicine as well as at the Children’s Hospital of Pittsburgh.

Description: The course was comprised of four sessions. The first session was an introduction to concepts of narrative medicine, with a guest speaker from the University of Pittsburgh Writing Program who introduced interviewing from a journalistic, rather than medical, point of view. In the second session, students were paired with a patient family at CHP and conducted an interview, with a goal of eliciting the patient’s illness narrative. Students then wrote essays based on their interviews and the third session was a peer-editing workshop. In the last session, students shared their final drafts and we had a discussion reflecting on how this experience will affect future patient interactions. They produced a variety of essays describing their patient interviews and relating the content of their discussion to personal experiences as well as advocacy topics.

Evaluation: Students were surveyed at the end of the course and overall felt that this was a valuable experience, that it changed their perception of patient experiences, and that it would affect their approach to patients during third-year clerkships.

Discussion/Reflection/Lessons Learned: In conclusion, a Narrative Medicine elective is an experience that appeals to a self-selected group of students. It has potential to increase comfort with patient interviewing, lead to more meaningful interactions, and allow those who are interested in the humanities to have a formal outlet during medical school.
E-Learning module on opioid abuse and diversion across three health science schools: Implementation and evaluation

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Introduction: The CDC’s 2011 report Prescription Painkiller Overdoses in the United States revealed serious deficits in healthcare practitioners’ education and training in pain management and substance abuse. The NIH responded to this education gap by funding Centers of Excellence in Pain Education (CoEPEs) at eleven health professions schools. The University of Pittsburgh’s CoEPE will develop, evaluate, and implement seven case-based e-learning modules by 2021, including Opioid Misuse Following Wisdom Teeth Extraction, which directly addresses the opioid epidemic. Here we describe and evaluate curricular implementation of this module across three health science schools.

Methods: Eight faculty with various expertise collaborated to create the module. Learning objectives were embedded in the case of a teenager who shows signs of opioid abuse and diversion after a third molar extraction. The module was implemented separately at three University of Pittsburgh health science schools: Pharmacy, Dental Medicine, and Nursing. Learners completed a five-item quiz before (pre-test) and after (post-test) viewing the case, as well as a six-item learner satisfaction survey.

Results: 250 learners (Pharmacy, n=112; Dental Medicine, n=86; Nursing n=74) completed the module. On average, learners’ scores increased from pre- to post-test (M=3.61±0.66 vs. M=4.39±1.08); and the number of learners whose scores increased exceeded the number whose scores decreased or did not change (z=-8.82, p<0.01). Responses to the satisfaction survey were largely favorable, with > 90% of learners agreeing or strongly agreeing that the module provided them with a valuable learning experience. Also, learners agreed they were provided content they did not already know, and that the pre/post quizzes facilitated their learning that of that content.

Conclusions: A novel e-learning module on opioid abuse and diversion can improve the knowledge of health science learners, within a valuable learning experience.

Significance: As the opioid epidemic continues to grow, so too does the need for increased healthcare practitioner knowledge in the areas of pain management and opioid abuse and diversion. More extensive implementation of our module across multiple health science schools may help address that need.

Research/Grant Support: National Institute on Drug Abuse, National Institute of Health, Department of Health and Human Services, HHSN271201500082C
**Pediatric Fellowship Program Director Perceptions of Burnout**
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**Needs and Objectives:** Medical students, residents, and early-career physicians report greater levels of burnout than the general population. Furthermore, trainees have increased odds of burnout compared with early career physicians. Program directors play an important role in identifying and addressing burnout symptoms among their trainees. One survey of program directors of various specialties showed that they underestimated the rate of resident burnout. Fellows are in a unique position as they are still in training, but lack the larger support structure offered by residency programs. To our knowledge, no studies have formally assessed how burnout is addressed in fellowship programs. Our objective is to complete a needs assessment for formal education on burnout as part of the pediatric fellowship curriculum.

**Setting and Participants:** A survey was administered to Pediatric Fellowship Program Directors (PD) and Assistant Program Directors at the Children’s Hospital of Pittsburgh.

**Description:** Data was collected using Qualtrics. Survey questions included: estimated prevalence of burnout, frequency of PD meetings, assessment of burnout, comfort in providing resources for burnout and contributing factors to burnout. Of sixteen people included in the survey, fourteen responded (88%). Eleven subspecialties were represented.

**Evaluation:** Participants thought 14% of fellows are currently experiencing burnout and 54% experience burnout at some point during fellowship. PD meetings occur 2-5 times per year; however, 50% of participants estimated that burnout is only "sometimes" discussed. Only 21% of participants stated they had a formal method to assess burnout among fellows. Most participants (70%) stated that they felt "somewhat" comfortable identifying signs of burnout and that they were either "somewhat" or "extremely" comfortable with providing resources on burnout. Recurrent themes about potential causes of burnout included high patient volume, frequent pages, lack of sleep, personal issues, and emotional aspects of patient encounters. Participants suggested "decreased call," "clerical help," "fellow-led discussion on burnout," and "regular assessment for early recognition" as possible interventions that could reduce burnout.

**Discussion:** Overall, survey participants felt that burnout affected about 50% of fellows. Although many participants felt somewhat comfortable recognizing symptoms and providing resources, most did not have a formal system in place for assessing burnout or providing fellows with formal burnout education. Formal assessments, such as the Maslach Burnout Inventory may be a useful tool for assessing burnout in fellowship. Next steps include surveying fellows to compare their perception of burnout to those of program directors as well as surveying fellowship program directors in other specialties.
A Multidisciplinary Cardiac Arrest Simulation Curriculum in the Cardiac Intensive Care Unit
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Needs and objectives: As rapid respond teams (RRTs) led by critical care staff have become more prevalent, UPMC resident exposure to cardiac arrest resuscitations has decreased. Many UPMC internal medicine housestaff and trainee graduates have voiced concern about being unprepared to practice at institutions where they would be responsible for leading RRTs. We aimed to increase CICU nurse and housestaff ability to 1) recognize cardiac arrest and initiate high quality CPR within one minute, 2) identify pulseless ventricular tachycardia or fibrillation and defibrillate within two minutes of arrhythmia onset, 3) Demonstrate appropriate team leadership using closed loop communication and delegation of roles.

Setting and participants: The ten-bed cardiac intensive care unit (CICU) specializes in care of patients with cardiogenic shock, myocardial infarction, unstable arrhythmias, respiratory failure, and cardiac arrest. Each month, at least three interns (PGY1) and three residents (PGY2-4) in Internal Medicine rotate through the CICU, where they typically respond first to any cardiac arrests of CICU patients.

Description: We conducted two one-hour simulation sessions on the first and second Monday of each four-week resident rotation. Each session simulated two separate patients who develop pulseless ventricular tachycardia or fibrillation. One cardiology fellow (ZR or JL) or faculty (MS) facilitated each session with a nursing facilitator (LB). CICU housestaff rotating on daytime shifts and two ICU nurses attended each session. Facilitators debriefed participants after each scenario using the (Gather-Analyze-Summarize) method focusing on simulation objectives.

Evaluation: In each scenario, we measured the time from arrest to initiation of CPR, time from arrest to defibrillation, and CPR quality. Following the first scenario debrief, the team improved their time to CPR initiation by an average of 20 seconds, time to defibrillation by an average of 44 seconds, and CPR quality by an average of 16%. The average course rating by the first 65 participants was 4.9 on a 5-point Likert scale. The most common participation feedback was the request for more RRT simulation scenario opportunities.

Discussion: Current ACLS training does not prepare inpatient teams to resuscitate patients in cardiac arrest simulation scenarios. Using interdisciplinary training with nurses and housestaff provided an opportunity to practice ACLS as a team before it occurred on the unit, improved surrogate simulator outcomes, and was highly rated by participants.

Support: WISER Center, CICU leadership including Doug Morgan
Longitudinal Subspecialty Clinic for Pediatric Residents: Enhancing Preparedness for Fellowship Through Continuity and Mentorship
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Introduction: Recent changes in graduate medical education prompted the Council of Pediatric Subspecialties (CoPS) to address the preparedness of residents entering fellowship. Based on a widely-distributed survey, they found that 54% of fellowship program directors believed residents were not prepared for fellowship. Cops recommended experiences to enhance fellowship preparedness such as longitudinal subspecialty clinic, increasing patient exposure, and faculty role-modeling. Likewise, the Accreditation Council for Graduate Medical Education (ACGME) requires that a subset of resident experiences be individualized based on career plans and allows for a subspecialty continuity clinic in the third year of residency. To address the recommendations above, we developed a curriculum for residents to participate in a subspecialty continuity clinic in their final year of training. Our objective was to evaluate the impact of a subspecialty continuity clinic experience through a descriptive analysis of the learners’ and preceptors’ experiences.

Research Questions: What is the experience of residents who participated in the subspecialty continuity clinic? How do faculty perceive their role as educators in a subspecialty continuity clinic?

Methods: Residents that expressed interest were required to be deemed competent by their primary care clinic preceptors. Subspecialty clinics were held half day a week throughout the final year of residency. Since 2013, ten residents participated, with seven in hematology/oncology. Online surveys were distributed to resident participants with the opportunity for them to participate in follow-up interviews. Faculty preceptors within the hematology/oncology division were interviewed. Interview topics included strengths/weaknesses of the curriculum, meaningfulness of the experience, and ability to maintain continuity. Transcripts of the interviews were coded in an iterative process and themes identified.

Results: Residents felt the subspecialty clinic offered a striking improvement in patient continuity, mentorship, and ability to observe the evolution of disease over time compared to their primary care clinic. Trainee interviews revealed themes such as increased comfort starting fellowship, faculty mentorship, patient continuity, and individualized learning. Faculty stated they had improved continuity with the learner which allowed for opportunities for feedback and enhanced mentorship.

Conclusion: Longitudinal subspecialty clinics provide unique improved patient continuity for pediatric residents, including patients with medical complexities. Optimizing continuity between the faculty and the learner allowed for enhanced mentorship and individualized learning with increased opportunities for feedback. These are areas identified by cops to enhance fellowship preparedness.

Significance: This is a useful framework in which to consider programmatic and curricular changes to address gaps in training and preparedness for practice after residency.

Research Support: The American Society of Pediatric Hematolog
Effect of a Hands-on Pre-Clinical Neurosurgery Elective Course on Second-Year Medical Student Interest and Attitudes

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*These authors contributed equally to this abstract.

Introduction: Early exposure to neurological surgery is limited in the traditional medical school curriculum. However, residency programs often favor applicants with significant academic and clinical credentials over a number of years. Further, students who are exposed in their preclinical years are able to define their goals for matching into neurosurgery earlier in their medical career. Preventing loss of interest or switching to another specialty later allows for the development of more competitive and informed applicants to residency programs.

Hypothesis: Preclinical exposure to neurological surgery allows students to explore their interests in the field, make connections with department faculty and residents, and make an informed decision on their interest in pursuing a neurosurgery residency after medical school.

Methods: We designed a five-session course on neurological surgery at the University of Pittsburgh School of Medicine offered in the spring of the second year. Sixteen students were enrolled in the course, which ran during January and February of 2017. Each session was composed of either a lecture or a lecture plus skills lab. We conducted pre- and post-course surveys gauging degree of interest and opinions about neurological surgery. Each week, there was also a 10-question fact-based quiz before and after the lecture presentation. The survey responses were used as qualitative measures of interest in pursuing a neurosurgical career, while the quizzes were benchmarks of practical knowledge of neurosurgical topics.

Results: Our results revealed no significant change in the average rating of student interest in pursuing neurosurgery as a career. However, fewer students rated neurosurgery highly (≥8/10 interest level), and those who did expressed an increase of interest from their pre-course rating. The knowledge-based quizzes revealed a significant increase in the students’ overall score (p=0.04).

Conclusion: Early exposure to surgical subspecialties can assist students in making an important decision regarding competitive subspecialties such as neurological surgery. Our study showed that while fewer students demonstrated a high interest following the course, those who did had a marked increased interest in pursuing neurosurgery. Simultaneously, the opportunity to learn about neurosurgical techniques may provide students with a foundation of knowledge before moving into higher levels of their medical education.

Significance: Increasing preclinical exposure to surgical subspecialties in the medical school curriculum may help students to make an informed decision about specialties of interest, spark connections with existing faculty and residents, and further their involvement in the department to better prepare for application to residency.

Support and Resources: We received no financial resources to fund this project. We received permission from the University of Pittsburgh School of Medicine to conduct this course as a mini-elective for second year medical students.
Improving Medical Residents’ Ability to Identify and Address Social Determinants of Health (SDH) in the Ambulatory Setting

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Needs/objectives: Describe the link between SDH and health outcomes; Identify SDH among clinic patients; Provide targeted interventions using clinic and community resources for the following SDH: no/underinsurance, food insecurity, suboptimal housing, transportation barriers, need for supplemental income

Setting and participants: Participants were 38 PGY2 IM categorical residents at a tertiary academic center in Bronx, NY. The curriculum was administered during ambulatory blocks from 9/2015 to 5/2016. Description: The curriculum included three didactic sessions on SDH, immigration and incarceration; an interactive workshop; a case conference and a journal club session. In the workshop, students used cases to identify SDH and community and clinic resources to address them, building skills they then applied to their clinic patients. Faculty participated in a session on precepting SDH in clinic and were given evidence based teaching points. Resource sheets and a community resource website were available online for residents and faculty.

Evaluation: Identical pre- and post-intervention surveys were administered to residents. The survey had thirteen questions on demographics, prior experience, perceived barriers to addressing SDH in clinic, confidence identifying and intervening on SDH, and current rates of addressing SDH in the clinic. Confidence levels were measured via a Likert scale from least confident (1) to most confident (5) and rates of addressing SDH in clinic were measured on a 6 item scale ranging from 0% to >20% of patient encounters. The survey included thirty validated knowledge questions on healthcare access, SDH and health disparities and three questions on incarceration. Residents identified time and lack of knowledge as the greatest barriers to addressing SDH in clinic. Post intervention, knowledge as a barrier was reported significantly less (35.6% vs 62.1%, p<.01). Residents reported a significant increase in overall confidence in their ability to identify patients’ SDH (3.20 vs 2.77, p<.01) and create a plan to address SDH (3.09 vs 2.68, p<.01). Residents showed a significant increase in overall knowledge (59.5% vs 49.3%, p=<.01) immediately post intervention. They also reported a significant increase in the overall proportion of recent patient encounters during which time was spent identifying/addressing SDH (3.34 vs 2.96, p=.049). 90% of residents recommended the curriculum for future residents.

Discussion: Socioeconomic factors are fundamentally related to health and interventions on SDH can have measurable health benefits. Residents demonstrated improvements in knowledge, attitudes and self-reported behavior immediately after receiving a SDH curriculum that emphasized clinic based interventions and felt the curriculum was worthwhile.
Emotional Intelligence in the Clinical Setting: Empathetic Communication Training in Anesthesiology Residents Improves Patient Outcomes
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Introduction: Anesthesia residents rotating on the obstetric (OB) service often encounter challenging patient communication situations. Clinicians can be trained in empathetic communication, resulting in improved outcomes in the outpatient setting.¹-³ The objective of this study was to assess the impact of training anesthesia residents in empathetic communication on the obstetrical patient experience.

Hypothesis: We hypothesized that a simulation-based empathetic communication curriculum (SBEC) for anesthesia residents on their OB anesthesia rotation would improve maternal and partner satisfaction, anxiety, and psychological trauma symptoms.

Methods: A pre-post intervention design was chosen at a tertiary care academic medical center. A previously-described SBEC⁴ was introduced to residents at the beginning of their two-month OB subspecialty rotation. Each resident participated in three patient care scenarios with standardized patients. Immediate feedback was given to the residents throughout the scenarios by an expert trained in communication (ALT). Patients cared for by the residents were followed on postpartum day 1 or 2. Outcomes measured before and after SBEC implementation included patient and partner anxiety (HADS, Hospital Anxiety Depression Scale), satisfaction (WOMBLSQ, Woman’s Views of Birth Labour Satisfaction Questionnaire) and psychological trauma (IES, Impact of Event Scale). Qualitative comments were recorded. Resident evaluations were assessed. The Student t-test compared patient and partner scores before and after SBEC implementation. A P-value of 0.05 was considered significant.

Results: 27 residents participated in the SBEC between January 2016 and May 2017. 93% had no formal OB communication training. 67% rated themselves “somewhat competent” with communication. SBEC implementation was linked to improved patient satisfaction (WOMBLSQ mean pre-intervention score, 114.7 vs. post-intervention score, 125.4, P=0.01) and reduced psychological trauma symptoms (IES mean pre-intervention score 11.2 vs. post-intervention score, 4.4, P=0.009) but not improved anxiety (HADS) scores (Table to be presented on poster). Partner outcomes were not significantly improved. Qualitative patient remarks after SBEC implementation were positive (Table to be presented on poster). After SBEC participation, resident self-ratings on communication improved; residents rated the quality and relevance of the SBEC course highly (Figure to be presented on poster).

Conclusions: Empathetic communication training in anesthesia residents leads to improvements in maternal satisfaction and reduced postpartum trauma symptoms.

Significance: SBEC training among anesthesia residents should be emphasized in educational curricula. Broader applications to areas of clinical care that stand to benefit from enhanced patient-physician communication by SBEC training are justified.

Research Support: Supported in part by the University of Pittsburgh Department of Anesthesiology.

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International Experiences and Global Career Aspirations Among U.S. General Surgery Applicants
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Introduction: Healthcare-worker distribution, including physicians and surgeons, contributes to global disparities in medical care. U.S. medical student interest in international experiences (IEs) has grown, and medical school curricula increasingly include global health content. In post-graduate medical education, students with IEs are more likely to enter primary care fields. Surgery comprises an essential part of primary medical care, yet U.S. surgical residencies lag behind in IEs. Such experiences are available in 10-34% of general surgery programs, vs. 57% internal medicine, 73% of emergency medicine, and 74% of family medicine residencies.

Hypothesis: Despite the incongruity in available experiences, we hypothesized that interviewees for general surgery would have equal or more IEs than the average U.S. medical student, and that IEs would predict global career interests.

Methods: Previously-extracted data were analyzed from interviews of applicants for a U.S. general surgery residency between 2010-2016. Variables included number of IEs, and global career interests. Comparison to U.S. data utilized binomial proportion tests, and logistic regression characterized predictive relationships.

Results: Prevalence of IEs (34% overall) among general surgery residency applicants matched or exceeded that among all U.S. medical students. In 2013, 42% interviewees had IEs vs. 30% nationally (p<0.05). Interviewees with prior IEs were 10.3 times as likely to identify international career goals, and with each additional discussed IE, interviewees were 2.5 times as likely to plan a global career (p<0.05).

Conclusions: Disparities in worldwide medical care and physician distribution are being prioritized across disciplines, including among U.S. medical students. Despite this need and interest, surgical residencies provide limited international experiences. Among interviewees of a general surgery residency program, we demonstrate that prevalence of IEs meets or exceeds national data; these experiences strongly predict career aspirations.

Significance: U.S medical students, including those interviewing for surgical residency, endorse interest and prior participation in international experiences, which shape their career aspirations. Surgical programs should advocate for international participation among interested residents, and provide mentorship and resources for career planning and professional development in global surgery.
Inter-Professional Pre-Professional Education in Health and Rehabilitation in an International Context – The Benefits and Challenges
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It has long been recognized that effective healthcare delivery requires a team-based approach. This has led to the development of inter-professional education (IPE) programs for health professional students and practitioners. While many models of IPE delivery have been developed, most have had a focus on professional entry programs. Assuming that an early start on an IPE journey may help foster expectations of intentional collaboration in future study and practice, a study abroad program in the School of Health and Rehabilitation Sciences has been designed to provide an undergraduate pre-professional learning experience that aims to meet four core objectives: 1) to help students develop a foundational knowledge of the scope of practice of future colleagues, establishing mutual respect and trust, before professional bias and stereotypes develop; 2) to create an inter-disciplinary learning environment where students are exposed to successful and creative models of inter-professional practice; 3) to foster an appreciation of the impact of policy, cultural, economic and system influences on collaborative clinical practice; and 4) to develop cultural competency in health-related contexts.

Since 2007, over 250 students from four pre-professional undergraduate programs in the School of Health and Rehabilitation Sciences have participated in the SHRS in Ireland Study Abroad Program. All students have had plans for clinical and/or research careers in a range of disciplines including Audiology, Clinical Dietetics, Occupational Therapy, Physical Therapy, Physical Assistance, Speech and Language Pathology. Over fifteen clinical and education sites in Northern Ireland and southern Ireland provide instruction and observation opportunities serving as a basis for further collaborative multi-disciplinary learning and inter-disciplinary presentations and projects.

Student surveys and reports suggest that pre-professional IPE provides opportunities for increased understanding of the possibilities for collaborative practice within the rehabilitation sciences. Studying in an international context helps develop insights into political, social and resource influences on health and rehabilitation practice. Future inclusion of students from other health professions such as nursing, medicine, medical social work will expose them to the complex, long-term disability and rehabilitation issues faced by many of their future clients, and provide a unique opportunity for collaborative learning with their future rehabilitation colleagues.

This poster will address the benefits and challenges of developing and managing a pre-professional IPE program in an international context.
Global Surgery Interest Across Stages of Surgical Training
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Introduction: Despite growing recognition of disparities in global surgical care, opportunities for involvement in global surgery during surgical training lag behind other disciplines, and barriers remain. We sought to qualitatively describe the global surgery definitions, experiences, and motivations in a single academic surgical department, by talking to surgeons across stages of surgical training—medical students, residents, and attending surgeons.

Hypothesis: We expected motivations and challenges, related to global surgery, to differ by stage of surgical training, as a surgeon’s professional identity and career goals mature.

Methods: We developed a semi-structured interview instrument by consensus of authors, and piloted for clarity. The study took place within the University of Pittsburgh's Department of Surgery, General Surgery Residency Program, and School of Medicine. Participants included medical students, residents, and attending surgeons, who identified an interest in global health or global surgery. Sixteen interviews—with five medical students, five residents, and six attendings—were transcribed and coded using inductive methods. Emerging themes were identified by the research team, with ongoing data collection used to refine and revise these themes.

Results: Definitions of “global surgery” included both service to low-resource countries, as well as an international academic forum. Misconceptions were addressed. Experiences varied geographically, and participants emphasized sustainability. Motivation was multi-factorial, but encompassed a humanitarian component for 88%. Challenges included intrinsic factors (limited skills, ethical concerns) as well as external restrictions. Time away from professional responsibilities was particularly problematic, yet family concerns predominated for residents. Supportive mentors were helpful, as was early exposure to global contexts, with 50% of participants citing a prior residence outside the continental U.S. All called for incorporation of global surgery into surgical training structures.

Conclusions: While global surgery is emerging and variable, core values are consistent across stages of surgical training—recognizing worldwide disparities, and seeking to provide surgical care. Impetus is increasing among global-surgery advocates, to correct misconceptions, to create opportunities within surgical training, and to participate in global surgery in a collaborative and sustainable way.

Significance: Our qualitative description within a single academic surgical department is representative of most U.S. institutions—either without formalized global surgery initiatives, or early in development. We hope these findings will empower surgical educators to: 1. shape global surgery experiences within surgical training, and 2. identify challenges and strengths, unique to surgeons, in developing global institutional relationships.
Religion, Spirituality and Medicine: Impact of an Educational Intervention for Medical Students and Physicians
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Introduction: Training physicians in “the recognition and support of religious and spiritual (R/S) dimensions of illness” (i.e. R/S informed care) is the largest predictor of subsequent provision of R/S informed care to patients (Balboni, M.J. et al., 2013). We sought to evaluate the impact of an educational workshop for medical students and physicians that addressed the importance of attention to R/S in the healthcare setting and approaches to providing R/S informed care.

Hypothesis: We predicted that an educational workshop on R/S in medical care would improve medical students’ and physicians’ knowledge, skills, and attitudes regarding R/S informed care.

Methods: The two-hour workshop included information on evidence-based support for R/S informed care, approaches to and practice taking a spiritual history, and interactive discussion regarding perceived value of and barriers to providing R/S informed care. Participants were evaluated via subject-matched pre- and post-workshop surveys that assessed knowledge, skills, and attitudes pertaining to R/S care.

Results: Forty participants (63% female), were comprised of medical students (N=26), physicians (N=12), and other healthcare providers (N=2). Thirty-seven participants completed both surveys (90% response rate).

<table>
<thead>
<tr>
<th>Regarding R/S informed care</th>
<th>Pre-Workshop (n=40) n (%) ; mean Likert ± sd</th>
<th>Post-Workshop (n=37) n (%) ; mean Likert ± sd</th>
<th>Mean Increase</th>
</tr>
</thead>
<tbody>
<tr>
<td>Its provision is important</td>
<td>37 (93%); 4.2±1.1</td>
<td>36 (97%); 4.6±0.90</td>
<td>0.40</td>
</tr>
<tr>
<td>It should be provided by physicians</td>
<td>31 (78%); 3.1±1.0</td>
<td>35 (94%); 4.2±1.1</td>
<td>1.10</td>
</tr>
<tr>
<td>Feel comfortable providing it</td>
<td>30 (75%); 3.2±1.2</td>
<td>34 (92%); 3.9±1.0</td>
<td>0.73</td>
</tr>
<tr>
<td>Knowledge of available resources</td>
<td>19 (40%); 2.5±1.2</td>
<td>31 (84%); 3.4±1.0</td>
<td>0.92</td>
</tr>
</tbody>
</table>

When stratified by importance of R/S in one’s own life, there were no significant differences in mean change scores for any of the survey questions. Written comments from participants indicated a heightened awareness of the value of R/S informed care to patients, as well as practical ways to approach R/S care in clinical encounters.

Conclusions: This brief educational intervention positively impacted knowledge, skill and attitudes regarding R/S informed care among students and physicians and was equally effective regardless of how important R/S was in the participants’ own lives.

Significance: The results of this study will inform future curriculum-based approaches teaching medical students and physicians to address patients’ R/S as a component of effective medical care.

Research / Grant Support – University of Pittsburgh Year of Diversity (Dr. Dena Hofkosh)
A Multicenter Study of an Electrocardiogram Email Curriculum for Medicine Residents
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Introduction: The challenges of comprehensive medical education are growing. New approaches that account for this evolving landscape should utilize proven strategies of adult learning. We sought to evaluate the effectiveness of a spaced and test-enhanced email electrocardiogram (ECG) curriculum, called Beat Blasts, in first-year medicine residents.

Hypothesis: Exposure to a spaced and test-enhanced case-based email curriculum is expected to improve resident ECG interpretation.

Methods: A total of 129 first-year Internal Medicine and Medicine-Pediatric residents at three major academic university hospitals were randomized to either receive an ECG email curriculum or continue standard training. The curriculum involved ten ECG-based cases with an associated multiple-choice question, sent biweekly via email from June 2016 through December 2016. The case solution was sent immediately to responders and to all residents prior to the next case. Participants were asked to complete a pre- and post-test and survey to assess resident ECG interpretation and attitudes.

Results: A total of 83 residents completed the pre-test, 41 completed the post-test, and 34 (21 curricular, 13 control) completed both. Learning preferences were similar across the three institutions, the most popular being electronic question banks (81%). Time was the most commonly identified barrier to ECG learning (88%). Overall, residents’ ECG test scores significantly improved over the 6-month period regardless of group (p<0.01). The improvement in the ECG test score among participants in the curriculum group was not significantly greater than the control (p=0.82). However, the effect of the curriculum was found to vary significantly by the residents’ number of cardiology rotations (p=0.031). Improvement was highest for the curriculum group participants that had not yet experienced a cardiology rotation. This benefit disappeared after rotating in cardiology. On the post-test, 97% of residents who received the curriculum would recommend it to a fellow resident.

Conclusions: This novel curricular design is inexpensive, feasible and in line with learner preferences and the principles of adult learning. Beat Blasts may enhance resident ECG learning, particularly prior to a structured cardiology rotation.

Significance: Case-based, interactive email curriculums may provide an easy and effective means of enhancing resident education.

Research/Grant Support: UPMC Department of General Internal Medicine Award
How Does Pretesting for PubMed Knowledge Spark Student Learning?
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**Needs and objectives:** Pre-doctoral students enter dental school with varying skill levels for searching biomedical databases, and a tendency to overestimate their searching abilities. A pretest/intervention/post-test was developed for use in a PubMed instruction session to: help students recognize shortfalls in their searching abilities; spark learning during the instruction session; and elicit measurable improvement in searching skills.

**Setting and participants:** Pre-doctoral dental students (80) enrolled in an evidence-based dentistry course completed a pretest/intervention/post-test to assess PubMed knowledge and searching skill.

**Description:** In order to objectively self-assess genuine PubMed abilities, students completed a non-graded pretest (twelve knowledge questions; eight hands-on searching tasks). Pretesting was immediately followed by the intervention – a 90 minute lecture and hands-on PubMed training session. The expectation was that student motivation for learning PubMed skills during the intervention would increase, if the pretest objectively showed a difference between students’ self-perceived and their actual searching abilities. The session concluded with a graded (pass/fail) post-test to determine the efficacy of the instruction session for student learning.

**Evaluation:** Comparison of pre/post-test scores showed the fifteen percent increase in overall class average score was statistically significant using a two-tailed paired t-test: t(79), p<0.001; and 100 percent of students passed the post-test.

**Discussion:** These results suggest that a pretest/intervention/post-test approach enabled students to recognize shortfalls in their PubMed knowledge and searching skills, and sparked learning that was focused toward those specific deficiencies. Also, gains in post-test scores provided immediate gratification for both students and the instructor. However, long-term retention of skills was not ascertained. The described pretest/intervention/post-test method could be readily adapted for use in other health sciences courses that include a PubMed instruction component.
Improving Pediatric Residents’ Understanding of Transition Medicine
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Needs and Objectives: Residents at Children’s Hospital of Pittsburgh do not receive training about the transition from pediatric to adult healthcare for adolescent and young adults with special health care needs. Ninety percent of chronic conditions of childhood survive into adulthood. In 2002, guidelines for transition were published in a statement by the AAP, AAFP, and ACP. Based on this, “GotTransition” was developed, a resource with tools to assist providers. As pediatricians are expected to care for patients through early young adulthood, pediatricians must understand the transition process. In a study by Hess et al, residents had little knowledge of healthcare transition at baseline. In 2009, an AAP survey of pediatricians showed 34% lacked skills in transition planning. Our objective is to enhance residents’ knowledge and attitudes about transition and introduce them to skills and tools from “GotTransition.”

Setting/Participants: We created a curriculum for residents rotating through adolescent medicine. This setting was chosen for the patient population and the opportunity to utilize curriculum content in our transition clinic. Information about educational needs was sought from the pediatric chief residents and a sample of pediatric and medicine-pediatric residents during development. The curriculum was piloted with three second-year residents and their feedback was incorporated into the final design.

Description: The curriculum is a 90-minute workshop, consisting of a lecture, an activity utilizing patient scenarios and tools from “GotTransition”, and role-playing to practice shared decision-making. The lecture includes background on transition, the consensus statement’s recommendations, the “Six Core Elements of Healthcare Transition” from “GotTransition”, and adolescent development.

Evaluation: Before and after the pilot, learners completed surveys testing knowledge and attitudes about transition. The pilot group demonstrated increased knowledge and comfort after the workshop. Changes were made to the curriculum and survey after feedback. The final version will be implemented with residents rotating through adolescent medicine and evaluated immediately pre and post with surveys measuring changes in knowledge and attitudes. Another survey, given at three months post-curriculum, will test retention and whether skills were utilized.

Discussion: Our pilot curriculum was successful in improving knowledge and attitudes about transition. Since our workshop format is brief and delivered during an adolescent medicine rotation, a pediatric residency requirement, this is generalizable to other programs. While some content included skill-building, we had no feasible way to evaluate skills objectively. Moving forward, we will ask questions for qualitative data on skills in the three-months’ post survey.
Development of the Test2Learn™ Educational Platform to Teach Precision Medicine

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Needs and Objectives: Delivery of precision medicine through pharmacogenomics is a critical competency of today’s health-care professional. Using real genetic data through personal genomic testing (PGT) and/or anonymous datasets is a proven method for teaching clinical genetics in the classroom but requires ethical concerns to be appropriately managed. We developed an education model (Test2Learn™) using expert content and a custom web application that enables a direct connection to data and structured educational activities within a responsible framework.

Setting and Participants: The program was implemented using live didactic content, recorded videos, and through a custom web application built with the Python web development framework: Django. Participants (n=773) included practicing physicians, pharmacists, bio-engineering students, pharmacy students, and medical students.

Description: Test2Learn provides a solution to the need to increase the fidelity of education using real data and ethical concerns associated with using these data in the classroom. The program was built to require instructors to be blind as to what students opted to undergo PGT and presented learners with ethical instruction before PGT was offered. Students were given the option to undergo PGT through 23andMe. The Test2Learn web-application links with 23andMe through an application-program interface over which learners have control. The web application also allowed for aggregation of PGT data with learners’ permission. All aggregated data is de-identified and cannot be linked to the contributor. Instruction was provided in a mixed lecture and active learning setting. Activities within the web-application provide static content with dynamic responses based on real genetic data.

Evaluation: This educational program enabled learners from diverse backgrounds to reach high level pharmacogenomics learning competencies. Objective learning measurements of learner performance on course assessments improved. It also sparked lasting engagement and interest in genomics based on continued return to the web-application following the conclusion of the course exercises.

Discussion/Reflection/Lessons Learned: Teaching of pharmacogenomics concepts was successful using a short lecture and hands-on activities in diverse learner groups and multiple curricula. Overall, students were able to successfully complete an active learning activity following lecture utilizing real genetic data, regardless of background. This represents an innovative method of instruction that has utility in road ranges of students in the health sciences and engineering disciplines.

Online Resource URL: www.test2learn.org

**Changing Science, Changing Society: Teaching Emerging Science and Social Medicine to Medical Students**

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**Needs and objectives:** Biomedical knowledge is evolving at an ever-increasing pace. The environments where our graduates will practice are also changing, in response to society’s needs and fiscal and policy influences. Optimal medical care must take fully into account the social determinants that influence health, illness and well-being, and the most up-to-date scientific knowledge.

**Setting:** This novel senior elective course, Changing Science, Changing Society (CSCS), presented these subjects in a highly integrated manner, at an opportune point in students’ development.

**Description:** CSCS integrated recent advances in basic and translational science, and social determinants of health (SDH), with a focus on concepts and technologies that are rapidly evolving since the time when these students began medical school. Unlike traditional courses that present basic science and SDH in separate silos, CSCS presented topics from multiple perspectives, all within a single unit of instruction. Examples: 1. Unit on vaccine development combined scientific breakthroughs with ethical challenges on vaccine refusal. 2. Hepatitis C - pharmacology of new drugs plus cost of and access to expensive treatments. Topic were presented from multiple perspectives, combining the scientific advances with the relevant ethical, legal, social and fiscal issues. Topics included genetic testing; genome editing; pain and addiction; regenerative medicine; tissue engineering; microbiome; and SDH advocacy at the patient, community and population levels. Students’ Capstone Projects on Advocacy in SDH and Health Policy were based on the current legislative agenda. The course culminated in students’ meetings with legislators and staffers in Washington, DC.

**Evaluation:** The initial 34 students reported that the course contained an appropriate balance of important scientific, economic and behavioral concepts of clinical relevance. They saw the relevance and value of this content both at this point in their career, and to their future practice. They acquired a more sophisticated understanding of SDH (94% rated high/considerable). Students also reported increases in their perceived importance of SDH in the care and health of individual patients and populations. Faculty observed students having an increased appreciation for the importance of incorporating SDH into practice.

**Discussion/Reflection/Lessons Learned:** Students’ experiences advocating on Capitol Hill and in preparing op-ed articles were highly valuable and motivating. Overall, this course successfully demonstrated how basic/translational science and SDH are not mutually exclusive and can be relevant and exciting for senior medical students. CSCS has demonstrated how this significant content can be effectively added to medical student curricula.
High Intensity Operationally-Relevant Simulation Training (HOST)
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Needs & Objectives: Simulation training is primarily used to bridge classroom learning with real world application, but limited to the design of a simulation center. In the Emergency Department (ED), there are constant distractions and interruptions, multiple patient needs, communication barriers, and EHR interfaces that are not typically included in simulation training scenarios. The objective of this program was to create a simulation scenario within the ED, allowing the trainee to experience operationally relevant interfaces specific to their place of work and to acquire skills beyond the scope of a traditional simulation laboratory.

Curricular Design & Description: High-intensity Operationally-relevant Simulation Training (HOST) sessions are coordinated within the ED, comprised of one facilitator (an EM physician), one nurse, general ancillary staff, and a medical actor. The trainee is presented with three simultaneous simulated patients created within the Cerner-based FirstNet application. Two patients are virtual simulations managed by the facilitator while the third patient is a medically trained actor. The trainee is expected to manage all three cases efficiently while prioritizing critical actions until finalizing all three disposition plans. A trained nurse interrupts the trainee with varying degrees of updates. The resident is expected to communicate effectively as a measure of teamwork and interdisciplinary patient care. All orders completed in the EHR to evaluate efficiency and accuracy. At the end of the session, the trainee documents a full note in the EHR for formal review. Evaluation and feedback components include: general knowledge, patient care, interdisciplinary communication, documentation, efficiency, and multitasking abilities.

Evaluation & Discussion: Simulation is an invaluable tool for residency training, but limited by artificial settings. The trainees enthusiastically review HOST as an exceptional advancement in education, bringing interdisciplinary elements and bedside realism to simulation training. It introduces more clinical relevance and teaches beyond knowledge-based testing. We have not been able to fully immerse the simulation with three full actors for each case due to limited resources. However, with adequate time commitment, this program is applicable in any Emergency Department setting with almost any level of trainee.
The Longitudinal Alliance Project: A Four-Year Patient/Student Relationship
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Needs/ Objectives: Healthcare in the United States has historically developed from the perspectives and needs of healthcare deliverers. We think as doctors, as healthcare administrators, and as healthcare providers. Weaknesses within our current system are less visible from that traditional, privileged perspective. In contrast, our system’s weaknesses are dramatically visible from the patient’s point of view. A physician only needs to become a patient herself to suddenly see the frustrations, problems and gaps which were invisible before. We believe that the healthcare leaders of tomorrow will need to see the system from the inside out: from the patient’s perspective. To accomplish health care reform, the new medical leaders will need to think and approach problems from the patient’s point of view. The Longitudinal Alliance Project aims to accomplish this by allying students with patients; it represents a radical restructuring of the student experience of the healthcare system, and brings a fresh perspective to every level of medical knowledge.

Setting/ participants: In the fall of 2013, we started with a small pilot group of ten students, and in the successive three years, we have expanded to groups of 20-40 students per year, divided into small groups of approximately eight. At the end of AY2016-17, the Longitudinal Alliance included a total of approximately 100 students across the entire medical school. In addition to medical students, the Longitudinal Alliance Project has included 14 faculty members from many different clinical departments, inter-professional guest speakers from nursing, case management, dentistry, nutrition, clinical pharmacy, physical therapy, leaders of patient advocacy groups and the birth circle, as well as over a hundred patients and their families.

Description: Charged by our Dean Arthur Levine, over the past four years the University of Pittsburgh School of Medicine has developed an ambitious project to connect each medical student with an individual patient throughout their medical education: The Longitudinal Alliance Project. We will present the Longitudinal Alliance program, logistics, curriculum and outcomes as observed throughout the initial four years of this longitudinal four-year co-curricular experience.

Evaluation: We will present student reflections on their experience with the Longitudinal Alliance Project after one year and also upon graduation.

Discussion/ Reflection: The Longitudinal Alliance Project functions as a mirror of our Longitudinal Scholarly Research Project, both of which are sustained throughout the students’ four-year medical education, and which form the two pillars of strength in medical education: dedication to scholarship and patient care.
Pediatric Resident Perception of a New Educational Curriculum During Night Float Rotation
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Introduction: In response to ACGME work-duty hour restrictions, many residency programs have implemented night float systems. This can have negative effects on resident education, including decreased attendance at educational conferences.¹ Some residency programs have instituted new, structured learning opportunities during non-standard hours to address such gaps in education, with reported success in internal medicine and surgical programs.²,³ The purpose of this study is to implement and measure the perception of a new educational curriculum for pediatric resident physicians on the night float rotation.

Hypothesis: Pediatric residents find a new night float educational curriculum beneficial to their training.

Methods: A new pediatric night float educational conference was implemented during the 2016-2017 academic year at Children’s Hospital of Pittsburgh of UPMC. Prior to this, there was no formalized educational experience for the residents rotating on nights. The weekly conference is a 30-minute session led by an attending hospitalist pediatrician. The curriculum seeks to increase residents’ confidence in caring for patients autonomously overnight by building their ability to triage multiple tasks, recognize urgent clinical scenarios, and broaden differential diagnoses. Nine months after implementation, resident physicians completed a survey to measure their perception of the educational value of the conference. Responses were measured using the Likert scale.

Results: Forty-eight surveys were completed. The response rate was 43%. Of the total responders, 49% were first-year residents. A total of 93% of responders agreed that the evening conference was beneficial. Eighty percent of responders agreed it allowed them to broaden their differential, 78% agreed it prepared them to recognize “cannot miss” situations, 89% agreed it helped them address problems that commonly arise overnight, and 82% agreed it improved their confidence to autonomously care for patients overnight.

Conclusions: Night float rotations are a common way to maintain hospital coverage while complying with ACGME work-duty hour restrictions. However, this system can be problematic in providing adequate resident education. Pediatric residents found a new, formal evening curriculum overall beneficial to their training.

Significance: This evening conference during non-standard hours will be continued during the new academic year. Next steps include expanding the curriculum and standardizing the content. This type of educational experience could be implemented in other pediatric residency programs to benefit resident training.

Research/Grant Support: This protocol was self-financed by the authors. We did obtain support of the University of Pittsburgh, which provided the platform to develop and send the survey.
Know What You Know (KWYK) Testing in Residents
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Background and objectives: In 2015 our team developed a testing format that uses multiple choice questions on any topic and provides a report to the test taker of performance in terms of accuracy and also other measures related to how the test taker manages uncertainty. We call the testing approach “Know What You Know” (KWYK). In addition to the accuracy on the material, routine KWYK testing reports an estimate of confidence and also a measure of the ability of a user to capture the correct answer in their guess pool.

In this project the KWYK test was implemented among resident trainees in the Pediatric Department at Children's Hospital of Pittsburgh. The main objectives of this study are 1) To explore the KWYK metrics in a new specialty and level of training, 2) To examine the variability of the KWYK test metrics among residents in the Pediatrics Department and the relationships between KWYK metrics and other existing measures of trainee confidence.

Hypothesis: That early stage resident trainees will have KWYK metrics similar to third- and fourth- year medical students and that later stage trainees will have KWYK metrics that deviate in a direction consistent with ideal match of confidence and accuracy.

Methods: Twenty multiple-choice questions were developed from retired pediatrics exams and deployed in KWYK test format. Tests were (will be) provided to PGY1, (PGY2 and PGY3) residents. KWYK results were evaluated and compared to historical performance trends in third-0 and fourth- year clerks.

Results: 1) In comparison to medical students in the family medicine clerkship, there was less variability in the PGY1 KWYK test metrics, 2) The PGY1 trainees manifest a confidence that is closer to their level of accuracy than M3/M4 students (p < 0.05).

Conclusion: To date, our experience indicates that this system is feasible to integrate in the normal course of resident training. The balance of accuracy vs. confidence moves toward an ideal value of 1 in the PGY1 group in a statistically significant manner in comparison to the M3/M4 trainees.

Significance: We look forward to having further information about KWYK metrics in PGY2 and PGY3 trainees along with information about how KWYK metrics correlate with independent measures of trainee confidence at the time of the conference. We anticipate the KWYK metrics may provide useful feedback to trainees and educators that will help to optimize their training and ultimate performance.
Health Policy Education in Medical School: A Survey Assessment of University of Pittsburgh School of Medicine (UPSOM) Medical Students
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Introduction: Recent health policy reforms have re-shaped the landscape in which physicians will practice. While medical educators recognize that trainees need basic knowledge of health policy issues, there is no clear consensus on what, when, or how to teach these topics. The objective of this 2016 survey is to assess UPSOM medical student interest in, and attitudes toward health policy topics and education.

Hypothesis: Medical students at UPSOM will believe that an understanding of health policy is important to the practice of medicine, and be willing to commit additional curricular hours to study specific health policy topics.

Methods: A 27-item multiple choice and free text survey was e-mailed to all UPSOM medical students, including students on research years/leave of absence (n = 655). The survey was fielded from July-October 2016. Data was analyzed via Qualtrics and Stata.

Results: 328 of 655 medical students (50%) responded to the survey. 71% of all students felt that understanding health policy was somewhat or extremely important to the practice of medicine. 72% of students come to medical school with only a poor or fair understanding of the U.S. health care system. The majority of students get health policy information from the news (83%) and their medical schools (63%). Health policy (46%), health disparities (44%), and medical economics (38%) were ranked as the most important topics for medical students to learn about at some point in their training. Nearly 75% of students across all four years were willing to spend additional curriculum hours learning about these topics. The majority of students (42%) preferred elective coursework, followed by required coursework (23%). 29% were willing to spend an additional 16-25 additional hours over four years learning about these topics.

Conclusions: Medical schools have an important role to play in health policy education. While students believe health policy is important to the practice of medicine, their knowledge is subjectively limited. Student free-text written comments regarding the health policy curriculum at UPSOM emphasized the importance of teaching health policy during the preclinical years, to give students a working foundation of core topics.

Significance: This survey provides useful data for medical schools seeking to expand their health policy curriculum. Specifically, it shows that most medical students value health policy education, and look to medical schools to provide information on health policy topics. The survey provides information on the types of topics student value most. Additionally, it quantifies how many curricular hours students are willing to spend learning about these topics, and how they would prefer that instruction to take place.

Research support: Partial support provided by NIH grant number UL1-TR-001857.
Orthopaedic Surgery Interest Groups: A Model for Incorporating Musculoskeletal Education into the Medical School Curriculum

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Needs & Objectives: Musculoskeletal complaints account for 12-20% of visits to primary care providers.1,3 However, as of 2010, only 83% of U.S. medical schools had required instruction in musculoskeletal medicine with a disparate amount of time, approximately 3% of all teaching hours, devoted to the diagnosis and management of musculoskeletal disease.1-3 The aim of this project is to provide opportunities outside the traditional medical curriculum to expose all medical students to musculoskeletal medicine.

Setting & Participants: The faculty and residents of the Department of Orthopaedic Surgery donated their time and resources to implement this program. An additional obstacle in realizing this program was funding. In this regard, the interest group at our institution has developed an outreach model to establish an endowment fund via alumni who are interested in supporting medical student experiences in musculoskeletal medicine.

Description: Literature on educational strategies in musculoskeletal medicine identify that small group learning is integral to student success and that that simply “shadowing” is insufficient to master the extremely “hands-on” musculoskeletal exam.2 As such, our program focused on small group, hands-on learning. Lunch hour lectures featuring orthopaedic faculty were given to build foundational knowledge regarding common musculoskeletal complaints and strove to give clinical context to musculoskeletal anatomy and pathophysiology garnered during the traditional basic science curriculum. Small group workshops on suturing, casting/splinting, and reading x-rays were offered. Opportunities to apply this foundational knowledge and skill set were made available through two clinical experience settings: evening call with orthopaedic residents in the emergency room, and staffing local high school football games as the sideline medical team. These lower volume and stress settings fostered an environment in which students could take a larger role in patient care and get hands-on experience performing a musculoskeletal exam.

Evaluation: Surveys indicate that students had positive experiences during clinical experiences (average rating 8.5 on a scale of 0 to 10) and that their interest in pursuing orthopaedics as a career was maintained or increased in all respondents. A limitation of this project is that we cannot formally quantify how this program affected the acquisition of cognitive knowledge of musculoskeletal conditions.

Discussion: Through this project, a successful funding and student engagement model was developed. This model could be used by other student interest groups with the aim of supplementing an over-burdened undergraduate medical curriculum with knowledge that every aspiring physician should have (i.e. dermatologic and ophthalmologic conditions).
Practice makes perfect: Optimizing students' geriatrics assessment skills
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Introduction: Active engagement and immediate application of new skills promote effective adult learning. Our objective was to rapidly equip 195 health professions students with geriatric assessment skills and provide opportunities for immediate application of those skills during a week-long interprofessional geriatrics course.

Hypothesis: A geriatrics assessment skills fair followed by health fairs with older adults in the community will provide health professions students with basic proficiency in geriatric assessment and opportunities to immediately apply new skills.

Methods: University of Pittsburgh third-year medical, nurse practitioner, physical therapy, pharmacy, and communication sciences students attended twelve of eighteen possible skills stations at a geriatric assessment skills fair. They then paired up to perform assessments selected by older participants in health fairs at nine community-based independent and assisted living facilities. Students recorded their findings and interpreted whether the participant was “at risk” for the health outcome associated with each assessment. Participants retained a copy of the form for their physicians. Using MEAN and FREQ procedures (SAS), we measured frequency of assessments performed and frequency of errors or failures to determine risk.

Results: 195 students performed 1,038 geriatrics assessments (mean 5.3/student) for 209 participants (mean age 86). Participants underwent a mean of 5 assessments each. The most common assessments performed were orthostatic blood pressure (157), cognition (146), pain (90), gait (87), depression (85), and sleep quality (82). Least common were grief (n=10), advanced directive (25), and oral health (28). 37% of assessments resulted in a positive screen for a geriatric condition. Errors in assessment or failure to determine risk occurred at an overall rate of 11% (0.56 errors/student). The assessments associated with the highest error rate were: orthostatic blood pressure (27%), FRAX calculation (21%), depression screening (18%), and gait assessment (13%). Errors were least frequent among grief, medication adherence, and oral health assessments (all <1%).

Conclusions: Health professions students rapidly developed basic proficiency in geriatric assessment by learning and practicing assessments in a skills fair, then immediately applying them at health fairs. Errors were more common with some assessments, which may require a different instructional approach or more direct supervision during early application of the skill. This curriculum provided for positive interactions between health professions students in different disciplines as well as between health professions students and older adults in the community.

Significance: This curriculum provides an interactive, practical, and efficient means of facilitating health professions students’ learning of basic geriatric assessment skills.

Support: University of Pittsburgh School of Medicine, Health Resources and Services Administration (HRSA) Geriatric Workforce Education Program (Rollin Wright), HRSA Geriatric Academic Career Award (Rollin Wright).
Improving University of Pittsburgh School of Medicine 3rd- and 4th-Year Medical Students' Understanding and Detection of Affective Biases in Clinical Decision-Making

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Background: Medical errors resulting from cognitive biases are known to be a major source of morbidity and mortality worldwide. Cognitive debiasing has become an increasingly popular topic in medical education literature, yet very few studies exist which assess the success of debiasing interventions in undergraduate medicine. Affective bias is one type of cognitive bias that has been especially understudied, yet is known to impact clinicians’ decision making.

Hypothesis: Informing University of Pittsburgh School of Medicine’s (UPSOM) 3rd and 4th year medical students (MS3, MS4) about clinical decision-making models and cognitive biases will improve their ability to identify affective biases in written and video cases versus control classmates.

Methods: Sixteen control and nine experimental subjects were recruited from UPSOM’s 3rd and 4th year classes. Experimental subjects watched an eleven-minute video detailing the Dual Process Theory of cognition and subtypes of affective biases (environment, patient, internal); controls received no intervention. Both groups were asked to define some basic terms related to the Dual Process Theory and identify affective biases present in three clinical vignettes. Definitions were scored based on concordance with definitions presented in the video; biases were scored against a “master list” generated by study authors.

Results: Significantly more experimental subjects correctly defined the cognitive theory terms: System 1, System 2, subtypes of affective bias. Experimental subjects also identified significantly more environment-type and patient-type affective biases across the three clinical vignettes. Only around half or fewer participants, however, could accurately define affective bias or identify internal-type biases, and there was no difference between groups for these measures.

Conclusions: UPSOM MS3/4 participants show knowledge gaps regarding cognitive biases, including affective bias. Promisingly, however, an educational video increased identification for two out of three affective bias subtypes and knowledge about certain medical decision-making concepts.

Significance: This study serves as a foundation for a multitude of new directions, including evaluating the effect of a more longitudinal curriculum and developing new and more interactive educational interventions to help combat biases in medical undergraduates’ clinical decision-making.

Research support: personal funds
HOCUS POCUS—Piloting a Hands-On Curriculum Using Simulation for Point-of-Care Ultrasound to Reduce NICU Radiation Exposure and Procedure Duration
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Introduction: NICU procedures commonly involve blind device insertion to a depth estimated by weight, length, or landmarks. A location x-ray is obtained; adjustments are made; follow-up x-rays are completed. Overall, this x-ray dependent practice causes prolonged procedure times, decreased productivity, longer interruptions of optimal bedside care, and repeated radiation exposures. Advancement in ultrasound resolution, portability, and ease has made incorporating it into the NICU setting an attractive option. Recent literature looks at Point-of-Care Ultrasound (POCUS) as procedural and real-time care adjuncts in neonates. However, existing literature describes use by experienced ultrasound practitioners. There are no studies examining POCUS curricula targeted toward NICU providers.

Hypothesis: We hypothesize that (1) NICU providers can be taught the knowledge and skills to use POCUS via this innovative curriculum and (2) implementing NICU POCUS will decrease radiation exposure and procedure duration for central line placement.

Methods: Pilot group of five Children’s Hospital of Pittsburgh proceduralists. Curriculum on fundamentals and vascular access consisted of a three-hour didactic and simulation workshop supplemented with one-on-one hands-on drills where learners scanned neonates with central lines and same-day x-rays (learner and instructor both blinded) for catheter location. Ultrasounds and x-rays were compared for accuracy. Knowledge was evaluated by pre/post-test and analyzed by Wilcoxon signed-rank. Satisfaction was assessed by five-point Likert scales. Data for lines placed with and without ultrasound were collected via logs with chart review verification and analyzed by t-test.

Results: Knowledge scores increased 66.7% (p<0.05). Satisfaction across all categories had mean Likert scores of 4.8. 75.5% (n=49) of ultrasound and x-ray results matched with most common failure reason of inability to visualize upper extremity (UE) catheter. Lower extremity (LE) and umbilical line accuracy was 82.4% (n=34) and UE was 60% (n=15). User accuracy improved between drills from 45.8% to 100%. X-rays decreased 2.23 to 1.5 (ns). Procedure time decreased 52.4 to 41.4 minutes (ns).

Conclusions: NICU providers can be taught POCUS via this curriculum. POCUS may reduce procedure duration and radiation exposure for central line placement, but UE line visualization is challenging. Patient outcomes were not statistically significant, which may be due to small sample size. Next step is to recruit and randomize larger cohort.

Significance: While previous studies have looked at POCUS in hands of an experienced provider, this is the first to examine its use by NICU clinicians. In addition, drill data may provide useful baseline for determining competency criteria.
Gender and Self-concept in the General Surgery Trainee: Behaviors and Perceptions that Shape Professional Identity in the Nascent Surgeon
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Introduction: Surgery is evolving to accept increasing diversity into a traditionally male-dominated field. Much remains to be understood with regard to how gender shapes behaviors within training and consequently affects career advancement prospects.

Hypothesis: Surgical culture has been noted as a ‘gender specific deterrent,’ to success within the field and we propose that this may contribute to the diminished self-concept observed in female trainees, primary through preventing the development of the necessary non-technical skills.

Methods: UPMC general surgery residents participated in a qualitative mixed-methods study employing survey and interview techniques. Transcribed interviews were then coded for recurring content using inductive methods, i.e., without an a priori framework. Coded data were evaluated for emerging themes. Data and inter-rater reliability were analyzed using Fisher's exact tests and Cohen's Kappa respectively.

Results: 18 female and 24 male residents participated (87.5%). 11.1% of females ‘always’ felt comfortable referring to themselves as ‘surgeon’ relative to 37.5% of males (p<0.0001). 33/42 residents described patient disregard of female residents’ professional credentials versus 5/42 describing similar events for male residents (p<0.0001). Ten women and two men reported physician disregard for their professional credentials (p<0.0001). Females experienced hostility and sexual harassment more frequently than males (72% versus 25%, p<0.0001 and 56% versus 13%, p<0.0001 respectively). 8 women versus 4 men described feeling discomfort (44% versus 17%, p=0.0001). 5 females and 2 males described feeling pressured to participate in unprofessional behaviors (28% versus 8%, p=0.0001). 56% of women versus 29% of men had received negative evaluations regarding confidence/assertive behaviors (p=0.0002). Eight female but no male residents felt there was a lack of mentorship (p<0.0001). Ten women and Five men experienced task interference resulting from events described in the interviews (56% versus 21%, p<0.0001). 24 residents reported females experience professional hardship versus 6 residents describing similar experiences for male residents (p=0.0001). Interviews coded by two individuals yielded Cohen’s Kappa coefficient ranging from (0.63-0.83), with an average value of 0.75.

Conclusion: Implicit bias present in academic surgery programs manifests in the form of gender-discrepant events and variation in the interpretation of these events, which can be disruptive to the healthy maturation of the female surgical resident.

Significance: Achieving surgical competence (i.e. technical, non-technical, and interpersonal skills) is inherently based on residents’ self-concept and their ability to self-identify as surgeons. Exploring how discrete events contribute to trainee self-image and confidence will contend with issues attributed to surgical ethos and initiate change.

Support: None.
The Effectiveness of an Operating Room Etiquette Video on Medical Student Comfort in the Gynecologic Operating Room
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Introduction: Medical students spend a large portion of their obstetric and gynecology rotation in the operating room (OR), yet the majority have never stepped foot into an OR prior to their third-year clerkships. Students are appropriately apprehensive regarding how to behave and have identified emotions of anxiety and fear as barriers to learning in such a high-stress environment. Through a needs assessment, we identified a deficit in appropriate OR orientation, and made a ten-minute video reviewing topics such as proper attire, scrubbing technique, gowning and gloving, patient positioning, and skin preparation. Through introducing this video into the clerkship, we aim to assess if improved orientation affects medical students' comfort and self-rated performance in the OR.

Hypothesis: We hypothesize that medical students with access to the video will feel more comfortable and competent in the gynecologic OR.

Methods: Third- and fourth-year medical students participating in the OBGYN clerkship at Magee-Womens Hospital were recruited during orientation. Participants completed a pre-test survey on their first day and a posttest survey after their final exam. All students watched the video once during orientation and were provided the link and an identification number to access the video online. Students were provided with a set of gloves and gown to use for practice. After each OR day, subjects were asked to complete a brief self-assessment on comfort with specific tasks.

Results: We recruited 71 students participating in the OBGYN clerkship at Magee. Most students accessed the video one or zero times during the rotation. Students were divided into those with no prior surgical rotation experience and those with prior experience. Preliminary data shows that students with no prior experience found great value in this video compared to students who already had previous surgical experience. Final statistical analysis is pending completion of one more block of recruitment.

Conclusions: Preliminary data suggests that most students, regardless of prior OR experience, reported improved comfort and self-reported competence in the gynecologic OR by having access to the instructional video.

Significance: As medical students enter the gynecologic OR for the first time, this video can be implemented as part of the clerkship curriculum and broadened for use in other surgical clerkships at the University of Pittsburgh and at other institutions.

Research Support: The Clinical and Translational Science Institute at the University of Pittsburgh is supported by the National Institutes of Health Clinical and Translational Science Award program.
A Pilot Mock Interview Program Improves Medical Student Preparedness for Surgical Residency Interviews
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Introduction: The interview is a critical component of the residency application, though most medical students have no prior experience and feel inadequately prepared. We examined the impact of a pilot mock interview program on self-perceived preparedness.

Methods: Fourth-year medical students applying to surgical specialties participated: General Surgery (n=5), Other (n=6). Students reported their perceived preparedness before and after three mock interviews with faculty and residents. Survey questions were answered on a 5-point Likert scale. A focus group followed to discuss strengths and areas of improvement of the program. Students completed a final survey after the residency interview season to reevaluate the mock interview program.

Results: All students (n=11) perceived the interview as critical for their residency application (median=5, range: 4-5, 5=Very Important), however 73% (n=8) reported little to no prior experience with professional interviews. Prior to the pilot, students reported a neutral level of comfort (median=3, range: 2-4, 1=Very Uncomfortable, 5=Very Comfortable), and subsequently reported being comfortable to very comfortable following the pilot (median=4, range: 3.5-4.5, p<0.001). Overall feedback from the focus group was positive and identified requests for improved realism and potential challenging scenarios. Following live residency interviews, eleven (100%) participants agreed that a structured program was advantageous to their performance.

Conclusions: A structured pilot mock interview program improved perceived preparedness for surgical residency interviews and was well-received by medical students. Future efforts should expand this beneficial program for all students participating in the residency match in all specialties.

Table 1: Post-Interview Season Assessment of Mock Interviews

<table>
<thead>
<tr>
<th>Perceived Comfort Entering Interview Season</th>
<th>Post-Live Interviews*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mock Interviews Prepared Well for Interview Season</td>
<td>4.4 (4-5)</td>
</tr>
<tr>
<td>Mock Interviews Were Similar to Real Interviews</td>
<td>3.5 (1-4)</td>
</tr>
<tr>
<td>Encountered Surprises during my Real Interviews</td>
<td>3.5 (2-5)</td>
</tr>
<tr>
<td>Recommend Mock Interviews to Future Applicants</td>
<td>5 (5)</td>
</tr>
</tbody>
</table>

*Reported as mean (range) on Likert scale 1-5 (1=Strongly Disagree; 5=Strongly Agree)
A Novel Collaborative Multidisciplinary Approach in Radiology Residency Education: Our Early Experience
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Introduction: There is a growing body of scientific evidence that limited contact between radiologists and referring physicians hinders best patient care. There is increasing effort to get the radiologist out of the “dark room” into a more visible role in patient care. Most ongoing efforts to achieve this focus on radiologist participation in hospital committees, reaching out to referring physician in a consultant manner and inviting referring physicians to the reading room to review studies. Our approach goes further by getting radiology residents to participate in daily patient rounds in “image-heavy” critical care units.

Hypothesis: Radiology participation in multidisciplinary rounds will improve collaboration with the referring physician and patient outcomes.

Methods: Diagnostic Radiology (DR) residents in the third year of their training completed a two-week rotation split between the trauma and neuro intensive care units during which they participated in daily patient rounds. The two units were selected due to “image-heavy” nature of the units. Third year DR residents, primed for the national American College of Radiology core examination, were selected due to their expansive fund of knowledge in cross-sectional imaging across all modalities. Surveys were given to the Critical Care Medicine (CCM) residents/fellows and DR residents.

Results: Twelve DR residents have completed the rotation so far. All DR residents (12/12) believe that they contributed to the team in a unique way, have better understanding of the clinician’s perspective with regards to imaging studies and learned from the CCM team. CCM residents/fellows believe that DR residents were a great addition to the team as they provided immediate interpretation on imaging studies, recommended appropriate imaging studies and provided education on basic interpretative skills.

Conclusions: Participation of DR residents in multidisciplinary rounds benefits both the CCM and DR trainees. Most importantly, it has the potential for positive impact on patient care by eliminating delays in interpreting images and recommending appropriate imaging studies. It also lays the ground work for more collaborative interaction between radiologists and referring physicians.

Significance: This novel educational approach in DR residency has the potential to reduce unnecessary imaging tests, reduce cost in the long run and create a more collaborative work environment.

Research/Grant Support: – Department of Radiology, UPMC.
Myers-Briggs (MBTI) Personality Types and Effective Learning Strategies in Medical School
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Introduction: The rapid transition to medical school can be difficult because of the high volume of information to be learned within the relative time constraints. It is widely accepted that different strategies work for different students but students struggle using trial and error to adapt their learning strategies and only find what works for them after much of the first year has already gone by. Our aim is to help first year students who are struggling to adjust academically to medical school by facilitating their understanding of their learning style sooner in the academic year. Myers-Briggs Type Indicator (MBTI) is a personality type framework developed by Katharine Cook Briggs and Isabel Briggs Myers–to explain differences in how individuals prefer to (i) take in new information and (ii) make decisions (see Table 1). Within medical education, MBTI can be used to understand the variation in successful learning strategies for students based on their type preferences. Students with similar MBTI types are likely to experience similar challenges and it is possible that students use strategies that are incompatible with their intrinsic MBTI, which can lead to difficulties transitioning to medical school.

Methods: In this project, we plan to survey medical students who have completed their first year regarding what strategies that they have found success with as well as strategies that were not helpful to them. Further, we will plan to collect information about specific components of the strategies that were helpful, such as spaced repetition, use of colorful aides, etc. Following our data collection phase, we will coordinate sessions where students in groups with similar types can discuss their experiences with each other and provide feedback for the compilation of effective learning strategies for their MBTI type for incoming first year students. Such sessions could continue throughout the first year and beyond as a space to discuss challenges and strategies for academic adaptation.

<table>
<thead>
<tr>
<th>Table 1: Preferences by Category</th>
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<tbody>
<tr>
<td>Gathering Information</td>
</tr>
<tr>
<td>Sensing (S): facts and details</td>
</tr>
<tr>
<td>iNtuition (N): patterns and possibilities</td>
</tr>
<tr>
<td>Decision Making</td>
</tr>
<tr>
<td>Thinking (T): logic and analysis</td>
</tr>
<tr>
<td>Feeling (F): personal values and priorities</td>
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</table>

Discussion: As explained by psychologist and educator Donna Dunning, “everyone uses Sensing, iNtuition, Thinking, and Feeling when learning, but learning is usually easier and less tiring when we can focus primarily on our preferred approach” [1]. Ultimately, our assessment of MBTI types and the ways they shape learning strategies can culminate in positive changes for medical education.

The Bedside Swap: Assessing Medical Students Response to Perspective-Taking for “Difficult Patients” on the Wards
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Objectives: There are an increasing number of studies showing the benefits of narration within medical education. Perspective-taking is a cognitive skill defined as “an understanding of other people’s mental states” and has been studied as a way to teach empathy. This approach can be most helpful during encounters with so-called “difficult patients” by allowing the trainee to see the world through the patient’s eyes. This exercise assessed medical students’ response to perspective-taking as a substitute for a history and physical exam on an identified “difficult patient”.

Setting and participants: Exercises were completed by a group of medical students in their University of Pittsburgh School of Medicine (UPSOM) Internal Medicine Clerkship course. The exercise was reviewed by the Internal Medicine Clerkship Director and the UPSOM Curriculum Committee. IRB approval was obtained. “Difficult patients” were student-identified after a broad definition was provided.

Description: The following prompt was provided to the students: “Please write a first-person account from the patient’s perspective of their medical experience.” This narrative was substituted for a traditionally written history and physical exam (H&P) and was mandatory. After completing the exercise, students participated in a workshop lead by one of the authors and completed a Likert survey assessing their response.

Evaluation: Twenty-three students participated in the exercise. Selected quotes from the perspective-taking exercise included: “I only see my doctors a few times a day for a few minutes, otherwise I’m just waiting for the next thing they’re going to do to me” and “I look down, I’m in a hospital gone, with the back open, naked…there is no dignity or privacy in this place”. The average response on a 1-5 Likert scale (1=strongly disagree, 5=strongly agree) for the statement, “I found this exercise helpful to better understand the challenges my patient faces” was 4.26 ± 0.75. The average response was 4.26 ± 0.81 for the statement, “I feel more empathetic toward my patients after this exercise”.

Discussion: Overall, medical students had positive responses to the narrative exercise. Majority of medical students identified the exercise as a way to evoke empathy and self-reflect on interactions with “difficult patients”. Perspective-taking in medical school education may play a positive role in professional development, patient care, and physician well being.
Impact of Women's Health Residency Tracks on Clinical Practice
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Introduction: Internal medicine residencies have established women’s health tracks (WHT) for those interested in developing a gender focus to their careers. There has been little assessment of the impact of these tracks on career outcomes.

Hypothesis: Graduates of WHTs are more likely to focus their clinical practice on gender-specific care for women.

Methods: We conducted a multi-institutional survey of internal medicine WHT graduates starting in 2000 of the University of Pittsburgh, University of Alabama, and Northwestern University. We paired each WHT graduate with a non-women’s health track (NWHT) graduate from the same program. The survey assessed respondents’ clinical practice and incorporation of gender specific care. Descriptive statistics and statistical comparisons were performed using Fisher’s exact test and Wilcoxon rank-sum test.

Results: Of the 216 graduates surveyed, 133 responded (61.6%). While our data did not meet statistical significance, there were differences between WHT and NWHT graduates. WHT graduates were more likely to report being in primary care (40.9% vs 32.3%). Among those in primary care, 48.2% of WHT graduates reported a focus on women’s health compared to 30.0% of NWHT graduates. WHT graduates were more likely to report treating menopause (85.2% vs 70%) and eating disorders (63% vs 40%) and to address contraception (88.9% vs 80%) and preconception counseling (85.2% vs 70%). Additionally, 22.2% of WHT graduates reported inserting sub-dermal contraceptives and 14.8% reported placing intrauterine devices as part of their practice. None of the NWHT graduates reported performing these procedures. Among those in subspecialties, 20.5% of WHT graduates reported that a women’s health focus to their practice compared to 9.5% of NWHT graduates. Subspecialty WHT graduates were more likely to report treating a women’s health specific condition, such as fertility concerns, pregnancy issues, and counseling regarding contraception and teratogenic medications (73.7% vs 57.1%).

Conclusions: The domain of the primary care providers from the WHTs is substantially broader than that of the NWHT. Subspecialty graduates of WHT are more likely to incorporate women’s health.

Significance: WHTs improve the care of female patients by creating clinicians who incorporate gender specific care.

Grant Support: Division of General Internal Medicine Grant (PI: Amy Farkas, MD)
Taking Two Steps Back: An Innovative Online Curriculum in Clinical Reasoning
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Need and Objective: There are few resources with which to teach clinical reasoning efficiently and effectively to a large group of trainees. We aimed to develop and implement an interactive online curriculum for internal medicine residents that teaches the language, theory, principles, and process of medical decision making.

Setting and Participants: University of Pittsburgh Medical Center, October 2016 to May 2017. All internal medicine residents from PGY1-PGY4 including categorical, medicine-pediatrics, transitional and preliminary year trainees were included.

Description: After extensive review of the literature and expert consultation, eleven interactive modules were created using the online platform DecisionSim.™ Modules are multimedia with video-discussant, interactive patient videos, text, multiple choice and short-answer questions, and accommodate branching logic. Topics covered include: diagnostic error; intuitive and analytical reasoning; definition and development of key clinical findings, problem representation, illness scripts, summary statements; heuristics; and cognitive biases. Modules 7-11 are dedicated to a “diagnostic checklist,” which teaches a systematic process to think through medical decision making in the clinical setting. Residents were granted access to modules 1-6 in October 2016 and given instructions for completion within two months as part of a program expectation. Modules 7-11 were distributed in May 2017.

Evaluation: As of March 2017, 199/199 (100%) residents had completed module 1 and 154/199 (77%) residents had completed module 6. Average completion time for modules 1-6 was two hours. Written feedback was received from approximately 80% of learners, the majority of which were positive: “Modules were well organized,” “Great intermixing of video, questions, and didactic throughout,” “Helped me to better understand the biases,” and, “Thank you for emphasizing the importance of thinking about our thinking.” Ways to improve the modules included increasing the number of clinical cases, adding summary documents that could be accessed in paper format, and adding a progress bar. Some found the content regarding the language and psychology of clinical reasoning to be too basic.

Discussion and Lessons Learned: Implementation of a clinical reasoning curriculum has been successfully received in our residency program. Anecdotally, faculty perceive better assessments, increased clinical reasoning terminology and discussion of bias by housestaff during clinical encounters. Given the ubiquitous nature of clinical reasoning, these modules can easily be extrapolated to other specialties and domains of medicine. Moving forward, investigation of the embedded module questions is needed to evaluate the curriculum as hard outcomes regarding the effectiveness of our curriculum on clinical care will be difficult to pursue.
Implementation and Evaluation of a Web-Based Critical Care Curriculum Using a Mixed Media Approach
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2University of Pittsburgh Medical Center, Department of Critical Care Medicine, Pittsburgh, PA

Introduction: Web-based teaching is widely used in medical education; however there is a paucity of literature comparing different online learning modalities. Such comparisons may inform educators of more effective online teaching methods to facilitate their effective and widespread use.

Hypothesis: We hypothesized that a web-based, mixed media curriculum would be effective in teaching evidence-based Critical Care concepts to Internal Medicine and Critical Care trainees. We further hypothesized that our different content delivery methods would have different rates of use amongst learners.

Methods: In this before/after observational study, we developed an online educational course teaching common evidence based medicine in intensive care that consisted of five modules containing video lectures, audio lectures and text based teaching for each module. Access to the course was given to Internal Medicine residents and first-year Critical Care Medicine fellows after completion of a survey of baseline characteristics, with participation being voluntary. Content delivery was through a commercially available online learning management system, which also allowed tracking of content delivery preferences for each learner. A single group pre/post-test design was used to assess knowledge changes.

Results: Out of 55 trainees invited to participate in this curriculum, 36 (65%) completed the pre-course assessment and 20 (36%) completed the entire curriculum. Mean test scores (max score of 10) were 5.40 and 7.15 for the pre-curriculum and post-curriculum tests respectively (p<0.001) For preferences regarding content delivery, users accessed and used 86.9% of available text based resources, 53.9% of available video resources and only 9.5% of available audio resources.

Conclusions: Delivery of a multi-media curriculum using an online platform improved test performance of evidence based concepts in Critical Care. Learners seemed to prefer text and video based media to media that was audio-based.

Significance: Our findings support the feasibility of using an online curriculum for delivering content to learners which incorporates multiple media format choices. It also demonstrates the value of a computerized learning management system for collecting complex outcomes such as online learner activity to measure preferences/attitudes for designing future educational interventions.
Instrumentation of interclass reliability in surgical skills evaluation
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Introduction: While surgical technical training curricula exist within the realm of post-graduate training, most do not include proficiency metrics. Setting milestones and training toward proficiency is the next era of surgical education and these metrics have not been fully established, but one measure that is becoming increasingly utilized is review of video performance. One principal hurdle to this approach is the time commitment on the part of expert surgeons to review and grade training videos. Crowdsourcing methodology has been previously described and deemed a quicker and valid substitute for expert review; therefore, crowdsourcing may be a viable methodology toward developing and accessing technical skill metrics in medical education.

Hypothesis: We hypothesized that an unbiased process in selecting a dependable cohort to perform crowdsourcing for surgical skills assessment from a pool of applicants can be established.

Methods: Surgical training drills were created for a pancreaticojejunostomy, hepaticojejunostomy, and gastrojejunostomy anastomoses. Drills had previously been graded by two expert hepatobiliary surgeons using time, error counts, and the Objective Structured Assessment of Technical Skills (OSATS) which has been previously validated for technical skill scoring. OSATS scores are based on a Likert Scale of 5 (5=best) in five domains plus a summary domain. A one-hour information session was held for all prospective graders where the grading criteria were reviewed and video examples of variation in skill were described. Then, three examples from each anastomosis were given. Reliability testing using Cronbach alpha coefficient and interclass correlation were used in the analysis.

Results: Twenty items were included in the analysis: seventeen crowd viewers and three previously tested expert reviewers were tested for reliability. Using results from all six OSATS domains on the nine test videos, 9 members (53%) have been proven to have high reliability with interclass correlation average measure of 0.98 (95% C.I 0.956, 0.995), P<0.0001. Three members (18%) have medium reliability and five individuals (29%) have low reliability compared to the gold standard. The recommendation was made to include high reliability individuals, exclude low reliability individuals, and to train the medium reliability individuals.

Conclusion: Statistical methodology can be a of great resource for establishing suitable crowdsource graders to evaluate surgical techniques using OSATS.

Significance: This methodology can be utilized to make video review of technical proficiency scalable assuring adequate skill acquisition during surgical training.

Research / Grant Support: Intuitive Surgical Industry Sponsored Education Grant for Hepatobiliary Robotic Surgery (PI: Melissa Hogg and Herb Zeh).
Know What You Know Testing and Feedback

Authors: Maier R\textsuperscript{1}, Maier J\textsuperscript{1}, Ounis H\textsuperscript{2}
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\textsuperscript{2}University of Pittsburgh School of Medicine, Pittsburgh, PA

\textbf{Background and objectives:} In 2015 our team developed a testing format that uses multiple choice questions on any topic and provides a report to the test taker of performance in terms of accuracy and also other measures related to how the test taker manages uncertainty. We call the testing approach “Know What You Know” (KWYK) testing and have been using it as an augmentation to the Family Medicine clerkship for the last two years. In addition to the accuracy on the material, routine KWYK testing reports an estimate of confidence and also a measure of the ability of a user to capture the correct answer in their guess pool. We have seen evidence that the KWYK metrics carry information that may be predictive of poor outcomes in independent aspects of student assessment in clerkships.

In this project we evaluate two years of experience with KWYK testing and feedback approach with a focus on changing a subset of the questions on a consistent set of nationally defined knowledge body and training cases.

\textbf{Hypothesis:} That KWYK metrics observed in third- and fourth- year clerks will display a similar range of variability when questions are changed, but the subject matter and testing method remain the same.

\textbf{Methods:} Of the 110 questions that span forty learning cases our team re-wrote ninety questions and deployed them as part of the weekly quiz. A subset of twenty questions were maintained to serve as a control.

\textbf{Results:} We observed a distinct change in the overall accuracy of the students on some of the questions consistent with a change in the level of difficulty of new questions in comparison to the old. In spite of this change in difficulty, there still appears to be a significant amount of variance in the other parameters we measure (estimated confidence, capture accuracy and capture efficiency).

\textbf{Conclusion:} We are encouraged by the continued stability of the KWYK metrics in actual use and now have the opportunity to explore how level of difficulty contributes to the other measures we generate.

\textbf{Significance:} The KWYK test provides a potential way to identify learners who might struggle during training. To the degree we can explore and validate these additional measures available through KWYK we can add additional information that will help educators and learners achieve their goals.
Development and Evaluation of a Hybrid Wheelchair Training Program for Wheelchair Providers in Less-Resourced settings: A Pilot Study in India, Mexico, and Colombia.
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¹School of Health and Rehabilitation Sciences, University of Pittsburgh, Pittsburgh, PA, USA.

Introduction: Wheelchair users in low and middle-income countries are at a high risk of developing secondary health conditions and premature death because they do not have access to appropriate wheelchair provision by trained wheelchair service providers. The International Society of Wheelchair Professionals (ISWP) developed a blended or Hybrid course that combines online and in-person training to increase the numbers of trained wheelchair service providers. The course is based on the World Health Organization Wheelchair Service Training Program - Basic Level (WSTP-B) which is a five-day in-person course that focuses on building trainees skills and knowledge in providing wheelchair to users who do not require postural support devices. ISWP’s Hybrid Training Course leverages online modules designed for low-bandwidth internet access that reduce the in-person exposure to three days, making costs lower and more convenient for both trainees and trainers.

Hypothesis: We hypothesized that the Hybrid Training Course will be an effective method to increase knowledge in basic level wheelchair delivery with overall high levels of student’s satisfaction.

Methods: A quasi-experimental approach was used to evaluate the effectiveness of the Hybrid Training Course taken by trainees in India, Mexico, and Colombia by measuring pre/post knowledge using a validated online test and a satisfaction survey. India and Mexico had a control group where the traditional WSTP-B 5-day in-person course was facilitated.

Results: A total of 97 participants were trained. Eight participants (8.25%) were excluded due to the incomplete baseline assessments. Data from 89 participants was analyzed, 50 (58.10%) from the hybrid training and 39 (41.90%) from the in-person training. In each group, the difference within participants in their pre-and post-test scores was significant, with an average increase in the score of 15.4±8.1 and 11±6.9 in the in-person and hybrid group, respectively. There were no significant differences between the groups. The average hybrid satisfaction score was 3.57 (0=strongly dissatisfied to 4=strongly satisfied).

Conclusions: Hybrid participants reported a significant increase in wheelchair knowledge and high levels of satisfaction. Further research is needed to compare costs of the trainings and the impact on wheelchair service professionals.

Significance: Rehabilitation professionals who work with people with mobility impairments in low and middle-income countries can benefit from this training approach which could help reduce disparities in secondary health conditions due to improper wheelchair provision.

Grant Support: This publication was produced by ISWP and University of Pittsburgh sub-award number APC-GM-0068, and CONACYT Graduate Student Fellowship.
Impact of an Institution-Wide Mentoring Program on a Single-Class Cohort of Pediatric Residents
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Needs and Objectives: There is a relative paucity of literature regarding mentoring for pediatric residents. The BRIDGES Individualized Mentoring Program at the Pediatric Residency Program of Children’s Hospital of Pittsburgh of UPMC, initiated in 2013, formally matches and supports resident-faculty mentor dyads. We aimed to describe the impact of our formal, institution-wide mentoring program on a single-class cohort of pediatric residents.

Setting and participants: Our pediatric residency program is ACGME-accredited and situated within a tertiary-care, free-standing pediatric hospital. The program typically matches 36 residents per year in categorical pediatrics and combined training programs (neurology-pediatrics, internal medicine-pediatrics, and pediatrics-psychiatry). The selected class cohort consisted of 36 total residents, 30 of which were categorical, who participated in the BRIDGES mentoring program for all three years of their residency (2014-2017).

Description: The program surveys all residents annually about their experience in BRIDGES. We administered an additional survey to the selected class cohort in their third year to assess perceptions of mentor assistance in specific domains. All survey data was de-identified and we used descriptive statistics.

Evaluation: The survey response rate for categorical residents each of the three years was ≥ 90%. The response rate for the additional survey sent in the 3rd year of residency was 57% (17/30). Among residents who responded, most wished to stay with their assigned mentors throughout training (80% in year 1, 69% in year 2). Among responders, mentorship in the domain of career planning was indicated as “very important” by >60% of residents throughout training. While > 50% of responders indicated that mentorship for scholarly work was “very important” during the first two years of residency, only 29% of respondents to our additional survey perceived having some degree of active assistance from their BRIDGES mentor in this domain. Most respondents in the final year of residency perceived having some to a good deal of active assistance from their BRIDGES mentor related to career planning (82%) & wellness planning (88%).

Discussion: Formal mentor-mentee matching can be a successful strategy to initiate 1:1 mentor relationships. Formal mentoring programs should consider tailoring mentoring needs to year of training, as mentoring needs change throughout residency.
Integration of Virtual Electronic Health Record Technology into a Core Therapeutics Course for Pharm.D. Students
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Needs and objectives: With the rapid adoption of electronic health record (EHR) technology across the continuum of patient care, student pharmacists are expected to efficiently evaluate patient data in the context of medical therapy. This information must then be evaluated to identify drug-related problems and determine appropriate therapeutic recommendations, while demonstrating appropriate attitudes of ownership and confidence. Therefore, a need exists to effectively integrate virtual EHR technology into the Pharm.D. Curriculum to better prepare student pharmacists for these challenges.

Setting and participants: We implemented the use of a virtual EHR into a required cardiovascular therapeutics module within the Pharm.D. Curriculum. This technology was used in a class size of 115 students and integrated into existing learning activities (problem-based learning and human patient simulation) which encompassed several cardiovascular disease states.

Description: Groups of five to six students were given access to the patient’s virtual EHR in advance of the patient encounter, which afforded them the opportunity to collect relevant data and identify medication-related problems. After the encounter, each group then documented a pharmacist note within the virtual EHR. Each group of students participated in both the intervention and control groups for different disease states. The control group had the same patient encounter, but did not have access to the virtual EHR. Our research evaluated pharmacotherapy knowledge/clinical decision-making skills by the instructors, whereas attitudes of ownership, communication, and satisfaction with learning were self-assessed by students using pre- and post-surveys.

Evaluation: Integration of the virtual EHR decreased the amount of time students needed to provide the most appropriate therapeutic recommendations for patients by 25% compared to the control group. The median time difference was approximately three minutes saved for a typical ten minute patient encounter. Survey feedback showed a high degree of satisfaction in using this technology, with 100% of students indicating that use of the virtual EHR was valuable to their learning.

Discussion/Reflection/Lessons Learned: Our experience with the virtual EHR demonstrated value in the efficiency of learning while providing students with an engaging and interactive means of practicing essential pharmacist functions in a simulated setting. The virtual EHR complements human patient simulation by integrating a workflow that aligns with realistic patient encounters. Students showed an overall faster time to appropriate pharmacotherapy decision-making, while allowing more time for instructor feedback and de-briefing. The innovation of our findings led to the expansion of the virtual EHR platform throughout multiple courses in the Pharm.D. Curriculum.
Introduction: Exam room presentations (ERPs) in resident continuity clinic (RCC) have the potential to meet several current needs in medical education: increasing direct observation, improving patient satisfaction, and promoting patient centered care. At our institution, the majority of faculty do not utilize ERPs in RCC. We aimed to assess the feasibility, barriers, and advantages/disadvantages of ERPs as a precepting model in Internal Medicine RCC by examining faculty and resident perceptions through survey and qualitative data.

Hypothesis: Difficulties with time, reviewing the chart, writing an attestation, and preserving learner autonomy would be consistently identified barriers. With regards to the qualitative component, we expect this to be hypothesis generating.

Methods: Internal Medicine faculty and categorical residents were invited to participate in this study. ERPs were defined as the initial case presentation and discussion in the exam room with both the patient and attending physician present. Faculty completed a survey rating ten barriers to ERPs as: not a barrier, somewhat of a barrier, or a significant barrier. Faculty then attended a one-hour ERP workshop and were encouraged to pilot 1-2 ERPs/half day of RCC over one month. After the pilot period, faculty completed the same survey and participated in semi-structured phone interviews. Residents participated in one-hour focus groups.

Results: The response rate for the pre and post-surveys were 74% (26/35) and 71% (24/34), respectively. Chi-square and Fisher’s exact test were used to compare pre- and post-survey data.

The most frequent pre-survey barriers (barriers rated somewhat of or a significant barrier) included learner discomfort, time, and reviewing the chart at 96%, 92%, and 81%, respectively. Comparatively, on the post-survey 65% (p=0.03), 80% (p=0.55), and 60% (p=0.21) identified learner discomfort, time, and reviewing the chart, respectively, as barriers. On the post-survey, time was the most frequently identified barrier; however, over half rated patient discomfort, attending discomfort, writing an attestation, and comfort with bedside teaching as not barriers.

Conclusions: Faculty consistently identified time as a barrier, while learner discomfort was significantly less frequently perceived as a barrier after the pilot.

Significance: ERPs could play a significant role in medical education; however, barriers must be addressed prior to routine use. Qualitative data, which is currently being analyzed, will be used to generate a set of best practices to maximize the educational value while mitigating barriers of ERPs.

Support: University of Pittsburgh DGIM; The Thomas H. Nimick, Jr. Competitive Research Fund (Shadyside Foundation)
Teaching, Learning, and Professional Development: Using Social Media in Medicine

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Objectives: The volume of medical information is large and growing, whereas the time that students and practitioners have to process it is finite. The demands of residency and clinical practice hamper physicians from studying the way they did as students. Social media can help busy medical practitioners with life-long learning by pushing content into the interstices of their days—clinical pearls while waiting for their coffee, an article review on the bus, an interesting image before bed.

Setting/Participants: We will use dedicated accounts on Twitter, Facebook, Instagram, and Tumblr accounts run in cooperation with department staff to disseminate medical education curricula. The primary population of interest is Internal Medicine and Pediatrics trainees at UPMC, with attending-level physicians encouraged to participate.

Description: This project is a joint effort between two teams. One team (Ehrenberger) will operate a Facebook- and Tumblr-based platform to publish short-form clinical pearls, disease descriptions, and links to online resources. The published vignettes are designed to appeal to the spectrum of learners from first-year medical students on Mondays to attendings on Sundays. The other team (McQuade and Simonson) will operate Twitter- and Instagram-based accounts to disseminate journal articles on Mondays, EKG or radiology images on Wednesdays, and Resident Report of Clinical Reasoning cases on Fridays.

Evaluation: The study will begin in Fall 2017 with an initial survey of Internal Medicine residents at UPMC of their social media and study habits; perceptions of the trustworthiness of medical information on these platforms will be elicited. We also plan to examine the characteristics of both high-engagement users as well as posts that stimulate the most engagement (likes, shares, retweets, comments). Posting will launch after online and in-person interest has been generated. Another survey will take place after six months. Additional interviews will be conducted with individuals who rapidly and newly adopt social media use to help characterize the social media user-phenotype.

Discussion: Free and Open Access Medical Education (FOAM, #FOAMed) has been challenging traditional print media since 2012. Unlike traditional methods of disseminating scientific and medical knowledge, FOAM relies upon post-publication peer review. The project authors will be participating in this process as they generate content, and they expect their social media followers will do the same via commenting and sharing. Evaluating reception is notoriously difficult, so we will approach it both quantitatively (likes, shares) and qualitatively (survey responses, content-analysis of comments).

Support: Amar Kohli and Brian Primack mentor this Leadership and Discovery (LEAD) Project.
Resident Attitudes and Compliance Towards Robotic Surgical Training
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**Background:** Surgical innovation has recently led to the expanded adoption of the robotic platform in general surgery. As attendings adopt robotics, general surgery residents (GSR) are often excluded from cases. Mandatory requirements exist for laparoscopic skills for GSRs; however, there is not a robotic equivalent. This study sought to perform a needs assessment for a robotic curriculum based on future practice patterns of residents and determine practical adherence to a non-mandatory structured robotic curriculum.

**Methods:** During the 2014-2015 academic year, a survey was administered to all GSRs addressing future practice and robotic experience. A non-mandatory robotic curriculum utilizing mastery-based simulation was available for residents to train. Compliance was assessed. Two years following implementation during the 2016-2017 academic year, the same survey was re-administered. Barriers to completing the curriculum were identified by GSR.

**Results:** The 2014 survey was completed by 45/48 (93.8%) GSR and by 49/49 (100%) in 2016. Demographics between 2014 and 2016 were similar for future academic practice (71.1% vs 73.5%; p=0.401) and fellowship training (73.3 vs 79.6; p=0.414) respectively. Between 2014 and 2016, interest in improving robotic skills remained high (97.8% vs 95.9%, p=0.608), and the majority of residents planned to incorporate robotic surgery into their future practices (2014=77.8% vs 2016=69.4%; p=0.358). During the 2-year time period, 11 residents (20.1%) voluntarily completed the robotics curriculum while an additional 20 (37.7%) residents started but did not complete. Simulators are available at 6/8 (75%) hospitals where GSR rotate. Average time to complete curriculum was 5.1 (SD 2.4) hours. Experience with robotic simulation (17.8% to 38.8%, p=0.025) and box trainer increased (20.0% to 40.8%, p=0.029) during this time period. A trend toward increase in case participation was seen (60.0% to 77.6%, p=0.066). The perceived barriers to completion of the curriculum were lack of access to a simulator (46.7%) and length of time required to complete (40%).

**Conclusions:** Availability of a structured robotic curriculum increases exposure of residents; however, despite high interest and plans to incorporate robotics into practice, few GSR complete a non-mandatory curriculum. A structured non-mandatory curriculum is insufficient to expedite the learning curve of surgical trainees to the robotic platform.

**Significance:** Proficiency-based testing for robotic skills akin to the Fundamentals of Laparoscopic Surgery and Fundamentals of Endoscopic Surgery will likely become an integral part of surgical education. Mechanisms to engage trainees, boost motivation while providing protected time away from clinical responsibilities, experienced mentors, and dedicated staff will facilitate the training of the next generation of robotic surgeons.

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Pediatric Hospital Medicine Podcast Series  
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Needs and objectives: In October 2016 the American Board of Medical Specialties approved Pediatric Hospital Medicine (PHM) as a subspecialty of pediatrics. Unlike at UPMC Children’s Hospital, approximately 50% of pediatric hospitalists work in community hospital settings without access to experts in PHM and subspecialists. My goal was to create a teaching tool to expose practitioners worldwide to the depth of knowledge our institution can share. The aim was for this tool to fit into the busy schedule of physicians, take advantage of technology to reach a wider audience and supplement the didactic curriculum of the upcoming fellowship at UPMC. To achieve these goals, I created a podcast reviewing the core competencies in pediatric hospital medicine.  

Setting and participants: Thanks to technological advancement, only a few items are needed to create a podcast. Recording occurs in my office with a Blue® microphone and I plan to use Skype® to record remote participants. Audacity® was selected for editing audio files as it is the highest rated free app. Libsyn® was selected as the hosting site because it places podcasts directly onto Itunes® and other sites. The University of Pittsburgh provides free CME credit to listeners who answer five questions I create reviewing the material. The goal is to release a new episode every 4-6 weeks.  

Description: Since October 2016, I have released five 1-1.25 hour podcasts each reviewing a PHM core competency with an expert guest. Podcast content includes extensive literature review, diagnosis/management overview and expert opinion. To date, there are over 5000 downloads in 45 countries (87% of downloads are in the US).  

Evaluation: The positive response and widespread audience proves that this portable and convenient tool is an excellent way to keep pediatric hospitalists up to date on the current literature in our growing field and earn CME credits. To my knowledge, this is the first podcast of its kind and has allowed UPMC to expand our reach and be seen as a worldwide authority in the field.  

Discussion/Reflections/Lessons Learned: Examining the download pattern and feedback has allowed me to identify the most popular episodes to help guide topic selection and format design of future episodes.  

Support: Children’s Hospital of Pittsburgh of UPMC, Department of Pediatrics – Diagnostic Referral Services, and The University of Pittsburgh
Differences in Mindset Between Teacher and Learner in the Operating Room
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Introduction: The operating room (OR) is a unique educational environment, with unique interactions between teacher and learner. In intelligence theory, Carol Dweck defined a “fixed” mindset where “your qualities are carved in stone,” and a “growth” mindset in which “your basic qualities are things you can cultivate through your efforts.” We sought to qualitatively describe the educational exchanges in the OR, including the mindset of the attending surgeon and resident. Hypothesis: We suspected that the predominating mindset among residents might differ from that among attending surgeons, regarding a resident’s operative performance.

Methods: Separate semi-structured interviews were conducted with residents and attendings after laparoscopic cholecystectomy, and transcribed. Both groups answered questions regarding: the resident’s operative roles and decisions, the attending’s roles and guidance, and effects of the teacher-learner relationship. Statements indicating “fixed” or “growth” mindset, about the resident’s ability, were coded based on Dweck’s definitions. Groups were compared with Fisher’s exact tests.

Results: Thirty interviews were completed, after fifteen cases. Mindset-reflective statements were made in 93% of interviews. Surgical residents often made “fixed”-mindset statements (47%, vs. 53% “growth”-mindset), while attendings predominantly displayed a “growth” mindset (88% vs 13% “fixed”-mindset, p<0.05). In fact, the two interviews containing “fixed” statements by attendings, also contained “growth”-mindset statements about the same resident and operation. Residents made statements like, “my skill set was not such that I could progress through the case,” and, “it was a technical issue.” Attendings demonstrated “growth” mindset with descriptions like, “intraoperative decision-making is a skill that is in development at [this resident’s] PGY-stage,” and “I'm more likely to let her struggle, especially because she takes instruction well.”

Conclusions: The teacher-learner relationship is the foundation of surgical education—but the mindset of each participant, about the resident’s ability, may not correspond. Among pediatricians, “fixed” and “growth” mindsets distributed similarly between residents and attendings. Our findings, on the other hand, demonstrate a discrepancy in the OR.

Significance: Learners with “fixed” mindsets are more likely to react destructively to setbacks, but targeted educational interventions have demonstrated ability to promote a healthier “growth” mindset. Such interventions warrant study among surgical trainees, as they may have long-lasting beneficial effects.
Implementing the Trauma Evaluation and Management (TEAM) Course in Kenya

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Needs and Objectives: Trauma is a leading cause of death worldwide and > 90% of injury-related deaths occur in low-and-middle-income countries (LMICs), including Kenya. Trauma skills courses have been modified for low-resource environments in sub-Saharan Africa. Outcomes include knowledge and skills acquisition, as well as improved patient mortality. These courses have primarily been administered to surgeons, surgical residents, medical officers (MOs, initial general practice after medical school), and non-physician providers. Provision of this essential curriculum to undergraduate medical students in LMICs has been infrequently reported.

Setting and Participants: The Trauma Evaluation and Management (TEAM) course adapts the concepts of trauma assessment for medical students in their clinical years, and includes lecture presentations, video demonstrations, case scenarios, and skills sessions. Materials were donated by the American College of Surgeons (ACS) and regional surgical training sites, for implementation at the Egerton University Medical School in Kenya. The course was taught over two days in January 2017, by an interdisciplinary and multi-institutional team of surgical and radiology faculty and residents. Sixty-one undergraduate medical students in their final (6th) year attended. Adaptations for low-resource practice included: didactic emphasis on history and physical, inclusion of alternatives during skills sessions, and demonstration of point-of-care ultrasound.

Evaluation and Results: Formative assessment was integrated into small groups, and formal summative assessment included pre- and post-test evaluations. Pre- and post-tests were developed by course instructors, with differences evaluated using paired t-tests. Written feedback on the course itself was requested on a voluntary basis. 84% of students improved from pre- to post-testing. Mean pre-test score was 57% (range 25-85) and mean post-test score was 72% (range 45-95), demonstrating significant improvement (p<0.001). Narrative feedback on the course was positive, from both students and faculty.

Discussion: Implementing the TEAM course in Kenya was successful, as measured by knowledge acquisition. The course presents principles of trauma, which are otherwise not systematically covered, and which are valuable for students’ general practice as MOs. The experience strengthened institutional partnerships among faculty. Future work could include interval post-course surveys during MO-practice, to determine skill and knowledge maintenance and utility. We demonstrated the course’s effectiveness and feasibility, which will hopefully translate to future educational initiatives for the students and faculty of this and other medical schools in LMICs.

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