NEGEA 2019 ANNUAL CONFERENCE

Abstracts

PRE-CONFERENCE WORKSHOP

Writing Effective Titles and Abstracts: Making Your Scholarship Stand Out
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AAMC

Publishing your work in a peer-reviewed journal helps disseminate important findings and ideas to a wide audience. For trainees, publications strengthen residency, fellowship, and job applications. For faculty, they are key criteria for promotion and tenure decisions. Yet most journals receive large numbers of submissions and have low acceptance rates. At the same time, there are many publications competing for attention. What can you do to make your work stand out to editors and readers?

This interactive session will include an overview of the peer-review and publication processes as well as common reasons for rejection. We will discuss strategies for writing effective titles and abstracts for all types of scholarly publications (e.g., journal articles, conference submissions, reports, etc.) and share published examples from Academic Medicine to illustrate these strategies. Participants will engage in a number of writing exercises to apply what they have learned. The session facilitators and small groups will provide feedback on what participants have written.

Learning Objectives: After participating in this session, participants should be able to:
1. Understand the peer-review process and common reasons for rejection;
2. Identify the right article type and publication for their work; and
3. Craft a strong title and abstract that accurately represent their work.

ORAL ABSTRACT PRESENTATIONS

Oral Abstract Presentation 1

A New Metric to Identify and Target Variation in Resident Engagement in Patient Safety Event Reporting
E. Sonnenberg, S. Adusumalli, J. Berns, C. Salva, E. Valentine, J. Ziemba,
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Objective or purpose of innovation
We sought to measure resident engagement in patient safety event reporting across graduate medical education (GME) programs and to promote individualized program improvements.

Background and/or theoretical framework and importance of the field
Patient safety is a critical mission of the interprofessional clinical learning environment. Event reporting is influenced by education, local practice, peer attitudes, and faculty support of safety culture, which varies by residency program.

Design
We developed a metric, the Patient Safety Event Reporting Index (PSERI), which is the proportion of trainees from an individual residency program that submitted at least one safety event report during the academic year (PSERI=number of

trainees who submitted an event/total number of trainees in that program during one academic year).

The prior academic years PSERI for interns was distributed to each GME program as a baseline. If the PSERI fell below 0.50, programs were encouraged to consider the contributing factors and solicit input from their residents. These programs were also asked to introduce the concept of safety culture and examples of events that should be reported. Programs with a mid-range or high PSERI were encouraged to focus on facilitating feedback and communication around event reports.

Outcomes
We found wide variability in trainee engagement in safety event reporting across GME programs with PSERIs ranging from 0.0-1.0. The median PSERI in the academic year prior to our intervention was 0.44 [IQR: 0.17, 0.67] and the median PSERI in the academic year of our intervention was 0.59 [IQR: 0.33, 0.75].

Innovation's strengths and limitations
The PSERI is a reliable and reproducible metric that can easily track progress in patient safety engagement and culture. However, the metric may underestimate engagement since it does not count anonymous reporters.

Feasibility and generalizability
To be applied, the institutions event reporting system must capture the reporters name. We focused on interns, but the PSERI can be used for trainees at other stages or faculty.

References
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Oral Abstract Presentation 2

A Standardized Curriculum Employing Mixed Small Groups Improves Resident Preparedness for Quality Improvement Initiatives

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Objective or purpose of innovation
To inculcate a culture of safety and to equip anesthesiology residents with quality improvement and patient safety (QI/PS) skills using a standardized curriculum including experiential learning.

Background and/or theoretical framework and importance of the field
The Accreditation Council on Graduate Medical Education (ACGME) requires that all residents learn about QI/PS principles and participate in QI initiatives. Given the staff resources and non-clinical time required for QI involvement, it is difficult for large teaching programs to comply with this mandate.

Design
Since 2015, anesthesiology residents at the University of Pennsylvania have participated in hands-on QI as a part of mixed-class small groups; approximately 80 residents per year are divided into four groups. Residents propose projects and participate in the Penn Performance Improvement in Action methodology, a local framework for process improvement including flipped-classroom micro-learnings, didactics, facilitated small groups, and rapid-cycle QI initiatives. Each year, learners are surveyed anonymously to measure knowledge gained, comfort with QI methodology and comfort with future roles in QI endeavors.

Outcomes
The small group QI approach has been widely accepted by residents and faculty. Approximately 25% of the 12 completed group projects resulted in sustained changes in clinical care processes. In the first year of the program, 12/25 (48%) of responding residents said that they were capable or somewhat capable of leading a QI project. In the 2017-18 year, 21/21 (100%) of responding residents said that they were capable or somewhat capable of leading a QI project.

Innovation's strengths and limitations
Structuring experiential resident QI learning in cross-class small groups while delivering a standardized curriculum enabled completion of larger scale, multidisciplinary projects. However, self-reported resident competency may overestimate ability to lead future QI/PS initiatives.

Feasibility and generalizability
This innovation is feasible and relevant to all residency work environments. Working in small groups facilitated the completion of larger-scaled projects than could be accomplished on an individual basis.

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Oral Abstract Presentation 3

Development of a tool for faculty to assess resident-led large group teaching
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Research Statement/Research Question
Can we develop a tool for faculty to assess resident-led large group teaching using robust methodology which has good internal consistency and inter-rater reliability?

Background and relevance of the study
Residency programs are required to develop residents as teachers. Much of the formal teaching by residents occurs in group settings; the existing published tools did not collect validity evidence for assessment of resident-led large group teaching. We aim to create a tool for faculty to assess resident teaching in this setting.

Design and Methods
Initial tool content came from literature review and personal experience leading resident-as-teacher curricula. Resident focus groups informed the first round of tool revisions. A modified Delphi panel of 14 international faculty experts, over 2 rounds, provided feedback on the tools elements. Anchors were designed and finalized after a third Delphi round. Study investigators piloted the tool with 10 video-recordings of senior residents teaching from our 3 sites. Cronbachs alpha was calculated for internal consistency and intraclass correlation (ICC) for inter-rater reliability.

Results
The tool has 6 elements: learning climate, goals and objectives, content, promotion of understanding/retention, session management, and closure. Each element contains 12 sub-elements which are described by 37 behaviors. The Cronbachs alpha was 0.88. The ICC was good or excellent for 13/37 sub-elements (35%), fair or poor for 22/37 sub-elements (59%) and the remaining 2 elements had no ICC score given no variability in rater scores.

Conclusions

We developed a tool for faculty assessment of resident-led large group teaching using robust methodology. In the pilot study, the assessed behaviors have good internal consistency, but low inter-rater reliability. In the next phase, we will develop tool utilization standards, train faculty raters, and apply the tool to a larger video sample of resident teaching. We will collect validity evidence for the tool including ability to discriminate between novice and advanced teachers and its correlation with teaching milestones.

IRB Review

Has the IRB reviewed your project?
Yes

If you answered No or NA above, please explain why.
N/A

References

Reference documenting ACGME requirement for development of residents as teachers:
1. Accreditation Council for Graduate Medical Education. ACGME Common Program Requirements. https://www.acgme.org/Portals/0/PFAssets/ProgramRequirements/CPRs_2017-07-01.pdf. Accessed November 8, 2018.
References with assessment of teaching tools from which our initial tool was developed:
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Oral Abstract Presentation 4

Development of a formalized nutritional certificate program for surgical fellows

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Objective or purpose of innovation

To formally train incoming surgical fellows in nutritional support for the care of the critically ill patients.

Background and/or theoretical framework and importance of the field

Evidence-based nutritional support is integral to the care of the critically ill patient. Nutritional support teams led by formally trained physicians and Certified Nutrition Support Counselors (CNSCs) result in better clinical outcomes and reduced costs. The care of surgical patients, in particular, requires thorough familiarity with the science of nutritional support. Despite this, the number of formal nutritional support teams in hospitals has been falling in recent years.

Design

Individual interviews were conducted with 13 surgical fellows [11 Surgical Critical Care, 1 Minimally Invasive/Bariatric and 1 Burn Critical Care]. Fellows were asked questions about their previous formal training in nutritional support, knowledge of the CNSC certification, and attitudes about participating in a novel surgical nutrition curriculum co-led by Surgical Critical Care faculty and a CSNC Dietician.

Outcomes

All 13 fellows interviewed reported no formal training in nutritional support, deficits in their ability to nutritionally manage and counsel critically ill patients, lack of awareness of the ASPEN [American Society for Parenteral and Enteral Nutrition] guidelines and CNSC certification. Additionally, all 13 fellows reported strong enthusiasm in participating in a formal nutritional support curriculum endorsed by ASPEN leading to certification. This qualitative study of surgical fellows managing critically ill patients indicates a significant gap in formal nutritional support training.

Innovation's strengths and limitations

We understand that only 13 fellows were interviewed for this study in a single institution. Fellows pursuing residency in other programs may have had a different response for the same.

Feasibility and generalizability

The Department of Surgery of Weill Cornell Medicine is initiating a pilot program for surgical fellows to gain knowledge, skills, and accreditation to increase the number of providers who are certified in nutritional support. The same program can be initiated in other surgical programs as well.

References

https://www.nutritioncare.org/Guidelines_and_Clinical.../Clinical_Guidelines/

Oral Abstract Presentation 5

Leveraging organizational alignment: Theory informing practice in the creation of an academy at an academic children's hospital

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Objective or purpose of innovation

Academic medicines tripartite mission tends to be operationalized in favor of clinical care and research with fewer resources devoted to education. Capitalizing on a groundswell of interest in medical education and education scholarship at our freestanding childrens hospital, we formed a medical education academy to address this imbalance and enhance educational resources for faculty.

Background and/or theoretical framework and importance of the field

Alignment theory suggests that aligning an institutions strategic goals is necessary to optimize organizational efficiency.1 By aligning efforts of the evolving academy with institutional strategic goals, obtaining support and resources becomes more likely, thus enhancing the change initiatives (i.e., academy) momentum.

Design

Faculty from CHOPs six medical departments have assembled to share best practices and develop educational innovations. This academy has focused on promoting faculty members development as educators and as education scholars.2

Outcomes

To date, 35 faculty members have helped craft the academy vision, which was well-received by institutional leadership and other stakeholders. With leaderships positive regard and support in hand, a two-part needs assessment has commenced to identify the greatest areas of impact. Data from focus groups with 55 faculty members with diverse backgrounds, academic ranks, and educational leadership roles will inform an institution-wide survey to identify strengths, challenges, and opportunities for growth in education.

Innovation's strengths and limitations

This is the first academy housed entirely within a freestanding childrens hospital. Early stakeholder engagement and a rigorous 2-part needs assessment have been instrumental in aligning our work with hospital priorities. While limited to physicians at this time, we anticipate academy membership will include other healthcare professionals in the future.

Feasibility and generalizability

Aligning with an institutions mission and working within the scope of its strategic components creates momentum for successful and sustained innovation. We believe this work, informed by alignment theory, and given sufficient time and resources, can inform other institutions interested in balancing resources among education, research, and patient care.

References

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Oral Abstract Presentation 6

A review of U.S. medical schools promotion standards for excellence in education

K. DeVeau[1], L. A. Hoffman[2], R. S. Lufler[3], K. M. Brown[1], N. DeVaul[1], L. Fatica[1], J. Mussell[4], J. N. Byram[2], S. M. Dunham[2], A. B. Wilson[5]

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Research Statement/Research Question

This study investigates the extent to which medical schools promotion criteria align with published standards for documenting educational activities.

Background and relevance of the study

The number of medical science educators is ostensibly on the rise. Given the growing number of medical school faculty who commit a majority their time to education-related duties, it is timely to examine institutions promotion criteria related to educational excellence and scholarship.

Design and Methods

Promotion guidelines from U.S. allopathic and osteopathic medical schools were collected and systematically analyzed according to a predefined data extraction rubric. After 10 researchers each independently reviewed and extracted data from 1/5 of all guidelines, researchers compared their findings in pairs and reached consensus on all discrepancies prior to final data submission. Descriptive statistics were used to determine the frequency of cited promotion criteria.

Results

Promotion-related documents were retrieved for 110 (59%) of the 185 allopathic and osteopathic U.S. medical schools. Fifteen percent of schools were cited as lacking explicit direction for education focused faculty to attain academic advancement. Across seven education-related domains, educational measurement and evaluation was the least represented with only 37% of schools referencing this domain in their guidelines. The other domains including teaching, curriculum/program development, mentoring/advising, educational leadership/administration, research/scholarship, and service were referenced by at least 59% of schools. Overall, only 20% of schools were judged to have above average or very comprehensive criteria for excellence in education.

Conclusions

While most medical schools acknowledge educational activities within their promotion criteria, only 3 fully embraced published standards for educational excellence. These findings raise concern for teaching faculty who may be evaluated for promotion based on vague and/or incomplete promotion criteria. With greater awareness of how educational excellence is currently documented and how promotion criteria can be improved, more schools may be compelled to embrace change and follow recommended best practices.

IRB Review

Has the IRB reviewed your project?
Yes

If you answered No or NA above, please explain why.
N/A

References

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Oral Abstract Presentation 7

It Takes A Village: A Multimodal Faculty Development Program for Training Faculty Facilitators for Case-Based Learning

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Objective or purpose of innovation
To equip faculty with skills to facilitate case-based learning (CBL) sessions in the setting of a revised medical school curriculum, the authors sought to develop an immersive, multimodal faculty development (FD) program.

Background and/or theoretical framework and importance of the field
Transitioning from teacher to facilitator poses a challenge to faculty. Facilitators must learn to listen; ask questions that promote critical thinking; monitor discussion; and abandon previously held roles as content experts[1]. While FD has traditionally addressed opportunities for professional growth[2], successful programs should be multimodal; engage faculty; support communities of practice; and offer evidence-based practices[3]. To date, an exemplar FD program for training CBL facilitators is not widely available to the education community.

Design
A four-phased FD program was developed. Phase 1 offered faculty a series of asynchronous modules covering principles of facilitation, including recommended resources and details of the new curriculum. Phase 2 provided faculty with video recordings of actual CBL sessions facilitated/modeled by expert [basic science and clinical] faculty with medical students. Phase 3, an in-person workshop, immersed faculty in a simulated CBL session, and was followed by a large-group debriefing. An optional Phase 4, offered to faculty weeks before their first session (just-in-time), was executed through co-facilitation with expert facilitators.

Outcomes
Thirty-eight faculty were trained; 100% found the program helpful. While faculty comfort level increased after training (pre-training, 6.6/10; post-training, 7.1/10), this difference was not statistically significant. Mean training post-test score (94.5%) was higher that mean pre-test score (75.8%) [$p<0.01$].

Innovation's strengths and limitations
The 4-phased FD program was successful in providing faculty with the skills to facilitate CBL sessions. It introduces an innovative, blended learning model to meet the varied needs of faculty[4]. Time for training and the development of enduring materials remain limitations.

Feasibility and generalizability
The authors developed a multimodal FD program linked to pedagogical principles that can be customized by other medical/health schools to successfully train faculty for CBL facilitation.

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Oral Abstract Presentation 8

Integrating Advanced Cardiovascular Life Support Certification into a Transitional Residency Course for Fourth Year Medical Students

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Objective or purpose of innovation
To integrate a novel simulation-based advanced cardiovascular life support (ACLS) curriculum into the month-long transitional course Ready 4 Residency (R4R).

Background and/or theoretical framework and importance of the field
Many medical schools have implemented residency transition courses. (6,7) Some programs include ACLS certification, a two-day, in-person training or a blended course of online exercises and in-person simulation. The retention of cardiopulmonary resuscitation (CPR) knowledge and skills in traditional training rapidly decays by 3 months following training.(1-3) Simulation training can improve performance and retention.(4,5) Here, we pilot a new type of ACLS training integrated into a simulation-rich course.

Design
R4R is a required residency preparation course. In 2018, we collaborated with the American Heart Association to integrate ACLS into R4R using team-based simulation, individual observed skills assessments, and pre-learning modules for 147 students. The intervention uses: 1) low-dose curriculum extending course material over four weeks;(8,9) 2) spaced, repeated, deliberate practice through weekly simulations;(5,10,11) 3) pre-briefing and metacognition with weekly pre-simulation role assignments; and 4) longitudinal assessment with feedback through weekly pre- and post-test quizzes with team debriefings.(12) We assessed learner confidence in and knowledge of ACLS. Longer-term follow-up to assess for knowledge and skill retention is underway.

Outcomes
Mean knowledge scores increased from pre-test 20.14/30 (SD 3.57) to post-test 25.96/30 (SD 3.29; p=0.026). Prior to the course, 21.63% agreed that they felt confident performing a team-based resuscitation compared to 99.1% afterwards (p=<0.0001). Additionally, 20.72% agreed that they felt competent performing a team-based resuscitation prior to the course compared to 100% afterwards (p=<0.0001).

Innovation's strengths and limitations
This novel course successfully increased knowledge, confidence, and perception of competence among medical students of ACLS. The limitations of this study are that it is uncontrolled. Longer-term follow-up is underway.

Feasibility and generalizability
As many medical and nursing schools are now including transition courses, R4R/ACLS can serve as a new model for implementing integrated ACLS training.

References
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Oral Abstract Presentation 9

A Novel Video-Based Simulation Curriculum for Dermatologic Surgery

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Research Statement/Research Question
To assess the impact of a flipped-classroom curriculum combining video education and surgical simulation on dermatology resident procedural skills.

Background and relevance of the study
Medical education is evolving to emphasize trainee engagement and simulation. The potential impact of a flipped classroom curriculum and surgical simulation on dermatology resident surgical education has not been evaluated.

Design and Methods
We created a curriculum to teach foundational surgical skills to PGY 2&3 dermatology residents at three institutions (Harvard, Tufts and Northwell). The flipped-classroom approach starts with at-home viewing of instructional videos followed by three hands-on sessions using simulated skin models.

Outcomes were assessed using the Objective Structured Assessment of Technical Skills instrument to assess residents performing an elliptical excision with intermediate repair on a simulation skin model before and after the curriculum. Residents also completed pre- and post-curriculum surveys evaluating their confidence in surgical skills and the perceived educational value of the curriculum.

Results
31 residents were enrolled. Residents total OSATS score increased from a baseline median score of 27 (IQR 16.5) to a median score of 46 (IQR 12) post-curriculum ($p < 0.001$). A comparison of baseline and post-curricular surveys using a 5-point Likert scale by residents revealed improvements in self-reported confidence in aseptic technique (mean score of 3.7 to 4.3, $p <0.009$), cyst excision (mean score of 2.1 to 3.5, $p <0.001$), and elliptical excision (mean score of 2.3 to 3.7, $p <0.001$). 97% of residents felt that simulation added to surgical teaching received in clinics.

Conclusions
Our results suggest a powerful role for video education and simulation in dermatology. We hope our curriculum can serve as a template for other institutions and non-dermatology trainees hoping to improve procedural skills for dermatology procedures.

IRB Review

Has the IRB reviewed your project?
Yes

If you answered No or NA above, please explain why.
NA

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Oral Abstract Presentation 10

Is more information always better?: Engaging students in an information avoidance simulation to promote perspective-taking

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Objective or purpose of innovation
This teaching innovation engaged health professions students in an active simulation designed to promote understanding of cognitive and affective rationales for information avoidance.

Background and/or theoretical framework and importance of the field
Although health information is abundant and accessible, people deliberately avoid information concerning personal health risk1. This phenomenon is known as information avoidance (IA)1,2 and poses a possible obstacle to patient-physician collaboration in achieving desired health outcomes. Counterintuitively, people even avoid receiving information that could save or extend their lives. 3,4

Design
Ninety-eight undergraduate health studies and psychology students enrolled in 4 courses learned about IA using the simulation or lecture-alone. All students responded to the question, If you could take a blood test to find out the approximate age and way in which you may die, would you do it? Following discussion of reasons for/against IA, students in the simulation condition were offered an envelope containing a prediction of their cause/date of death matched to their genetic make-up in order to mimic a situation where they may partake in avoidance behavior. Subsequent discussion drew out rationale for choices and individual differences in IA. (Students were debriefed per IRB guidelines).

Outcomes
Students in the simulation had higher agreement with questions regarding understanding others perspectives and rationale for IA ($F = 52.37$, $p < .001$); active engagement/critical thinking ($F = 31.65$, $p < .001$), self-insight ($F=13.22$, $p < .001$) and openness to discussion of end-of-life issues ($F =15.66$, $p< .001$) compared to lecture-alone.

Innovation's strengths and limitations
Although patient IA can be taught didactically, greater understanding of others perspectives was gained through the simulation. Understanding patient perspectives is a defining feature of empathy and physicians who score higher on perspective-taking may have lower burnout than their peers.5

Feasibility and generalizability
This activity can be used with medical students in patient-centered medicine seminars and has applications to other areas where understanding patient avoidance/compliance behaviors (e.g., STD testing) is critical.

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Oral Abstract Presentation 11

Stop The Bleed (StB): Development Of A Perfused Synthetic Cadaver Model
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Objective or purpose of innovation
To develop a novel perfused-bleeding mannequin that mimics both arterial and venous bleeding, responds appropriately to various hemorrhage cessation techniques, and is both inexpensive and durable.

Background and/or theoretical framework and importance of the field
In the current StB course, participants undergo hands-on training using a synthetic limb mannequin. In a survey of 302 participants there was overwhelming sentiment that the mannequin was limited by its inability to demonstrate cessation of bleeding when hemorrhage control techniques were applied. We hypothesized that enhanced flow characteristics (pulsatile flow and flow at variable pressure) that can be stanched by StB techniques would improve the mannequin and hence the confidence of trainees.

Design
Different synthetic soft tissues were assessed for texture, thickness, compressibility, and durability. Vessel material, construction, and placement were evaluated on their ability to mimic pulsatile blood flow and durability to repeated pressure, packing, and tourniquet applications. Multiple mechanisms of simulating blood flow (gravity, pump) were also trialed. An 85 ml synthetic rubber capacity bulb with a 7.4 mm inner diameter tubing were used resulting in a stroke volume of 16 cc per hand stroke and pressure of 20-25 kPa or 150-187 mmHg. Material cost was considered to facilitate low-cost, global distribution.

Outcomes
Nurse and physician educators conducted beta testing of the perfused mannequin. One-on-one interviews revealed positive feedback regarding both realism of the perfused mannequin and participants ability to obtain bleeding control using StB techniques. Participants who trialed the mannequin reported an increased awareness of the rate of blood flow out of a wound, which increased their sense of urgency in applying hemorrhage control techniques.

Innovation's strengths and limitations
The final mannequin resulted in an inexpensive, novel synthetic cadaver limb model that is equipped with vessels mimicking both arterial and venous flow.

Feasibility and generalizability
As the new model is inexpensive and durable, it can be easily be incorporated into new Stop the Bleed training kits for global distribution.

References
https://www.bleedingcontrol.org/

Oral Abstract Presentation 12

Understanding debriefing: a qualitative study of event reconstruction at an academic medical center

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Research Statement/Research Question
This qualitative study sought to characterize the process of debriefing following critical events among anesthesia residents at an academic medical center.

Background and relevance of the study
Debriefing is typically described as a reflective process indicated in the wake of an adverse clinical event.13 Most studies have assessed debriefing in the setting of simulation. Those that have evaluated real-time debriefing have observed low rates of adherence.4 This study aimed to investigate the reasons underlying this non-adherence by examining the complex social process of proximal debriefing.

Design and Methods
We conducted 26 semi-structured interviews with anesthesia residents and one attending regarding 25 unique adverse events and the interactions that occurred thereafter. Interviews were transcribed. A codebook was generated through open coding, then used in an iterative coding process by a team of three researchers using NVivo 11. Theory development was ongoing using an abductive approach.5

Results
Our interviews demonstrated that debriefing was a process actively constitutive of an adverse event rather than a static rundown of this event. In descriptions of adverse events and their aftermath, residents described a multi-stage process by which events were continuously re-narrated. Through these stagesdebriefing (if it occurred) being one of themthe nature of the event and the role of the resident in it were reconstructed. Negotiated in each stage were issues of resident culpability, reputation, and the appropriateness of the residents affective response. Residents recognition of the constitutive role of post-event interactions can contribute to a reluctance to debrief.

Conclusions
Debriefing is one of several stages of interaction that occur after a critical event, all of which play a role in shaping how the event is to be remembered and interpreted. Because of its constitutive ability, debriefing can be a high-stakes interaction for residents.

IRB Review

Has the IRB reviewed your project?
Yes

If you answered No or NA above, please explain why.
NA

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Oral Abstract Presentation 13

Underlying Mental Health Issues Among Struggling Graduate Medical Learners: Results from a Single-Center Coaching Program

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Research Statement/Research Question

To identify the prevalence of mental health concerns (MHC) as a contributor to poor trainee performance and response to intervention.

Background and relevance of the study

It is common for graduate medical learners to struggle with clinical performance during training,1-6 and a subset of these trainees have underlying MHC.1-4 Timely and accurate recognition of MHC is critical to the success of remediation programs designed to correct the clinical performance deficit (CPD).

Design and Methods

At our institution, graduate medical learners not meeting milestones are referred to COACH (Committee on Achieving Competence Through Help). A physician remediation expert assesses the learner using a biopsychosocial approach. A primary CPD is identified, as follows: medical knowledge, clinical reasoning, organization/efficiency, professionalism, and communication. If an underlying MHC is identified, a COACH psychologist with expertise in working with medical trainees provides additional recommendations.

Results

Over two years, COACH assessed 33 learners struggling with clinical performance. 17/33 learners (52%) had a MHC directly contributing to the CPD. MHC was categorized as follows: psychosocial stressor; depression; anxiety; cognitive dysfunction; impairment; and other. Anxiety was the most commonly identified MHC (4/17, 24%), followed by family stress (3/17, 18%), depression (3/17, 18%), and cognitive dysfunction (3/17, 18%). Following identification of the MHC, learners were referred for psychotherapy, medication management, and/or cognitive testing. 12/17 (71%) then initiated a parallel coaching program to improve the identified CPD. For the remaining 5/17 (29%), no additional coaching was required, as the CPD improved with resolution of the MHC. The majority of learners are currently in good standing in their respective programs.

Conclusions

The incidence of MHC among struggling graduate medical learners at our program was higher than what has been reported in national surveys1,2,4 and single-center reviews.3 Engagement in targeted interventions to improve MHC facilitated successful coaching in most learners. Future work should identify potential drivers or determine whether

national estimates are low.

IRB Review

Has the IRB reviewed your project?
Yes

If you answered No or NA above, please explain why.
NA

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Oral Abstract Presentation 14

Moving Beyond Resilience: Organizational Change is Needed to Promote Humanistic Teaching and Practice

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Research Statement/Research Question

Objective: To identify organizational factors that inhibit or promote humanistic practice by faculty physicians in todays healthcare environment.

Background and relevance of the study

Rapid changes in healthcare organizations, increasingly driven by economic and business factors, have impeded humanistic teaching and practice. Over half of physicians experience burnout which significantly affects relationships with patients, trainees and quality of care. Most solutions have included individual interventions designed to promote resilience/wellbeing. Yet organizational factors may be primary.

Design and Methods

In this qualitative study, physician faculty who completed a one-year faculty development program in humanism at eight US academic medical centers provided written answers to two open-ended questions: (a) What institutional or specific organizational unit-related factors promote humanism for you and others? (b) What institutional or specific organizational unit-related factors inhibit or pose barriers, to humanism for you and others?
74% (68/92) of the physicians participated (59% women, 69% < 45 years of age, 85% junior faculty). The constant comparative method was used to analyze responses.

Results

Organizational culture was the central theme. Motivators of humanism included leadership supportive of humanistic practice, responsibility to role model humanism, organized activities promoting humanism, and practice structures that

facilitate humanism. Factors that inhibited humanism included top down organizational culture, non-supportive leadership, time and bureaucratic pressures, and non-facilitative practice structures.

Conclusions
Changing healthcare environments, increasingly propelled by business/economic factors, are associated with widespread burnout and dissatisfaction among physicians and barriers to relationship-centered quality care. Our national collaborative study examined organizational issues that inhibit or promote faculty physicians' humanistic practice. Current solutions have concentrated on cultivating humanistic qualities in individuals such as interventions to promote resilience and wellbeing. Our findings suggest that organizational change, at a minimum, is equally important. We describe features of healthcare organizational cultures that reinforce humanistic practice and offer recommendations for organizational change that support the primacy of humanistic, compassionate, high quality patient care.

IRB Review

Has the IRB reviewed your project?
Yes

If you answered No or NA above, please explain why.
NA

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Oral Abstract Presentation 15

Gender differences in work satisfaction and rates of burnout
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Research Statement/Research Question
The objective was to assess gender differences in the perceived impact of duty-hour regulations on wellbeing and reported rates of trainee burnout by gender.

Background and relevance of the study
Men and women experience job satisfaction and burnout differently. Prior to implementing specific interventions to address wellbeing, gender differences in medical training experiences need more study.

Design and Methods
In the 2015-2016 academic year, the iCOMPARE trial randomly assigned 63 internal medicine residency programs to standard duty hours (standard arm) or more flexible policies (flexible arm) largely removing shift length limitations. Surveys were administered to residents at the end of the year of assignment, and included 7 questions eliciting trainee

perception of how duty-hours affected their wellbeing and the Maslach Burnout InventoryHuman Services Survey (MBI-HSS), assessing emotional exhaustion, depersonalization, and personal accomplishment. We used mixed effects logistic regression models with a random intercept for each program cluster and an indicator for gender to determine between-group difference of dichotomized outcomes.

Results
The overall response rate was 45%. Compared to men, women trainees in the flexible arm expressed duty hours negatively affecting their job satisfaction (OR 0.57; CI 0.43-0.75), decision to become a physician (OR 0.65; CI 0.48-0.87), time with family/friends (OR 0.66; CI 0.52-0.85), health (OR 0.54; CI 0.41-0.69), time for hobbies/outside interests (OR 0.68; CI 0.53-0.87), and overall wellbeing (OR 0.57; CI 0.44-0.75). There were no gender differences in the standard arm. On the MBI-HHS, women expressed more emotional exhaustion than men in the flexible arm (OR 0.73; CI 0.56-0.93) and the standard arm (OR 0.70; CI 0.54-0.90).

Conclusions
Compared to men, women in the flexible arm were more dissatisfied on multiple measures of how duty hours affected their wellbeing and expressed more emotional exhaustion. These findings suggest how essential studying and understanding residency training duty-hours may affect men and women differently in order to understand causes and develop targeted interventions.

IRB Review

Has the IRB reviewed your project?
Yes

If you answered No or NA above, please explain why.
N/A

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Oral Abstract Presentation 16

CORD Advising Students Committee in Emergency Medicine: Helping Students Apply Smarter, not Harder
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Objective or purpose of innovation
The Council of Residency Directors (CORD) Advising Students Committee in Emergency Medicine (ASC-EM) provides consistent, quality advising resources to advisors and students applying to emergency medicine (EM) residency.

Background and/or theoretical framework and importance of the field
ASC-EM was created in 2013 in response to the perceived crisis in the EM Match - 2012 was a year without an unmatched position in EM programs as well as the year that the over-applying phenomenon started becoming apparent. ASC-EMs goal is to help students apply smarter, not harder.

Design
ASC-EM creates evidence- and consensus-based resources in response to needs assessments of EM bound students and advisors, including applying guides and student planners for the general EM applicant and special applicant populations (couples, IMG, osteopathic, military, re-applicants into EM, students at risk for not matching, etc). ASC-EM has collaborated with the Emergency Medicine Residents Association (EMRA) to create EMRA Match (filterable directory of EM residency programs and clerkships) and EMRA Hangouts (live webinars connecting students with advisors). An advisor consult service helps answer specific questions from advisors.

Outcomes
ASC-EM resources are endorsed by organizations in academic EM, are housed on our website and have been distributed through publications, conferences, listservs, and social media. Our Vocal CORD blog posts of our resources have had 50,000 views by 34,000 visitors. EMRA hangouts has been utilized by >1000 students and EMRA Match had >200,000 searches in just a 6 month period in 2017.

Innovation's strengths and limitations
Strengths include collaboration of EM advisors, residents and students across the country to create evidence- and consensus-based data. The largest limitation is our work is only helpful if we can get it into the hands of those who need them.

Feasibility and generalizability
ASC-EMs model could be used by other specialties or medical school administration for creating their own tools for advising medical students.

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Oral Abstract Presentation 17

Career Narratives of Women in Later Stage of Careers in Academic Medicine
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Research Statement/Research Question
From the vantage point of women in the later stage of their careers in academic medicine, what shapes their career?

Background and relevance of the study
Despite research on early careers of women in academic medicine, relatively limited research has focused on women in the later stage of their careers. Moreover, career models informed by feminist theory are seldom applied in academic medicine. The Kaleidoscope Career Model (KCM) proposes that women face stage-predominate career issues (CHALLENGEearly, BALANCE-mid, AUTHENTICITY-later).

Design and Methods
In fall 2018, we recruited women at one academic medical center who participated in a professional development program for women in later stage of career (n=10), and a snowball sample obtained by asking those women to identify a female peer who did not attend the program (n=11). We conducted in-depth interviews informed by KCM. Data collection and analysis occurred iteratively; inductive coding revealed patterns in data that were explored in subsequent interviews.

Results
After sharing their career narratives, only 2/21 women endorsed KCM: The concepts work, but I wouldnt say that Ive

followed any trajectory. Alignment with KCM fell short because (a) balance was the primary challenge, i.e., the perpetual struggle to raise children and succeed in academic medicine and (b) authenticity was present throughout their careers, i.e., I have always been true to myself. More poignant than KCM career issues were narratives of gender inequity within the culture/structure of academic medicine, e.g., being stereotyped, being the token female, and/or being treated differently than, and in ways that privileged, their male colleagues.

Conclusions
Career issues identified by KCM resonate with women in later stage of careers in academic medicine, but do not fully capture their experiences and perceptions of what shapes their career in the midst of cultural/structural inequities in academic medicine. Future research should explore how gender inequity is reproduced, and sometimes resisted, in academic medicine.

IRB Review

Has the IRB reviewed your project?
Yes

If you answered No or NA above, please explain why.
NA

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Oral Abstract Presentation 18

Pediatric Career Decision-Making: Insights from a Novel, Medical School Pathway Program
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[5]American Board of Pediatrics, [6] University of Utah School of Medicine, [7]University of Colorado School of Medicine

Research Statement/Research Question
Capitalizing on a novel, medical school pathway program, the authors asked, How do students who enter medical school with an interest in pediatrics make and adapt career decisions?

Background and relevance of the study
Research describes personal, specialty-specific, and curricular factors that influence students career decisions across specialties(1-4); however research specific to pediatrics is dated or conflated with research in primary care, and research about career decisions in pathway programs is lacking. Education in Pediatrics Across the Continuum (EPAC), a pathway program designed to assess the feasibility of competency-based, time-variable advancement in pediatrics, provided an venue to address these gaps in the literature.

Design and Methods
Individual, semi-structured interviews were conducted with medical students: Group 1: accepted into EPAC, n=8; Group 2: accepted into EPAC, opted-out, n=4; Group 3 applied to EPAC, not accepted, pursued pediatrics, n=4; Group 4: applied to EPAC, not accepted, did not pursue pediatrics, n=3; Group 5: pursued pediatrics at a school without EPAC, n=6. Consistent with grounded theory, data collection and analysis occurred iteratively, with inductive coding of data revealing patterns in data that were explored in subsequent interviews and refined in the final analysis.

Results
All students described personal values (notably, being happy) that attracted them to pediatrics, as well as pre-medical school, pre-clerkship, and clerkship experiences that challenged prior perceptions of a pediatric career; debt was rarely mentioned. For students across groups, knowing yourself was key to navigating tension between personal values and phase-specific experiences. Immersive experiences in clerkships enabled students to assess the fit between personal values and collective identities of diverse specialties.

Conclusions
Pediatric career decision-making is a complex process that involves awareness of personal values and openness to learning from new experiences that confirm or alter career decisions. Pathway programs should include immersive experiences in other specialties.

IRB Review

Has the IRB reviewed your project?
Yes

If you answered No or NA above, please explain why.
NA

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Oral Abstract Presentation 19

Visualizing my path: a 3-year Longitudinal Qualitative Research Study of Clinician Educators in Advanced Education Training
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Research Statement/Research Question
How do clinician educators who pursue advanced training (i.e., masters degree in medical education, MS-MEd) experience and narrate the programs impact on their career?

Background and relevance of the study
Personal and professional benefits of advanced training for clinician educators have been described (1,2), but less often reported are the experiences of clinician educators as they move through training. In longitudinal qualitative research (LQR), experiences are lived through, accumulated, reflected upon, and narrated by research participants (3).

Design and Methods
To answer our research question, we conducted LQR with 11 clinician educators (anesthesiology-2, community health-1, medicine-3, neurology-1, pediatrics-2, surgery-2) in a 2-year, executive-format, MS-MEd program. Interviews were conducted at the start, midway through and 3 months post program (n=32 interviews). We created codes, sensitized by educator identity literature, and iteratively revised codes based on incoming data. We clustered codes into themes, and

for this report, focused on those related to career goals/expectations.

Results
At the start of the program, participants articulated two primary career goals/expectations: to increase teaching skills and opportunities, and to secure educational leadership positions as a result of having MS-MEd credentials. Midway through the program, participants spoke of more diverse career goals/expectations, including educational research and collaborative roles such as co-directorships. By the end of the program, no participant mentioned credentials, even though all had obtained a master's degree and several had secured educational leadership positions. Instead, they distinguished being an educator from having a position, and visualized future roles in medical education that aligned with the educator identity that was shaped by their MS-MEd experience.

Conclusions
Advanced training in medical education impacts career goals of clinician educators as it shapes their educator identity. Therefore, efforts to evaluate the impact of these programs should track educator identity.

IRB Review

Has the IRB reviewed your project?
Yes

If you answered No or NA above, please explain why.
NA - IRB reviewed

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Oral Abstract Presentation 20

A novel OSCE case to assess medical students responses to a request for an unnecessary test: A qualitative analysis of communication challenges
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Research Statement/Research Question
To describe the communication challenges that medical students face when communicating with patients about unnecessary medical interventions.

Background and relevance of the study
Educators must train learners to communicate with patients about value and risk in healthcare. The Choosing Wisely initiative provides guidance and promotes conversations between patients and providers to decrease unnecessary medical interventions (1). We developed an OSCE case to assess medical students communication skills and attitudes towards conversations with patients about value-based care.

Design and Methods
Students enrolled at two US medicals school participated in this OSCE after their 3rd-year clerkships. A standardized patient presents with acute low back pain and requests an MRI (clinically not indicated [1,2]). In a post-encounter note, students responded to prompts about communication challenges perceived in response to the patients request for an MRI. Three of the authors performed categorical content analysis of challenges faced (3). Each students response was coded for all applicable themes.

Results
250/251 (>99%) of participating students provided responses to the prompt. The number of themes applied to each response ranged from 1 to 8. Six percent of students reported no challenges in responding to the patients request. The most commonly reported challenges included the cost of the intervention, and perceived lack of time, knowledge, skills and confidence. Students also reported challenges in communicating with a patient perceived to be persistent/demanding.

Conclusions
In this OSCE case assessing competency in communicating with patients about unnecessary medical testing, students described facing a variety of challenges in responding to a patient with back pain requesting an MRI. Those challenges resulting from a students lack of knowledge, skills or confidence comprise a needs assessment for educators developing curricula to educate learners to communicate about value with patients.

IRB Review

Has the IRB reviewed your project?
Yes

If you answered No or NA above, please explain why.
NA

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Oral Abstract Presentation 21

Development of an Empathy and Clarity Rating Scale for Medical Students to Measure the Effect of Improvisation-Informed Communication Skills Curriculum on End-of-First-Year OSCE Performance

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Research Statement/Research Question
Can a valid and reliable rating scale be developed to measure the effect of improvisation-informed curriculum (IIC) on patient-centered communication?

Background and relevance of the study
Few communication scales operationalize behaviors of empathy and patient-centered communication with none universally-accepted to measure the performance of IIC.

Design and Methods
Rutgers RWJMS, BUSM and SBSOM collaborated to design a communication rating scale and conducted three focus groups with clinicians, actors, patients and communication experts on utility of USMLE Step 2 Communication and Interpersonal Skills (CIS) domains to rate communication. Discourse and domain analyses approaches were used on transcribed recorded discussions to identify specific behaviors in relation to CIS domains and other validated empathy scales. Empathy and Clarity Rating Scale (ECRS) drafts were finalized utilizing modified Delphi Method. Content validity was tested (128 videos), comparing the ECRS score with modified Arizona Rating Scale (ACRS) score. Kappa coefficient was determined for 20% of videos. Mann Whitney U test was used to compare performance between IIC and non-IIC groups.

Results

A four-domain, seven-item scale, based upon inductive reasoning was developed with 5-point Likert scale anchored at the extremes (gold-standard/unsatisfactory behaviors) and anchors for 2-4 based upon the amount of adjustment needed to achieve gold standard behavior. Kappa coefficient=.84. The agreement between the ECRS and ACRS was modest (r= 0.262, p=0.003). Extreme ACRS and ECRS mismatch was influenced by performance on specific knowledge-based items: low ECRS/ high ACRS if high diagnostic items score and vice versa. There was a trend for higher ECRS in IIC group, with enhanced IIC group performing statistically better than non-IIC group (Mann-Whitney U test p=.037)

Conclusions
ECRS is reliable with modest content validity when compared to ACRS. Additional validation studies are needed, however ECRS appears to add a novel approach to assessing clinical skills particularly in IIC.

IRB Review

Has the IRB reviewed your project?
Yes

If you answered No or NA above, please explain why.
NA

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Oral Abstract Presentation 22

***Simulation-Based Communication Skills Training of Primary Care Providers Can Enhance Quality of Care and Outcomes in Patients with Type 2 Diabetes**
M. Kostic

Research Statement/Research Question
The main objective of our study was to assess what impact will training in communication skills for healthcare providers (HCPs) have on patents and HCPs experience of care and health outcomes.

Background and relevance of the study
Effective self-management behaviors by patients with T2D (including treatment adherence and lifestyle changes) can reduce co-morbidities, mortality risk, and overall healthcare costs. Lack of consistent inter-professional communication in primary care teams (PCTs) and challenges in patient-provider communication contribute to patients disengagement and non-adherence and undermine HCPs confidence and professional fulfillment.

Design and Methods
Our strategy was to provide evidence about the importance of communication on T2D patients outcomes and to empower PCTs to learn and practice effective communication skills within the context of the disease management.
The intervention was a half-day workshop that included expert-led lectures, multiple small group practice break-outs with standardized patients, interactive large group debrief, built-in assessment strategy and resource tool kit delivered 10 times

across the US.

Results
The mixed-methods, time-series, evaluation consisted of pre/post self-assessment questionnaires, pre/post evaluation questionnaires and 3 month post qualitative interviews (sample of participants and their patients),and pre/6 month post patients chart audit against a control group (no intervention).
Increased knowledge of strategies to promote positive self-management behavior and increased confidence in ability to assess patients readiness to adopt self-management plans were observed (both p0.001). PCPs understanding of the impact of their communication approach on positive self-management behaviors and their role in facilitating adherence both increased significantly (p0.001).
Patient chart audits showed a significant increase in a number of health management indicators. Patients reported changes in PCPs attitudes and functioning of the PCTs.

Conclusions
Our findings provide evidence of the positive impact of inter-professional simulation-based interventions on clinical efficiencies and quality of care. Empowering PCPs to better communicate as a team and to include their patients can contribute to improved adherence and overall T2DM management.

IRB Review

Has the IRB reviewed your project?
Yes

If you answered No or NA above, please explain why.
NA

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Oral Abstract Presentation 23

A Novel High-Yield Ambulatory Communication Skills Workshop within a Broader Internal Medicine Bootcamp Curriculum

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Objective or purpose of innovation
To create a novel and exportable simulation-based curriculum focusing on ambulatory communication skills for the graduating internal medicine (IM) residency-bound medical student

Background and/or theoretical framework and importance of the field
Preparing graduating medical students for the transition to internship is challenging. (1) IM residency program directors identified interpersonal and communication skills as a critical skill that is lacking in incoming interns.(2,3) However, to our knowledge, no targeted ambulatory communication transition curriculum currently exists.

Design
Graduating fourth year IM internship-bound medical students were invited to voluntarily enroll in this four-hour workshop embedded within a previously established transition to internship course. The course consisted of an hour-long interactive didactic outlining a framework for conducting ambulatory encounters. Students then rotated through four different faculty-facilitated challenging communication scenarios using both standardized patients and role-play. Course participants were asked to complete pre-and post-workshop surveys. In addition, all participants (including faculty) were asked to complete a checklist regarding expected communication behaviors observed during each simulated encounter.

Outcomes
A total of 16 of the 22 students who participated in the workshop completed the surveys. 13 (81%) of respondents would recommend the workshop to colleagues, 14 (88%) reported that they would change the way they approach communication with patients in clinic and 15 (88%) felt more confident having challenging conversations after the workshop. Chronic pain management and telephone communication were identified as areas for future improvement.

Innovation's strengths and limitations
We successfully implemented a new, exportable ambulatory communication curriculum that provided opportunity for real-time targeted expert feedback. The curriculum was well received and positively impacted confidence in communication skills. Because of the small sample size at one institution, further study of the curriculum is needed.

Feasibility and generalizability
This new curriculum is reproducible, low-cost and relevant to internal medicine trainees. The ease of implementation and generalizability at other institutions requires further study.

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Oral Abstract Presentation 24

Zip Lining Away Match Anxiety
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Objective or purpose of innovation
To design a 4th year student retreat to reduce match anxiety and foster a spirit of comradery.

Background and/or theoretical framework and importance of the field
Traditionally, 4th year students experience significant anxiety as they navigate the competitive, expensive and unpredictable nature of the residency application process. Although a widespread concern, there is no published data on how to measure the extent of or reduce the intensity of this match anxiety. The Zucker SOM at Hofstra/Northwell class of 2019 is comprised of 22 students (of 100 students) applying to pediatric residencies. This cohort of students expressed concern and anxiety given the large group of students applying within the same specialty.

Design
Cohen Childrens Medical Center faculty planned and attended a 4th year retreat at an Adventure Park for 22 students applying to Pediatric residency. In addition to team-building activities, the retreat was devoted to informal discussions surrounding match strategies, letters of recommendation, match outcomes and preparation for acting internships. Pre- and post-retreat surveys were administered, with questions adapted from the validated State-Trait Anxiety Inventory.

Outcomes
Paired-sample t-tests were conducted to compare student match anxiety both before and after the retreat intervention. Post-intervention, students felt both more at ease and calmer about the upcoming match process [$t(21)=2.61$, $p<.05$) and $t(21)=2.92$, $p<.01$), respectively]. Students also felt less frightened, nervous, and tense about the upcoming match process [$t(21)=-2.24$, $p<.05$), $t(21)=-4.91$, $p<.0001$), and [$t(21)=-2.42$, $p<.05$), respectively]. Students also reported feeling more connected to their fellow classmates applying to pediatric residency [$t(20)=2.22$, $P<.05$)].

Innovation's strengths and limitations
Although a single site study, this is the first report which quantitatively measures match anxiety and describes a method to reduce this anxiety and the perceived competition amongst students.

Feasibility and generalizability
This model of a collaborative 4th year retreat experience can be easily replicated within other specialties and at other medical schools as well.

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Oral Abstract Presentation 25

Mindfulness Meditation for Medical Students: A Student-Led Initiative to Expose Medical Students to Mindfulness Practices

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Objective or purpose of innovation
To provide a basic theoretical and experiential familiarity with mindfulness meditation and to explore expectations and perceived problems associated with mindfulness in medicine and medical education.

Background and/or theoretical framework and importance of the field
Mindfulness meditation is a wellness practice that is being incorporated into the curriculum of a growing number of U.S medical schools(1). Exposure to mindfulness practice may improve student wellness, enhance understanding of mindfulness modalities, and provide an experiential foundation for the biopsychosocial model(2). Medical student exposure to mindfulness interventions has been associated with a greater likelihood that students will administer or suggest such interventions in the future(3).

Design
41 Rutgers Robert Wood Johnson pre-clinical medical students attended a two-hour introductory mindfulness class and requested to participate in a full 8-week course; 20 were randomly accepted due to technical constraints. The course

consisted of eight 1.5-hour weekly group sessions, a mindfulness in medicine didactic component, and daily home practice. Course materials were adapted from Mindfulness-Based Stress Reduction (MBSR). The course was taught by a trained MBSR instructor.

Outcomes
80% of students who took the full mindfulness course expressed comfort with utilizing mindfulness modalities, versus only 23% of those who attended the introductory session alone. Thematic analysis revealed a perception of mindfulness as a safe alternative that fosters patient autonomy but also requires cognitive effort and dedication.

Innovation's strengths and limitations
The course provided students with a greater understanding of mindfulness interventions in clinical medicine and student wellness. The responses elicited from students also illuminated medical student perceptions of mindfulness in medicine. However, the time commitment required of medical students was a significant limitation on attendance and participation.

Feasibility and generalizability
20 students attended most or all components of a full course. The Rutgers Robert Wood Johnson medical student population is similar to that of many other U.S medical schools. As such this innovation is feasible and can be generalized to other medical U.S schools.

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Oral Abstract Presentation 26

Burnout in clerkships: Personality characteristics to blame?
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Rutgers Robert Wood Johnson Medical School

Research Statement/Research Question
Is there a relationship between personality characteristics and burnout in medical students in their major clerkship year?

Background and relevance of the study
Burnout is a rising issue given its negative impact on professional development and personal health (1) and high prevalence amongst medical students (2). Current research has explored the relationship between personality characteristics and burnout, suggesting that particular traits might account for burnout levels (3). While most studies focus on professional (4) or academic burnout (5), no studies explore personality factors accounting for medical student burnout during major clerkship year.

Design and Methods
This is a survey-based study with a population of 174 third-year medical students at one institution. Surveys were administered halfway through the clinical year, and they included the NEO Five Factor (NEO FFI) personality inventory and Maslach Burnout Inventory. A series of multiple regression analyses were conducted, with personality traits as predictors and burnout subscales as criterion variables.

Results
116 students completed the survey for a response rate of 67%. For emotional exhaustion, the five factors accounted for 49.5% of the variance, $F(5, 102) = 19.97$, $p<.001$, with neuroticism, ß =.63, $p<.001$ and extraversion, ß=.18, p =.031 emerging as significant predictors. For depersonalization, 23.4% of the variance was due to the five factors, $F(5, 102) = 6.25$, $p <.001$. Neuroticism was the only predictor to reach significance , ß =.26, p =.007. For personal accomplishment, the five factors explained 36.9% of the variance, $F(5, 102) = 11.93$, $p<.001$ with the factors of conscientiousness, ß =.26, p =.003, extraversion, ß =.31, p =.001, and openness, ß =.21, p =.014 as significant predictors.

Conclusions
Our results suggest that different personality characteristics can account for varying degrees of burnout. Further exploration of this relationship can have significant implications for individualized training prior to the onset of clinical years and nurturing of specific personality characteristics to promote resilience (6).

IRB Review

Has the IRB reviewed your project?
Yes

If you answered No or NA above, please explain why.
N/A

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Oral Abstract Presentation 27

Characterizing the impact of pairing medical students together on clinical clerkships: A mixed methods study
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Harvard Medical School

Research Statement/Research Question
The objectives of this study were to (1) retrospectively assess whether pairing medical students on clinical teams during their clerkships affected their grades and (2) to assess medical students attitudes towards being paired on a clerkship with another student.

Background and relevance of the study
Medical students are often paired together on clinical teams during their clerkships. The effect of this practice on student performance, however, has not been previously investigated.

Design and Methods
We analyzed 186 student pairings within the medicine sub-internship at 3 hospital sites of Harvard Medical School (HMS) from 2013-2017. Employing contingency table analysis, we examined categorical grading data to search for discrepancies

between expected and observed grading distributions. In addition, we conducted 17 semi-structured interviews with graduating medical students, and subsequently developed a questionnaire assessing student attitudes and preferences towards being paired on medical teams. The survey was distributed to the graduating class of HMS.

Results
From 186 pairings (372 students), we found no statistically significant deviation between the expected and observed distribution of student grades alone (p=0.39), or when taking into account students third-year Medicine clerkship grades (p=0.28). For our survey, 100 out of 168 students responded (59.5%). Of those who responded, 90% felt that being paired affected their evaluations by both residents and attending physicians. 52% felt that being paired with another student had decreased the number of clinical cases and admissions they were exposed to. Despite this, 49% of students reported that being paired had increased their overall learning, compared to 32% reporting no change, and 19% reporting decreased learning.

Conclusions
Despite our analysis suggesting that pairing medical students does not impact clinical performance on clerkships, the vast majority of students believe that being paired affects their evaluations. Awareness of student preferences regarding pairing can inform clerkship structure and be utilized to address student concerns.

IRB Review

Has the IRB reviewed your project?
Yes

If you answered No or NA above, please explain why.
NA

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Oral Abstract Presentation 28

***Fostering Safe Learning Environments: Training Faculty Leaders in Humanistic Interprofessional Education**
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Objective or purpose of innovation
To develop a national interprofessional education (IPE) curriculum in humanism/professionalism for faculty; to adapt the curriculum for pediatrics; and to create and sustain a faculty fellowship for IPE leaders at Boston Childrens Hospital/Harvard Medical School (BCH/HMS).

Background and/or theoretical framework and importance of the field
Learning environments influence professional identity formation, wellbeing, and patient care. Interprofessional collaboration is essential for safe, quality healthcare. We describe a 7-site national project, Faculty Development for the Interprofessional Teaching of Humanism.* BCH/HMS is the first pediatric site selected to design/implement interprofessional curricula.

Design
To achieve faculty buy-in and sustainability at BCH/HMS, we created the Faculty Fellowship for Leaders in Humanistic Interprofessional Education. Fellows participate in 1½-hour, twice-monthly small-group sessions for 8 months and develop a group project.

Topics focus on interprofessional collaboration/communication and include: highly functioning teams, diversity and inclusion, appreciative inquiry, narrative reflection, patients perspectives, wellbeing; resilience; values; IPE; and others. To increase impact, we recruited fellowship co-sponsors.

Outcomes
We developed and implemented an IPE curriculum in humanism/professionalism as part of a national program at 7 sites. At BCH/HMS we also created a faculty leadership fellowship. 21 faculty applied; the first cohort included 11 faculty representing medicine, nursing, social work, and psychology. Fellows are developing a group humanism project to foster humanistic values and culture.

Innovation's strengths and limitations
The curriculum provides opportunities to enhance teaching, communication/collaboration skills, reflection, and interprofessional role modeling, and to work together to promote humanistic values within organizational culture. At BCH/HMS we also developed a unique faculty leadership fellowship, adapted curriculum for pediatrics, created new curricula on values. Current limitation is funding to continue the fellowship; we are exploring potential solutions.

Feasibility and generalizability
The IPE curriculum has been successfully implemented at 7 sites. We plan to develop training for faculty facilitators.

*Supported by a multi-institutional grant from the Josiah Macy, Jr. Foundation (Dr. Branch as PI; Dr. Rider as site PI).

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Oral Abstract Presentation 29

Teaching Pain Management in the Era of the Opioid Epidemic: A Team Based Intervention & Assessment of Medical Students Knowledge & Attitudes around Opioid Prescribing in Serious Illness

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Objective or purpose of innovation
We designed a teaching intervention to improve medical student understanding of how a palliative care team cares for patients with pain at risk for opioid use disorder and discuss strategies for safe and effective pain management for patients with serious illness.

Background and/or theoretical framework and importance of the field
Teaching pain management in serious illness can be a challenge. Learners may come with pre-conceived knowledge and opinions about opioids or be hesitant to learn about them at all. On the other hand because patients with pain at risk for opioid use disorders often demonstrate multi-dimensional suffering they can be rich case demonstrations of how the palliative care interdisciplinary team functions.

Design
We created a teaching intervention for eight fourth year medical students taking an elective in palliative care. The intervention included a multidisciplinary case presentation of a patient with serious illness and pain at increased risk for an opioid use disorder, a discussion of opioid risk assessment and management followed by a panel discussion. We assessed students' knowledge and attitudes with a pre and post-session survey.

Outcomes
Students familiarity with palliative care team roles improved with our intervention. After the intervention students felt more strongly that it is important for them to learn how to prescribe opioids for patients with serious illness and had a better understanding of pain terminology and safe prescribing practices.

Innovation's strengths and limitations
Although our assessment tool was reviewed for content by multiple palliative care specialists, it was not rigorously validated. Other limitations include our small sample size at a single medical school.

Feasibility and generalizability
While our intervention is fairly easily replicated, we acknowledge that not all palliative care teams have such a robust interdisciplinary team with which to demonstrate various roles. Students evaluated had signed up for the elective in palliative care and thus were interested in palliative care already, a factor which may affect generalizability.

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Oral Abstract Presentation 30

Qualitative Assessment of Primary Care Education in an Interprofessional Team: Themes from the Improving Patient Access, Care, and Cost through Training (IMPACcT) Experience
D. Jackson, L. Marrast, A. Fornari
Donald and Barbara Zucker School of Medicine at Hofstra/Northwell

Research Statement/Research Question
What elements of the interprofessional model of care create an effective huddle and precepting experience.

Background and relevance of the study
Northwell Health has a federally funded grant from HRSA to develop and implement a longitudinal clinical program entitled Improving Patient Access, Care, and Cost through Training (IMPACcT). The goal is to provide interprofessional (IP) trainees with a mentored primary care experience integrating education and clinical skills focused on patient-centered care, quality improvement and population health in an IP team-based clinical setting. Teams interact via patient interactions, precepting and huddles. Huddles are prepared pre-visit discussions to assess the unique needs of every

patient prior to each clinical session.

Design and Methods
This is a qualitative study employing semi-structured interviews with 8 IP healthcare team members(2 pharmacists, 5 medicine attendings, 1 psychologist) to elicit experiences of conducting huddles, precepting in an interprofessional team, and educating learners of various disciplines in this model of care. Themes were identified using an iterative content analysis approach of the interviews,post transcription.

Results
Eight interviews were conducted with the IP attendings who precept the IP trainees. Participants described huddles as being resident driven, prone to tangents, more effective with defined leadership. Common themes about the precepting experience were (1) increased need to balance work flow and efficiency while educating multiple learners, (2) deeper connections with other professionals, and (3) increased reliance on other IP clinicians on the team.

Conclusions
As our population ages and medical comorbidities become more complex, there is an increasing need for IP collaborative approach to patient centered care.This analysis has demonstrated several important themes:(1) Huddles as effective tools organize patient care in an IP setting, (2) Precepting in this model of care increases interprofessional communication and camaraderie.Further interviews from all IP team members are needed to develop these initial themes into faculty development content.

IRB Review

Has the IRB reviewed your project?
No

If you answered No or NA above, please explain why.
The research conducted did not meet the criteria for human subject research.

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Provost SM, Lanham HJ, Leykum LK, McDaniel RR, Pugh J. Health care huddles: managing complexity to achieve high reliability. Health Care Manag Rev. 2015;40(1):212.

Oral Abstract Presentation 31

***A Qualitative Study to Inform an Effective Model for Mentoring in Medical Education Scholarship**
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Research Statement/Research Question
What are the elements of a model for effective mentorship in medical education scholarship (MES)?

Background and relevance of the study
MES is critical to advance the quality and effectiveness of medical education and, ultimately, the quality of care that physicians provide. However, MES is outside the scope of standard physician training and differs considerably from clinical research.(1,2) No clear model for MES mentoring currently exists, which limits the potential of faculty to contribute to the field of MES.

Design and Methods
This qualitative study relied on interviews of mentor-mentee dyads across the US and Canada using a snowball sampling strategy. Mentors identified as being exemplar mentors were nominated by peers in the field. Mentors provided names of their exemplar mentees. Structured interview protocols were created based on a systematic review of the literature and the authors experience. Mentors and mentees were interviewed separately.

We used a constructivist grounded theory approach to coding. Each transcript was independently coded by two members of the research team who discussed and agreed on codes before discussing with the whole research team. The coding structure was identified iteratively through this process and organized into aggregate themes.

Results
12 mentors and 11 mentees were interviewed. A conceptual model for mentorship was identified, detailing the skills, structure, and organization of mentoring relationships. Key themes include the relationship, organizational culture, differences between MES mentoring and other types of mentoring, what mentors/mentees value and bring to the relationship, outcomes of the relationship, and advice for mentors/mentees in MES.

Conclusions
Mentoring provides a pathway for advancing the skills of MES mentees and the field of medical education. Our framework offers a lens to understand the nature and value of such mentoring and provides recommendations for maximizing MES mentoring across institutions.

IRB Review

Has the IRB reviewed your project?
Yes

If you answered No or NA above, please explain why.
NA

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Oral Abstract Presentation 32

The Companionship Project: A non-medical patient companionship program for pre-clinical medical students
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Objective or purpose of innovation
Our objective was to explore non-medical companionship as a novel mode of clinical exposure during the early phases of medical school, as well as to provide a companionship service to patients with life-threatening illness.

Background and/or theoretical framework and importance of the field
Though early clinical experiences are now widely integrated into the pre-clinical phase of medical education, the optimal form of early clinical engagement has not been identified. To explore a novel mode of pre-clinical clinical exposure, we created The Companionship Project, a pilot program at NewYork Presbyterian Hospital/Columbia University that facilitates non-medical companionship between medical students and seriously ill patients with little to no social support.

Design
Student volunteers are matched with provider-identified patients, and visits occur at least once weekly. Patients can be referred to the program through the EMR from any hospital department; all patients with life-threatening illness are eligible

to participate. The volunteer-patient pairing ends at discharge or death.

Volunteers participated in mandatory training and debriefing sessions. Additionally, we administered a survey to medical student volunteers after a semester of participation.

Outcomes
40 patients were referred to the program. 16 students participated. Among students, 92% agreed that CP helped them better understand the patient experience and considered the program rewarding, a worthwhile time commitment, and an activity they would recommend to other students. 83% agreed that CP improved their communication skills. 67% agreed that CP oriented them to the hospital environment. 58% agreed that CP increased awareness of end-of-life issues.

Innovation's strengths and limitations
This program is unusual among pre-clinical experiences in that it offers longitudinal patient connections, an emphasis on patient-centered care, and an opportunity to improve students communication skills in an independent role. However, participation in this program was extra-curricular, and the number of students participating in the program was small.

Feasibility and generalizability
This program was administered at one site, which reduces its generalizability. However, its structure is easily replicated.

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Oral Abstract Presentation 33

***An Innovative Self-Instructional Teaching Method for Distinguishing Innocent from Pathological Heart Murmurs in Children**

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Research Statement/Research Question
Can we teach recognition of childhood heart murmurs with a brief self-instructional method using principles of andragogy, multisensory learning, and deliberate practice?

Background and relevance of the study
Normal, innocent, murmurs are common in healthy children, and non-cardiologists have limited skills to distinguish them from pathological murmurs. New methods of teaching cardiac auscultation are needed to decrease the high rate of over-referral of normal children for cardiac tests or consultation.

Design and Methods
Six on-line audiovisual modules, which take about 10 minutes each to complete, were developed, using recordings of pediatric heart murmurs, to expose the learner to deliberate practice using multiple examples of each murmur. Cognitive load was minimized, with emphasis on sound recognition. Pre-and post-tests, given 4 weeks apart, were developed using different recordings, with 20 cases per test. Third-year medical students on a pediatrics clerkship were given the pre-test and then randomized 1:1 to receive access to the modules prior to taking the post-test, or to receive access only after taking the post-test. For each recording, the subject was asked to assign innocent or guilty, level of confidence in this

distinction, and specific diagnosis.

Results
87 subjects completed both tests. Post-test results demonstrated clinically and statistically significant differences between these two groups on the primary outcome (differentiating innocent from pathological murmurs with at least moderate confidence, 66 v. 12%), and the secondary outcomes (differentiating innocent from pathological murmurs, and making the actual diagnosis). Within the experimental group, we also demonstrated significant differences in all 3 outcomes between those using 1-3 modules (mean score 44% on primary outcome) and those using 4-6 modules (83%).

Conclusions
We were able to teach recognition of common pediatric heart murmurs using our on-line self-directed curriculum, with particular attention to distinguishing innocent from pathological murmurs, using a method founded on teaching principles, which is brief, easily administered, and well accepted by learners.

IRB Review

Has the IRB reviewed your project?
Yes

If you answered No or NA above, please explain why.
NA

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Oral Abstract Presentation 34

A Team Based Learning Approach to Teaching Exercise Counseling in the Pre-Clinical Curriculum
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Objective or purpose of innovation
This study aims to identify whether a team based learning (TBL) approach to teaching medical students exercise counseling improves student performance.

Background and/or theoretical framework and importance of the field
Exercise plays an important role in the prevention and treatment of disease including: type 2 diabetes, hypertension, and depression. Exercise is a crucial part of health; however, many physicians do not feel competent counseling their patients due to a lack of training. With the shift in medical education toward the flipped classroom, we sought to develop a TBL to provide exercise counseling training. TBL has been utilized to teach lifestyle modification counseling in pharmacy school

however, to our knowledge this is the first report of a TBL exercise counseling module in preclinical medical education.

Design
Over 4 years, 355 first year medical students underwent exercise counseling education with either traditional lecture (2014-2015) or TBL (2016-2017). Performance on an exercise counseling assessment was compared between these cohorts of students.

Outcomes
Exercise counseling assessment significantly improved with the introduction of TBL with mean assessment scores of 80.5 and 80.0 in the control lecture groups compared with 90.3 and 88.2 in the experimental TBL groups ($p<0.001$).

Innovation's strengths and limitations
The intervention of developing an exercise counseling TBL resulted in an improvement in student performance on an exercise counseling assessment.

Feasibility and generalizability
This suggests the promise of TBL in teaching clinical skills and serves as a model to use TBL to teach other counseling in preclinical medical education.

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Oral Abstract Presentation 35

Using an asynchronous, interactive online learning module to improve electrocardiogram interpretation skills for preclinical medical students

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Research Statement/Research Question
The purpose of this study is to determine if an asynchronous, interactive online module (e-module) on electrocardiogram (ECG) interpretation improves students ability to identify abnormalities in an ECG compared to standard educational practice in the cardiology curriculum.

Background and relevance of the study
Electrocardiogram (ECG) interpretation is a core competency that is expected of graduating medical students (1). Yet, first-year residents lack skills in interpreting ECGs (2). There is some evidence that e-modules are effective in teaching ECG interpretation, however the literature is limited (3,4).

Design and Methods
E-modules were created at Stony Brook School of Medicine and consisted of narrated videos, in-video questions, and a mastery exam. Participants were first year medical students who either received the standard cardiology course materials (control group, N=73) or were given access to the e-modules as an additional self-study component (e-module group, N=119). First year internal medicine residents (PGY1 group, N=46) were included to benchmark where ECG interpretation skills should be at graduation. At two time-points (pre- and post-course), participants were given 6 ECGs to assess and were asked to select the correct ECG interpretation from 4 choices. Percent correct scores were calculated.

Results
Pre-course percent correct scores did not differ between the control and e-module groups (39% vs. 38%, respectively). However, the e-module group performed better than the control group on the post-course test (78% vs. 66%, $p<0.035$). Performance by the resident group did not change over time (74% at baseline and 4 weeks later), however the e-module group outperformed resident group ($p<0.001$) and the control group performed worse than the resident group ($p<0.001$).

Conclusions
An asynchronous, interactive e-module enhances student learning of ECG interpretation, exceeding resident performance. This e-module can be easily incorporated as a self-directed learning component of the preclinical curriculum to enhance ECG interpretation skills in preparation for clinical rotations.

IRB Review

Has the IRB reviewed your project?
Yes

If you answered No or NA above, please explain why.
NA

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Oral Abstract Presentation 36

***Impact of Remediation on Milestone Trajectory in Residency Training**
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Research Statement/Research Question
Identify the impact of remediation on objective performance measures using reporting milestones.

Background and relevance of the study
Approximately 7% of residents will be identified as struggling within internal medicine (IM) residency programs. (1) Strategies implementing resource-intensive remediation programs have been adopted nationally to address these residents, with unclear long-term outcomes. (2,3) We aimed to identify the trajectory of milestone ratings of residents following intensive remediation in an IM residency program as compared to their peers.

Design and Methods
We performed a single-center retrospective cohort analysis of milestone data from IM residents from 2014 to 2018 within the Department of Medicine (DoM) at the Hospital of the University of Pennsylvania (HUP). We analyzed summary statistics of residents completing formalized remediation as compared to post-graduate year (PGY) matched controls, and performed multivariable linear regression to assess change in milestone rating over training. To assess the trajectory over

duration of clinical training, we performed a difference-in-difference analysis using composite milestone ratings immediately pre- and post-referral to remediation (time-period 1), compared to the composite milestone ratings for the remainder of residency training (time-period 2).

Results
Of the 422 unique residents within the cohort, 19 (4.5%) were enrolled in formalized remediation. 79% (n=15) of remediated residents were referred during PGY-1, with the remainder referred during PGY-2. The majority of struggling learners primarily struggled in the domain of organization and efficiency (53% [n=10]), followed by clinical reasoning (26% [n=5]) and medical knowledge (16% [n=3]). Reporting milestones improved significantly following remediation and remained elevated. However, composite milestone ratings for remediated residents remained significantly lower than PGY-matched controls in all competencies. Difference-in-difference analysis revealed a significant difference in trajectory between the groups during the specified time-periods ($p < 0.005$).

Conclusions
While remediation results in immediate improvement in milestone ratings across competencies, remediated residents do not achieve the milestone ratings nor the same milestone trajectory as other IM residents.

IRB Review

Has the IRB reviewed your project?
Yes

If you answered No or NA above, please explain why.
NA

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Oral Abstract Presentation 37

***What Do You Want to Learn or Work on Today?: Benefits and Barriers to Asking Residents for Self-identified Learning Goals in the Pediatric Emergency Department**

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Research Statement/Research Question
The purpose of this study was to determine how asking residents to self-identify learning goals for their emergency department (ED) shifts affected residents and preceptors experiences with learning, teaching, and feedback.

Background and relevance of the study
In the unique clinical setting of the ED, residents and preceptors may have only a short-term relationship, such as a single

shift. This poses challenges to performing learner assessment, selecting ideal instructional strategies, and providing substantive feedback.

Design and Methods
This was a qualitative study with attending physicians and residents from fourteen training programs that rotate through the Childrens Hospital of Philadelphia ED. Residents were asked to write down a learning goal for their shift and to share their goal with their attending. Semi-structured interviews were conducted with a convenience sample of residents and a purposive randomized sample of attending physicians about their experience with resident-identified learning goals. Interviews were audio-recorded, transcribed, parallel coded, and analyzed until thematic saturation was reached.

Results
During the 19-week study period, 358 unique learning goals were collected. Nineteen residents and ten attending physicians were interviewed. Themes included: (1) Goal-setting facilitated learning. Residents and attendings reported that learning was attending-dependent and identified multiple ways in which attendings facilitated accomplishing residents goals, such as prioritizing teaching on shift, doing verbal teaching, and directing residents to patients and resources. They spoke about ways in which residents self-directed their learning less frequently. (2) Residents perceived weaknesses, future practice settings, and available patients informed their goals. (3) Goal identification helped determine residents educational needs, as there was often mismatch between resident and attending-identified goals. (4) The busyness of the ED, available patients, and resident difficulty creating goals were barriers to goal-setting, accomplishment, and feedback.

Conclusions
Asking residents to self-identify learning goals for their shifts in the pediatric ED as an instructional strategy facilitated perceived learning, goal accomplishment, and feedback.

IRB Review

Has the IRB reviewed your project?
Yes

If you answered No or NA above, please explain why.
NA

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Oral Abstract Presentation 38

Introducing Objective Standardized Clinical Examinations to Evaluate Communication and Professionalism Behaviors in An Anesthesiology Residency Program

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Objective or purpose of innovation

Weill Cornell Anesthesiologys Communication and Professionalism Education (CAPE) Program launched Objective Structured Clinical Examinations (OSCEs) to evaluate resident communication and professionalism (CaP). We describe their development and early data supporting our assessment methods.

Background and/or theoretical framework and importance of the field

Evaluation of CaP has been emphasized since the introduction of the Anesthesiology Milestone Project by the Accreditation Council for Graduate Medical Education (ACGME) in 2013 [1]. OSCEs are well-established for assessing CaP [2,3], but there is little describing their impact on anesthesiology trainees.

Design

CAPE anesthesiologists are involved throughout OSCE development: Scripting, Mapping milestones to behaviors, and Assessment. Scripts elicits actor-resident exchanges that are mapped to ACGME competencies. Encounters are filmed and evaluated by 2 CAPE faculty and the test-taker. Evaluation consists of checking behaviors that correspond to training milestones, which are then aggregated as mean progression through each subcompetency. The Gap-Kalamazoo assessment [5] is also used by actors, residents and CAPE faculty to provide feedback.

Outcomes

Residents found the OSCEs useful (88/89) and realistic (89/89). Most residents identified hidden strengths (50/89, see supplement 1) and weaknesses (63/89). Kruskal-Wallis tests demonstrate statistically-significant differences in milestone ranks between training years (see supplement 2).

Innovation's strengths and limitations

Our strengths include resident engagement, self-reflection, clinical relevance, and revealing "hidden" behaviors. Our OSCEs identify programmatic gaps that inform further education sessions. One limitation is our single-institution setting: CAPE evaluators work with residents and may be subject to bias. There may also be institutional and cultural biases when mapping behaviors to milestones. Developing scenarios, training actors and evaluating videos are time-consuming and require investment in faculty and video infrastructure.

Feasibility and generalizability
Eighty-nine residents have been tested since 2017, using scenarios that test a range of anesthetic CaP challenges. Our OSCEs can be reproduced in any institution with audio-visual recording and streaming capability. Future plans include partnering with other hospitals to reduce bias and challenge the validity of our methods.

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Oral Abstract Presentation 39

***Trusting Trainees: A Qualitative Study of Entrustment Decision-Making in Internal Medicine and General Surgery Program Directors**
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Research Statement/Research Question
To explore processes underlying Entrustment Decision-Making in Program Directors and characterize entrustment for cognitive and procedural tasks.

Background and relevance of the study
"Entrustment Decision-Making" (EDM) is a process to determine when trainees may perform tasks unsupervised. Program Directors (PDs) make both ad hoc and summative entrustment decisions. The goal of our study was to elucidate entrustment frameworks in PDs, and to compare EDM processes for cognitive (Internal Medicine - IM) versus procedural (General Surgery - GS) specialties.

Design and Methods
Semi-structured interviews were performed on PDs from around the country using purposeful sampling and an inductive approach. The authors met regularly to identify and agree upon codes. Analysis was performed using Dedoose©.

Results
Sixteen IM and 17 GS PDs were interviewed. The following themes emerged:
1) Assessment Networks: PDs prioritized assessment data using networks of persons at their institution. Often, data from 'trusted' faculty had more weight.
2) Expected Trajectory: PDs had a standard by which they determined individual progression. This measure was comparative or contextual in nature and helped PDs identify which trainees were struggling.

Although IM and GS PDs agreed on some 'valuable' trainee attributes, differences existed:
1) Insight/Judgement IM PDs reported insight as important, whereas GS PDs pointed to judgement. The difference stemmed from the degree to which the PD engaged in the task itself.
2) Observation as Foundation of Trust GS PDs reported the degree of their involvement as communication of trust.

Through IM PDs described direct observation as essential, they often used proxies to determine trainee competence.

Conclusions
PDs curate networks of trusted faculty to perform assessment of trainees. Expected trajectories are important decision-making tools, but may impose unintended bias. Valued attributes in trainees were similar between IM and GS but differed in emphasis on insight vs judgement; we theorize the difference was due to the focus on cognitive vs procedural tasks.

IRB Review

Has the IRB reviewed your project?
Yes

If you answered No or NA above, please explain why.
NA

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Oral Abstract Presentation 40

***The Path through Medical School, Does Generation Status Matter?**
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Research Statement/Research Question
We examined the effect of First-generation college graduate (FG) status on: medical-school outcomes: graduation, dismissal and withdrawal rates, and academic performance measured by United States Medical Licensing Examination first-attempt passing (vs. failing) scores on Step1 and Step2 Clinical Knowledge (CK) exams.

Background and relevance of the study
Although FG college graduates are under-represented among US medical students,1 there is little research on the academic experiences of FG compared to their Continuing-generation (CG) peers with at least one college-graduate parent/guardian.

Design and Methods
Responses to the Association of American Medical Colleges Post-MCAT, Matriculating Student (MSQ) and Graduation Questionnaires, data from the Student Records System and the National Board of Medical Examiners were obtained for US medical school matriculants in academic years 2007-2008 through 2011-2012. Multivariable logistic regression models were used to assess the independent effects of generation status, gender, race/ethnicity, age at MCAT, undergraduate institution Carnegie Classification, participation in MCAT prep course and high school enrichment programs, and health-related work prior to medical school, and MCAT scores on medical-school outcomes. STATA 15.0 was used for analysis.

Results
Of 76,646 MSQ respondents, 12.1% were FG. As a group, Blacks, Hispanics, American Indians, Alaskan and Hawaiian Natives were two times (95% CI: 1.92.1) more likely than non-Hispanic Whites to be FG. Unadjusted analysis showed FGs were significantly less likely than their CG peers to graduate (OR:0.84 [95%CI:0.76 -0.93]), pass Step1 (OR:0.59

[95% CI:0.54-0.65]), Step2CS (OR:0.67 [95% CI:0.59-0.76]) and Step2CK (OR:0.50 [95%CI:0.45-0.56]) and more likely to be dismissed (OR:1.9 [95%CI:1.5-2.3]) and to withdraw (OR:1.2 95% CI:1.1-1.4). After covariate adjustment, FG students were less likely than their CG peers to pass Step2CK (OR:0.76 [95%CI:0.66-0.88]) and more likely to be dismissed (OR:1.4; 95%CI:1.1-1.8).

Conclusions
Findings indicate that FG are more likely than CG students to struggle during medical school and may benefit from targeted educational initiatives both before and during medical school.

IRB Review

Has the IRB reviewed your project?
Yes

If you answered No or NA above, please explain why.
NA

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Oral Abstract Presentation 41

Academic Experiences of First-Generation (FG) and Continuing-Generation (CG) US Medical School Matriculates: Preliminary Results from a Qualitative Pilot Study

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Research Statement/Research Question
Describe the characteristics and experiences that contribute to First-Generation (FG) and Continuing-Generation (CG) students success in preparing for and navigating through medical school.

Background and relevance of the study
Although FG college graduates are under-represented among US medical students,1 there is a paucity of research on the academic experiences of FGs compared to their CG peers with at least one college-graduate parent/guardian.

Design and Methods
The study was conducted at three northeastern medical schools and approved by the Albany Medical College Institutional Review Board. Researchers at each institution presented the study to their medical students and sent the students an email with a survey link to the study.. After consent, respondents completed a survey on their experiences and perspectives, and, indicated if they were interested, in being interviewed for the survey. A random sub-set of respondents who expressed interest in being interviewed were contacted for the interview. The interviewer was blind to each interviewee's identity. Researchers had no access to individual data. Qualtrics and STATA 15.0 were used to analyze quantitative data. Nvivo was used to analyze qualitative data.

Results
Preliminary data from the screening survey indicate that of 459 respondents who answered the parental education question, used to create the generation status variable, 18% were FG. Eighty-five percent of all respondents reported being born in the US and 48% self-identified as non-Hispanic white. FG students were more likely than their CG peers to report currently contributing to their families finances (10% vs. 2% for CG; p = .004) and less likely to report receiving help navigating the medical school application and interviewing process (37% vs. 52% for CG; p = .003). Themes from open-ended responses show generation-status differences.

Conclusions
Data show that the characteristics and experiences of FG and CG students differ in several respects. This information may help medical educators as they design targeted student support programs.

IRB Review

Has the IRB reviewed your project?
Yes

If you answered No or NA above, please explain why.
NA

References
Grbic D., Garrison, G., Jolly, P. Diversity of U.S. Medical Students by Parental Education. Association of American Medical Colleges, Analysis in Brief 2010; August.

Oral Abstract Presentation 42

Three Strategies to Address Racism and Bias in Objective Structured Clinical Exam Stations
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[2]Maimonides Medical Center, [3]New York University School of Medicine, [4]Northwell Children Medical Center

Objective or purpose of innovation
To create OSCEs that are relevant for daily medical practice, the Maimonides Pediatrics OSCE Committee developed several stations that address bias and racism.

Background and/or theoretical framework and importance of the field
Racism and biases are of concern to most medical educators. They are widespread and can significantly interfere with clinical and team work. In addition to enhancing knowledge and adjusting attitudes, educators need to be concerned about skills to address such sensitive situations.

Design
Over several decades, three stations were developed that focus on racism and bias. In Seizure Disorder residents need to discontinue unnecessary medication, while the African American mother worries about having medication withheld because of racist policies. In Pediasure Please they have to confront a colleague who made racist comments about all Pakistani patients requesting Pediasure. In Best Doctor learners need to address a White Supremacist fathers refusal to have his child cared for by anyone who is different from himself. The SP adjusts his comments based on triggers that are pre-identified for each resident.

Outcomes
To date Seizure Disorder was used with 5 cohorts and Pediasure Please with 14 cohorts of PGY-2s. Best Doctor was administered to 2 cohorts of PGY-3s. Qualitative and quantitative data from residents, faculty and SPs point to the stations effectiveness.

Innovation's strengths and limitations
Bias and racism are sad facts of life making self-awareness and management skills essential. OSCEs provide unique opportunities to practice these competencies in a controlled environment, permitting further reflection and multi-source feedback. Such stations need to be planned with care and skillfully debriefed in order to assure psychological safety for learners, SPs and faculty.

Feasibility and generalizability
The repeated deployment of these stations attests to their feasibility and educational usefulness. Although the type of bias

may vary from location to location, all medical learners need to have effective strategies to manage such sensitive situations. With some adjustments to local circumstances, generalizability should be good.

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Oral Abstract Presentation 43

A Training Program to Reduce Implicit Bias in First Year Medical Students

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Research Statement/Research Question

This study was designed to measure the effect of a program for first year medical students to build awareness of and reduce manifestations of implicit bias.

Background and relevance of the study

Studies have shown that implicit bias among healthcare providers (the unconscious and unintended biases that influence medical decision making) contributes to health disparities. However, medical schools do not routinely measure implicit bias in students, and curricula lack specific programming for reducing implicit bias.

Design and Methods

Thirty-nine first year medical students (experimental group n=18; control group n=21) participated in a 3-part implicit bias training program. Students in the experimental group attended three art museum visits where an art educator discussed works of art to address themes related to implicit bias, a medical anthropology lecture, and a discussion about implicit bias in medical research. All participated in pre- and post-test activities: (1) the Harvard Implicit Association Test for Skin Tone (IAT) and (2) a questionnaire to measure awareness of implicit bias, which included writing narrative responses to open-ended questions.

Results

Analysis of IAT results indicated all participants had bias towards light skin tone (p=.025), and all were aware that implicit biases affect the provision of healthcare. Change in IAT scores for the experimental group did not reach significance but trended towards a decrease in bias.
Qualitative analysis of narrative responses indicated the experimental group provided more detailed examples of personal experiences with implicit bias in the healthcare environment.

Conclusions
A training program to reduce implicit bias can lead to deeper reflection on personal biases. Increased awareness and acknowledgement of personal biases may positively influence healthcare and impact healthcare disparities. Although this study involved only a small sample of first year students from one medical school, it is our intention to promote curricular focus on this important topic.

IRB Review

Has the IRB reviewed your project?
Yes

If you answered No or NA above, please explain why.
NA

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Oral Abstract Presentation 44

Assessment of Gender-based Qualitative Differences within Trainee Evaluations of Faculty

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Research Statement/Research Question
Are there gendered qualitative differences in faculty evaluations written by medical trainees?

Background and relevance of the study
Implicit biases are pervasive in medical training. (13) Studies examining gender bias in trainee evaluations of medical faculty are mixed. (46) No studies have examined gendered differences in narrative evaluations of medical faculty. We aimed to characterize qualitative differences in trainee narrative evaluations of female and male faculty.

Design and Methods
We performed a single-center, retrospective cohort analysis of trainee narrative evaluations of Pulmonary and Critical Care Medicine (PCCM) faculty at the Hospital of the University of Pennsylvania from 2015-2016. Directive and summative content analysis was performed by four raters with data coded and analyzed in Microsoft Excel (2018, 16.16.1). Major contextual themes were identified using constant comparative techniques in a multistage, multi-analyst procedure. Thematic differences based on faculty gender were identified, with statistical significance determined using chi-2 analysis ($p < 0.05$).

Results
747 of 1214 total narrative evaluations were analyzed, representing 62 faculty members [17 women, 45 men], with analysis continued for several hundred comments after saturation of themes. Six overarching themes emerged: teaching skills, clinical skills, supervision, interpersonal skills, and leadership skills. There were no differences in overall themes by gender. Within subthemes, we found no significant gender differences in the proportion of comments referencing general teaching skills (p 0.70), learning environment (p 0.85), enthusiasm for teaching (p 0.13), or interpersonal concern (p 0.65). Evaluations of male faculty more frequently mentioned receiving feedback (7% versus 3%, p 0.02), while comments about role models were more common in female faculty evaluations (15% versus 8%, p 0.01). Constructive criticisms of female faculty were more likely to mention demeanor (p 0.03).

Conclusions
Our data suggest minimal thematic differences in trainee narrative evaluations of male and female PCCM faculty. Further evaluation in other specialties, as well as assessment for subtle word choice differences, is warranted.

IRB Review

Has the IRB reviewed your project?
Yes

If you answered No or NA above, please explain why.
NA

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Oral Abstract Presentation 45

Behaviors Associated with Standardized Patients and Residents Perceptions of Empathy

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Research Statement/Research Question

The purpose of this study was to investigate which specific resident behaviors were associated with SP perceptions of resident empathy.

Background and relevance of the study

Prior research suggests that residents self-assessed empathy in Objective Structured Clinical Examinations (OSCEs) correlates poorly with standardized-patient (SP) assessments of residents empathy.

Design and Methods

A cross-sectional study of 222 residents investigated the correlation between residents behaviors during two OSCEs and SP ratings on the Jefferson Scale of Patient Perceptions of Physician Empathy (JSPPPE). Resident behaviors were analyzed with the Roter Interaction Analysis System (RIAS), a coding protocol for the analyses of behavioral interactions/utterances of health professionals. We analyzed categories in the RIAS on two OSCEs using multiple regression to determine how much variance in the JSPPPE scores could be explained by specific resident behaviors.

Results

In OSCE #1, a middle-aged woman with headaches, depressive affect, and is an abuse victim, higher JSPPPE scores were associated with data gathering activity (r=.438; p=.000), patient education/counseling (r=.341; p=.016), and facilitation/patient activation (r=.188; p=.044); together explaining 48% of the variance in JSPPE scores (R2=.480), F=16.766 (2,112), p=.000. Data gathering was the strongest behavioral contributor, standardized = .499 (p=.011). In OSCE #2, a 68-year-old man being discharged after an acute myocardial infarction, higher JSPPPE scores were associated with positive rapport building (r=.242; p=.012) and friendliness and warmth; together explaining 40% of the variance in JSPPE scores (R2=.399), F=34.575, (2,104), p=.000. Friendliness and warmth made the strongest unique contribution to the model, = .627 (p=.000).

Conclusions

This study shows that the role of empathy in clinical interactions, and the assessment of it, is complex and context specific. In OSCE #1, where emotion was high, different behaviors related to SP perception of empathy, as compared to OSCE #2, which was focused on information giving. Replication of the study with different cases is warranted to confirm these results.

IRB Review

Has the IRB reviewed your project?
Yes

If you answered No or NA above, please explain why.
N/A

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Oral Abstract Presentation 46

Towards a New Gold Standard: Artificial Intelligence and Clinical Skills Evaluation

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Objective or purpose of innovation

This innovation seeks to improve OSCE scoring by using artificial intelligence and natural language processing.

Background and/or theoretical framework and importance of the field

Objective Structured Clinical Examinations (OSCEs) often rely on standardized patients (SPs) to assess learner behaviors in simulated settings, but SP ratings often suffer from limited inter-rater reliability (1, 2). Our project asks: can applied artificial intelligence and natural language processing improve OSCE scoring?

Design

We randomly selected, deidentified, and transcribed 50 videotaped OSCE encounters using a single case utilized to prepare students for USMLE Step 2CS. The transcripts were manually split into 11,227 utterances, which were then annotated using criteria from an internal communication skills checklist and components of a standard medical interview (i.e. past medical history, medications, etc.). The annotated transcripts were split into training (n=40) and testing (n=10) sets, generating 13 different predictive models using a conditional random fields algorithm built on Scikit-learn software. The protocol was approved by the CUIMC Institutional Review Board (Protocol AAAR9040).

Outcomes

Automated scoring using algorithms based on the training sets were between 59% and 89% (mean = 78.5%), as

compared to human scoring of approximately 75.1% on similar tasks (3).

Innovation's strengths and limitations
The use of artificial intelligence to score OSCEs is an innovation that can improve efficiency and reliability in providing standardized feedback to students on clinical performance. On a cohort level, this technology can help screen for students in need of further clinical skills training. Limitations include that we have not yet replicated our findings using other cases and that the technology cannot capture non-verbal data (e.g. body language and tone).

Feasibility and generalizability
This approach is in the early stages of development and requires replication and validation before it can be used more broadly. We plan to further develop this innovation and validate its outputs and hope it can serve as an emerging gold standard for the evaluation of clinical skills.

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Oral Abstract Presentation 47

Natural language processing (NPL) approach to entrustable professional activities (EPAs) text analytics classification and scoring
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Objective or purpose of innovation
We aim to create a more efficient and timely feedback processing system for administrators and students which incorporate qualitative feedback. Currently, faculty comments on EPA performance are distributed to students as part of their 360-feedback system but there is no way to examine comments and feedback across the student body to identify trends or needs. We incorporated NLP to analyze qualitative big data into a more tangible form for both coaches and students to track EPA progress.

Background and/or theoretical framework and importance of the field
Columbia University Medical Center is one of ten schools piloting the Association of American Medical Colleges core EPAs for entering residency. EPAs provide the guideline for identifying gaps and transition points in medical students learning while they transition into residency1. One of the main tools for assessing medical students professional progress is through faculty feedback and comments2. Research has demonstrated that developing meaningful feedback mechanisms that are both credible and constructive is essential to learning3.

Design
We built an NLP algorithm to sort and identify faculty comments into targeted EPA buckets for sentiment processing. Key phrases were coded for EPA category and given polarity designations as positive/negative. An entrustment score was calculated based off sentiment to indicate which categories effort should be concentrated.

Outcomes
Individual student dashboards were designed to display overall score on various EPA categories to help guide learning efforts. Tableau dashboards were further designed to provide a birds-eye and detailed view of performance for students and advisors.

Innovation's strengths and limitations
We believe this is an early adaptation of NLP to process faculty comments on EPA performance. As such, the current algorithm has only been trained using a single schools EPA data. The algorithm will become more robust with additional data and feedback with growing users.

Feasibility and generalizability
The natural language processing algorithms built could be applied to any medical school seeking to analyze qualitative data.

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Oral Abstract Presentation 48

There's Got to Be a Better Way: Creating a Tool for Aggregating and Mapping Learner Assessments
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Objective or purpose of innovation
With 275 students/class and learner assessment data collected and stored in multiple platforms, we sought to create a central repository of assessment data mapped to competency frameworks.

Background and/or theoretical framework and importance of the field
As UME trends toward outcomes-based education with varied instructional formats and assessments, the need for an organizational system to determine student achievement is critical.1 Mapping to internal and external frameworks such as USMLE, competencies, Core EPAs and milestones is essential. This tool would support the UME to GME educational handover.2,3 No such product is widely available.

Design
Jefferson Competency Assessment Tool (JeffCAT) was designed by Jefferson and developed with an industry partner. We defined a taxonomy based on SKMC graduation competencies, AAMC EPAs, and ACGME Milestones. JeffCAT aggregates competency data to allow review through user-specific dashboards. Quizzes, exams, small group evaluations (Blackboard/ExamSoft) and clinical skills performance (SimulationIQ) form the core. Each entry maps to the taxonomy including type of assessment, curricular threads, body systems, SKMC graduation competencies, and EPAs. JeffCAT reports data by block, phase, and longitudinally utilizing permission-limited views that vary between students, faculty, and administration.

Outcomes
Faculty and administrators resoundingly agreed on JeffCATs utility for monitoring longitudinal progress. Feedback from Year 1 students demonstrated 73% felt JeffCAT enabled them to effectively monitor their progress, 71% agreed it helped identify areas for improvement and 80% planned to access it again within 3 months. Additional user data will be forthcoming.

Innovation's strengths and limitations
JeffCAT successfully aggregates and maps assessment data enabling outcome monitoring across multiple frameworks; allowing learner self-correction, academic support4, and meaningful information for the UME-GME handover. Cost for development, mapping, and manual input of NBME performance data are limitations.

Feasibility and generalizability
Jefferson designed JeffCAT to be available to other medical/health schools; customizable for other competency frameworks to monitor the achievement of outcomes. By collaborating with industry, we created that tool.

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Oral Abstract Presentation 49

Curriculum Map 2.0 - Producing a curriculum map with a higher level of detail to enhance curriculum design
C. Castiglia
NYU Long Island School of Medicine

Objective or purpose of innovation
Designing an enhanced curriculum map (C-map) for a new, 3-year medical school to provide clear reporting for accessing core curriculum education requirements.

Background and/or theoretical framework and importance of the field
Compressed timeline of a 3-year medical school requires that curriculum committee members exploit all opportunities to include required content where relevant. A comprehensive C- map can provide focused views of program architecture via text queries or visualizations such as heat maps to quickly reveal gaps and redundancies.

Design
An educational task force of course directors and educational technologists assembled. A needs assessment was performed; an agile iterative process conducted involving several discreet sprints to determine:
Queries to be expected, level of detail, report styles, outcomes desired.
What & How data should be collected.
Organization of data for easy export to third-party applications.
Select applications to collect and organize the raw data.
Develop process map to direct and identify level of effort and personnel.

Outcomes
Benefits from the collective vetting of learning objectives included refinements to course and learning objectives, and identified gaps and redundancies. Linking course objectives with critical competencies and EPAs was streamlined by leveraging efficiencies provided by programs including Microsoft Excel and Adobe Acrobat.

Innovation's strengths and limitations
By introducing a structured format for collection and organization, the process is defined and efficiently executed. Adding linkages to assessment methods return C-map previews with a higher level of detail. Barriers to success: investment of time during sprint and collection phase, a higher than anticipated learning curve for using the submission form.

Feasibility and generalizability
This innovation is obtainable by leveraging the professional expertise of the task force in their specific discipline and using familiar applications i.e. Adobe Acrobat form tool and Microsoft Excel. This approach which includes preplanning, data review and a clear plan for desired outcomes can also be applied to individual course design and project planning.

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Oral Abstract Presentation 50

Implementation of a Student-driven Wiki to Improve Student-to-student Communication and Information Sharing
P. Pancholi, E. Margono, N. Shah, W. Alam, P. Kung, A. Wong
Stony Brook University School of Medicine

Objective or purpose of innovation
Improve student-to-student communication and resource sharing using an organized, low-maintenance and easily-accessible resource.

Background and/or theoretical framework and importance of the field
In the era of Web 2.0, medical educators should understand how new technologies promote student communication and enhance educational experiences(1). At Stony Brook School of Medicine, students used to rely on information from upperclassmen which often varied in accessibility, accuracy, and comprehensiveness. Furthermore, existing resources were often outdated, disorganized, and time-consuming to maintain.

Design
We designed a student-driven wiki to facilitate student-to-student communication, increase information sharing, and improve the quality of information shared. We collaborated with the IT department to host the website using the open-source content management system Drupal and implemented Google Analytics for data collection.

Outcomes
On average, 372 students accessed the site monthly throughout the academic year, representing approximately 74% of the student population. We found that site usage grew proportionally to the amount of content available. Furthermore, significant traffic was observed on student life pages, such as those on health and wellness, highlighting a need for student-to-student sharing of such information.

Innovation's strengths and limitations
Curating initial site content is one of the major challenges with wikis. To address this, a system was established in which students who were interested in creating academic content could receive academic credit in exchange for

faculty-reviewed content. Once established, wikis are known to quickly become self-perpetuating resources of user contributions(2).

The greatest strength of the wiki platform is versatility(3). It can easily cover content ranging from comprehensive study guides to the best local running trails. This allows students to access relevant information for a balanced medical school career in an all-encompassing resource.

Feasibility and generalizability
The wiki platform can easily be implemented using a multitude of free and open source software(4), with minimal support and maintenance by school officials. Ultimately, it enriches the medical student experience and bridges communication gaps amongst students of all different years.

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Oral Abstract Presentation 51

A Six-Step Active Learning Design Process: Illustrating the Iterative Process of Design, Engagement, & Reflection in Medical Education

C. Simone, C. Nicholas, J. Moore, K. Huggett
Robert Larner, M.D., College of Medicine at the University of Vermont

Objective or purpose of innovation
We have a goal of 100% active learning by August 2019. We wanted to ensure high quality learning outcomes, alignment between objectives and assessment, differentiated objectives for independent learning and in-class sessions, and standardized instructional methods.

Background and/or theoretical framework and importance of the field
The Larner College of Medicine (LCOM) is converting curriculum delivery to 100% active learning. We identified a need for a process to guide faculty through the transition. Using the tenets of project management and modifying Kerns six-step model, we produced a six-step process.

Design
We created an active learning team of instructional designers who use the six-step process as a road map when meeting with faculty. This visualization, which has more detail than can be represented here, helps control for consistency and quality, while allowing faculty room for designing in-class activities and independent learning.

Step One: Review/revise course and session objectives
Step Two: Choose one of ten active learning modalities
Step Three: Design in-class activities
Step Four: Design independent learning
Step Five: Implement: assess and facilitate

Step Six: Evaluate and capture ideas for revision

Outcomes
The six-step process has helped communicate the vision of our project, while outlining concrete steps for success. Timeliness has proven to be, to large degree, a determiner of success. An overlay of recommended start times will be added.
We are currently tracking faculty perceptions about the process before and after, as well as faculty feedback on the active learning teams effectiveness through faculty intake and quality assurance surveys. Learning outcomes are also being tracked, and early results are very promising.

Innovation's strengths and limitations
By using the triple constraint of project management, scope, time, and cost, with high quality learning outcomes at the center, we have created a curricular redesign model that is codified, easily communicated, and well supported.

Feasibility and generalizability
This model can be replicated at similar institutions. Cost, time, and quality are interdependent variables.

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WORKSHOPS

Workshop 1

Diving Deeper in Quality Improvement & Patient Safety: Advancing Healthcare thru Competency Based Education Across the Continuum

L. Howley
AAMC

Session Summary:
In 2017, the AAMC convened a working group of diverse individuals (includes representatives from the LCME, ACGME, ACCME, AACN, the Informed Patient Institute, the Veterans Administration, as well as trainees and select member medical schools and teaching hospitals) to a draft set of tiered competencies in Quality Improvement and Patient Safety (QIPS) for use across the continuum (UME, GME, CME) for curriculum development and formative assessment. These competencies are aligned with the ACGME/ABMS six common competencies and supplement their relevant ACGME harmonized milestones. Throughout the iterative development process, the QIPS competency collaborative has solicited feedback from hundreds of stakeholders using a modified Delphi approach.
In this session we present the new tiered competencies and provide the opportunity to examine ways that the competencies can be used to develop learning activities and learner assessments around five domains of QIPS practice.

Session Objectives:
- Identify targeted competencies in quality improvement and patient safety appropriate to learners' stage of training
- Review existing curricular resources for teaching and assessing the QIPS competencies
- Propose learning activities and/or learner assessments for the QIPS competencies

Session Agenda:
- 0:00 –0:05 Commencement, introductions to the workshop presenters, outline goals and learning objectives.

• 0:05 – 0:15 Provide background on QIPS initiative (purpose and process of the AAMC QIPS Competencies collaborative).
• 0:15 – 0:30 Review the tiered competencies. Attendees will then be asked to identify any competencies that they feel would be a challenge to operationalize (make meaningful learning experiences and/or assessments around) in their current clinical environment and why.
• 0:30 – 0:50 Table discussion/Pair and share: Attendees will be asked to pair o form triads with others who identified the same domain/competency as challenging to operationalize. Each group will then brainstorm activities and/or learner assessments that might address those areas. A worksheet will be provided to guide this discussion.
• 0:50-0:65 Large group debriefing of the table discussions. Share challenges and potential solutions across the audience.
• 0:65 – 0:75 Wrap Up and Next Steps. Attendees will be encouraged to continue the discussion and/or plans for collaborative curricular design after the session and invited to keep the AAMC staff updated on progress.

Workshop 2

Negotiating Boundaries in the Era of #MeToo

S. de Gijsel[1], E. Pearlman[2]
[1]Weill Cornell Medicine, [2]Donald and Barbara Zucker School of Medicine at Hofstra/Northwell

Rationale

Since the #Metoo movement has gone viral in 2017, many women have shared their experiences with sexual harassment. A study in JAMA in 2016 showed that Medicine as a profession has a high prevalence of harassment and discrimination. Many medical schools are developing curriculae to increase awareness amongst faculty, students, and staff to help them recognize and report sexual misconduct. Recently a study in the NEJM described mens fears of false allegations of sexual misconduct impacting their careers. We hope to increase self awareness, and to explore non judgmental communication tools to address gender bias and sexual harassment.

GOALS:

To explore the impact of the #Metoo movement on health professionals and patients.
To use gender bias, harassment, and discrimination as a lens through which to empower those in the lower ranks of hierarchy to speak up, set boundaries, and provide feedback to those above them.

By the end of the workshop, participants will be able to:

Objectives:

Describe what is known about the prevalence of harassment and discrimination in the health professions,
Use a trauma-informed approach to understand the impact of harassment and discrimination in the workplace,
Identify the many forms of sexual misconduct from the overt to the more subtle,
Recognize ones own boundary alarm,
Practice setting boundaries and providing feedback using case scenarios, and
Brainstorm ways to support colleagues, trainees and mentees who find themselves on either end of an abusive relationship.

Session Methods and Format

Presentation of background literature, review of key concepts (trauma-informed care, concept of the boundary alarm) (10 min)
Large group discussion (10 min)
Videotape triggers with discussion (20 min)
Role play in triads using case scenarios/ video fragments (20 min)
Large group debrief & brainstorming best practices (10 min)
Wrap up & take aways (5 min)

Experience
Ellen Pearlman, faculty member for the Academy of communication in health care, has extensive experience in teaching communication skills and humanism to medical students and residents, including the use of role play, video tape review, personal awareness groups, and learner centered learning.
Swana de Gijsel, facilitator in training at the Academy of communication in health care, has experience in teaching communication skills to medical students, residents and attending physicians at NYP as well as leading resilience workshops to medical students.

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4. Gender differences and similarities in medical students experiences of mistreatment by various groups of perpetrators. Siller et al.
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9. Mens Fear of Mentoring in the #MeToo Era Whats at Stake for Academic Medicine?. Soklaridis S. Et al. NEJM October 2018
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Workshop 3

Essay-Based Exams: Rationales, Challenges, and Best Practices
J. Brenner, J. Bird, R. Hill, R. Lucito, Z. Nassrallah, D. Olvet, J. Willey
Donald and Barbara Zucker School of Medicine at Hofstra/Northwell

Rationale
Many medical schools have incorporated active learning strategies into curricula that are characterized by integration of basic and clinical sciences. While literature is evolving on curricular integration delivery, relatively little has been reported on complementary and innovative assessment strategies, especially in the pre-clinical years in medical education. In order to better align with active learning pedagogies and to best assess medical knowledge content in an integrated curriculum, the Zucker School of Medicine adopted essay-based examinations since its first students matriculated in 2011.
Our workshop is intended to assist educators in implementing essay-based exams into their assessment strategies.

Objectives
1. Describe the benefits and challenges of essay-based exams from student and faculty perspectives.
2. Identify components of an effective essay-based exam question and use that knowledge to create essay-based exam questions.
3. Identify components of an effective rubric and use that knowledge to create one.
4. Identify the necessary resources at the faculty and administrative level.

Session Methods and Format
Introduction (15 minutes): The workshop will begin with an introduction presented by panelists from the Zucker School of Medicine. Topics will include: 1) overview of our approach; 2) perceived benefits of essay-based exams; 3) principles of writing effective questions.

Skills session 1 (10 minutes): In small groups, participants will be provided with several sample vignettes. They will select the vignette that best matches their expertise and write sample questions using the principles learned during the introduction.

Report on skill session 1 (10 minutes): After reconvening, groups will share their challenges when writing questions. The panelists will share examples to use for group discussion.

Discussion 1 (10 minutes): The panelists will discuss the principles of rubric design, how to select faculty to grade, and best practices for the grading process.

Skills session 2 (10 minutes): The group will be provided with a new set of prepared questions, answers, and rubrics, and participants will score questions.

Report on skill session 2 (10 minutes): The group will discuss the characteristics of well-designed rubrics.

Conclusion (10 minutes): The session will end with panelists presenting several challenges faced in implementing this strategy, including USMLE Step 1 preparation. In addition, they will address any questions the participants have.

Experience
Jeffrey B Bird, MA is the educational research & strategic assessment analyst.
Judith Brenner, MD, is the associate dean of curricular integration and assessment.
Robert V. Hill, PhD, is an anatomist who co-directs the Structure curriculum in the first two years of the educational program.
Zeinab Nassrallah, PhD, is an anatomist who co-directs the Structure curriculum in the first two years of the educational program.
Doreen M. Olvet, PhD, is a medical education research project manager with expertise in research design and data analysis.
Joanne Willey, PhD, is a microbiologist and chair of the Department of Science Education.

Workshop 4

Lessons learned from remediation application to everyday teaching and learning

CJ. Dine[1], K. Warburton[2], A. Lanfranco[1], C. Clancy[1]
[1]Perelman School of Medicine at the University of Pennsylvania,
[2]University of Virginia School of Medicine

Rationale
Remediation of a struggling learner begins with the identification of a specific learning task. The remediation process comprises a cycle of deliberate practice of this task while being directly observed by a coach, followed by real time feedback and time for reflection. The process in its entirety is specifically designed around these specific learning tasks in order to promote learning and retention. The process also encourages the learner to take ownership of his or her own educational development and promotes self-directed learning. The remediation process highlights several important aspects of adult learning theory that faculty should incorporate into everyday teaching in the clinical environment. This symposium will first highlight the specific strategies that are successful in remediating a struggling learner and then emphasize how these same techniques could be used in teaching and assessing all learners within the clinical learning environment to enhance learning and retention. We will focus on two specific areas of learning clinical reasoning and procedures - to highlight how these concepts can be applied to different types of learning.

Objectives
1. Name specific strategies for goal setting to guide feedback for struggling learners.
2. Practice specific strategies to improve the assessment of learners across the continuum in the clinical learning environment.

3. Identify ways to adjust these specific strategies regardless of context using clinical reasoning and procedural expertise as examples.

Session Methods and Format
The workshop will start with a short introduction discussing key concepts of adult learning theory relevant to medical education. The speakers will then lead a large group discussion about the experiences struggles in teaching and assessing in the clinical environment, especially when working with struggling learners. The presenters will then review lessons learned from successful remediation programs that span UME and GME. The audience will then work in small groups to determine how best to apply these strategies to everyday clinical teaching and assessing of learners. The presenters will then highlight how these strategies can be adjusted when the context of the learning changes using procedural learning and clinical reasoning as examples.

Experience
The listed speakers have expertise in assessment and evaluation of clinical learners (Dine), remediation of struggling learners (Warburton), clinical reasoning (Clancy) and teaching procedural skills (Lanfranco).

Workshop 5

Managing Transitions Professional and Programmatic
S. Peyre, D. Lambert, C. Mooney
University of Rochester School of Medicine and Dentistry

Rationale
Careers in medical education can feel like a journey through continuous change and transition. Handling these transitions, and leveraging them for your own growth and development, is essential for a thriving career. This workshop will present a framework outlined by William Bridges, Managing Transitions, to support a deepening understanding of the phases associated with transitions, and identify strategies for navigating change. The three phased model (1: Ending, losing and letting go; 2: The neutral zone, and 3: The new beginning) will serve as structure for participants to reflect on times of transitions, share strategies they employed or observed, and reflect on stories of how these transitions sparked creativity and developed their own leadership skills in shepherding teams through loss and change. Primarily using small group discussion, the workshop will help participants identify interventions as well as reflect on their own volition as part of change. Discussion will include the difference between change and transition, as well as the anxiety and variable motivations that drive individual and team behavior.

Objectives
By the end of this session, participants will be able to:
Understand the difference between changes and transitions in our professional and personal lives
Analyze transitions in their own life and apply strategies for success
Articulate how the 4Ps (purpose, picture, plan and part) can help navigate new beginning in academic medicine

Session Methods and Format
Introductions
Brief presentation:
Change vs. transition
Change is fast transition is slow
Transition stages: Ending neutral zone new beginning
Small group - Reflection on a time of transitions
Think of a current of recent personal or professional transition
In small group: Share specific challenges to this time of transition and brainstorm strategies to help with transitions

Sharing Strategies: Report out on interventions to help with transitions

Further small group discussion on hot spots
Endings and the Neutral Zone: each table can choose which you wish to discuss further

Consider Endings: How can you better manage endings and what can you do as a leader to recognize loss and change?
What are they/you letting go of:
How happy are they with the way things are?
How can we embrace the change, eliminate fear and develop a new identity and sense of purpose in the change?
What communication/strategies are needed to get them/you there?

(2) Dangers of neutral zones: What can you do to spark creativity in the neutral zone?
Anxiety rises and motivation falls
People are overloaded, mixed signals and confusion is high, important tasks go undone, turnover is high
People become polarized some rush forward, others stay back and hang on
Old weaknesses re-emerge

Summary/Closing Thoughts

Experience
David Lambert, MD Senior Associate Dean of Medical Education and experienced educator and strategic leader.
Christopher Mooney, PhD Director of Assessment and key mentor for clerkship/course directors as they make changes in their programs.
Sarah Peyre, EdD Associate Dean for Innovative Education and seasoned leader on changes and transformations in curricular design and program development.

References
Managing Transitions: Making the Most of Change, by William Bridges

Workshop 6

Making a better interpersonal/communication skills assessment tool
B. Blatt[1], J. Klevan[2], C. Fleishman[3], J. Seol[2], W. Lakshman[4], K. Berg[2], N. Culpepper[5], K. Lewis[1], H. Lane[6]
[1]George Washington University School of Medicine and Health Sciences, [2]Sidney Kimmel Medical College at Thomas Jefferson University, [3]Johns Hopkins University School of Medicine, [4]Georgetown University School of Medicine, [5]University of Maryland School of Medicine, [6]Virginia Tech Carilion School of Medicine

Rationale
Measuring a student's interpersonal/communication/ skills (IP/CS) presents challenges. It can be difficult to standardize across one institution let alone several. Since interpersonal factors are known to make a significant difference in improved patient care and outcomes, we need a tool that can reliably assess a medical students IP/CS performance. Five years ago, the Mid-Atlantic Consortium (the MAC) of institutions developed a tool for use in the end of 3rd year/rising 4th year OSCE. During the past year, we implemented a process to evaluate this tool and improve it. This workshop offers participants an opportunity to share in this process and use it to evaluate and improve their own IP/CS tool. It also offers them a hands-on opportunity to try out an innovative IP/CS tool created by a collaboration of multiple medical schools.

Objectives
By the workshops end, participants will be able to
1. Explain challenges that need to be addressed in evaluating an IP/CS tool
2. Describe an innovative approach used by a group of medical schools to make their tool better
3. Practice using the new tool
4. Discuss how this workshop experience could be applied to improving the IP/CS tool at their home institutions

Session Methods and Format

1. Greeting and brief discussion 15min
Participants share their experience with IP/CS tools (challenges which may come up: 1. holistic vs behavioral, 2. feasibilitycognitive load for SP, length 3. Training, 4. linkage to NBME, 5 validation)
2. Presentation 20 min
--brief overview of old consortium tool: present 9 major categories, holistic/behavioral strategy, linkage to NBME, reliability5 min
-- consortium approach to improving the tool10 min
--psychometrics: describe factor analysis results
--feedback from SP training
3. Presentation and Discussion: new tool15 min
4. Practice with the new tool20 min
participants use new tool to assess a student-SP encounter on video that we will show
5. Discussion20 min
--reactions to using the tool: what worked well, what did not work well
--what will participants bring back from this workshop to use in their home institutions

Experience
All listed are members of the Mid-Atlantic Consortium (the MAC) and were intimately involved in creating the tool and psychometrically evaluating it.

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Workshop 7

Writing and submitting a successful NEGEA grant proposal
K. Huggett[1], A. Swan-Sein[2]
[1]Robert Larner, M.D., College of Medicine at the University of Vermont, [2]Columbia University Vagelos College of Physicians and Surgeons

Rationale
Busy clinicians and educators often face several barriers when attempting to develop and execute sound educational research1. Many of these barriers have been explored in the educational literature including a lack of expertise, time, and money2. Recognizing the importance of providing funding for researchers to develop and implement necessary research projects, the AAMC and the four regional groups of the Group on Educational Affairs (GEA) all provide funding for education research through an annual grant program. These funds are considered essential as they provide seed money to initiate research projects that seek to answer key educational questions and foster collaboration across individuals and institutions within a region. A key first step in defining high quality education research is improving the quality of proposals submitted to these funding pipelines and providing researchers with ample opportunities to seek guidance and mentorship3. Given the recent focus on increasing the quality of education research being conducted and submitted within the US4, this workshop is part of a larger national push to enhance the quality of education research projects being submitted to the NEGEA annual grant program using established resources in the existing literature5.

Objectives
At the conclusion of this workshop, participants will be able to:

1. Describe the requirements of the NEGEA grant program
2. Identify the characteristics of a competitive grant proposal
3. Discuss the common pitfalls in grant writing
4. Apply the processes described to begin the development of a grant submission

Session Methods and Format
Participants will be asked at the beginning of the workshop to identify a possible project that they would want to submit to the upcoming grant cycle. The workshop will then start with a brief introduction to the NEGEA grant program (5 min). This will include an overview of the intent of the program as well as a history of prior projects that have been funded. Following the introduction, we will introduce a panel of prior grant recipients and reviewers who will share their experience including pitfalls and recommendations (15 min). Next, participants will be broken into small groups and given an example of a grant proposal to review using the review criteria provided to reviewers (15 min). The groups will then report out to the large group (10 min). Next, session facilitators will walk through each component of the call for proposals and provide specific feedback on each section based on reviews from prior years (10 min). Following this, participants will break into small groups to discuss their individual ideas (15 min). We will specifically focus on problem statement, methodology, and evaluation/outcomes. The session will close with a final Q&A and review of some of the projects discussed in the small groups (5 min). Participants will be provided with a list of resources for grant writing upon completion of the workshop.

Experience
Both speakers have experience in running and reviewing proposals for the NEGEA collaborative research grant and can help workshop participants with writing a research grant proposal.

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studies in medical education: a systematic review. Med Educ 2007;41(8):737745.
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Workshop 8

Lessons Learned: Implementing EPA-Based Workplace-based Assessments to Enhance Student Formative Feedback

B. Barron[1], S. Quiah[1], S. Sagalowsky[1], P. Cocks[2], M. Green[3]
[1]Columbia University Vagelos College of Physicians and Surgeons,
[2]NYU Langone Medical Center, [3]Yale University School of Medicine

Rationale
In 2014, the Association of American Medical Colleges (AAMC) launched a pilot project with ten institutions to address the feasibility of implementing their 13 Core Entrustable Professional Activities (EPA). The EPA framework provides medical schools with a construct that integrates competencies and essential activities of daily patient care. The current EPA pilot is working to translate this construct into formats that are quickly understood by faculty and students alike as well as to help develop assessment methods. One assessment method that helps bridge the gap between construct and practice, is the workplace-based assessment (WBA), using entrustability scales.

Columbia University Vagelos College of Physicians and Surgeons (P&S), NYU and Yale have all implemented a work-based assessment tool in their work towards assessing students competency for graduation. The implementation of

this tool has enhanced faculty engagement and learner feedback in a multitude of ways. In this workshop, participants will have the opportunity to assess EPA 6 (oral presentation) using traditional hierarchical scales and construct aligned entrustability scales. They will also brainstorm, with experienced faculty, about strategies to implement these assessments at their schools.

Objectives
1. Recognize trust (permission to act) as a new currency for assessment.
2. Assess EPAs using entrustability scales.
3. Evaluate their institutions readiness to integrate the EPA framework into their assessment system.

Session Methods and Format
1. (5 minutes) Introductions
2. (10 minutes) Brief presentation about EPAs and entrustment
3. (5 minutes) Determination of participants experience with EPAs (audience response polling)
4. (25 minutes) Assessment of EPA-6 (video of oral presentation and audience response polling)
5. (10 minutes) Participants will work in small groups and discuss implementation challenges
6. (10 minutes) Facilitated large group discussion

Experience
1. Dr. Beth Barron is Associate Professor of Medicine at P&S and a member of the National Core EPA pilot.
2. Mr. Samuel Quiah is an education specialist at P&S and has supported the implementation and evaluation of the EPA Pilot and WBA assessment.
3. Dr. Selin Sagalowsky is Assistant Professor of Pediatrics at P&S and has implemented a WBA of EPA 6: Oral Presentations, in her Pediatrics Emergency Medicine Clerkship.
4. Dr. Patrick Cocks is Director of the Internal Medicine Residency Program and NYU and member of the National Core EPA Pilot.
5. Dr. Michael Green is Director of Student Assessment at Yale University School of Medicine and member of National Core EPA Pilot.

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Workshop 9

Curriculum Inventory Update
A. Farmakidis
AAMC

The AAMC Curriculum Inventory (CI)
The AAMC Curriculum Inventory is designed to serve as the premier benchmarking and reporting tool on content, structure, delivery, and assessment of U.S. and Canadian medical school curricula. Collecting this curriculum inventory data allows AAMC to share reports on national trends and innovations with members, and also facilitates AAMC's role as an advocate for medical education programs. During this update, AAMC will share the latest developments regarding the AAMC Curriculum Inventory, including how to access national curriculum reports, how to keep up to date with the latest developments in curriculum mapping innovations, how AAMC engages with vendors to facilitate the CI submission process, and the newest projects to be completed in time for the AAMC Curriculum Inventory season this August-September, 2019.

Objectives

1. Describe how to access AAMC national curriculum reports
2. Enroll in AAMC Curriculum Inventory communications
3. Discuss AAMC CI's efforts to help vendors target their CI customer support

Workshop 10

'Just the Facts?': Promoting Memory and Understanding through Test-Enhanced Learning

R. Lebeau, H. Rashid, K. Coppola
Rutgers, Robert Wood Johnson Medical School

Rationale

Effortful recall of information (retrieval practice) in the context of a test, leading to enhanced retention of that information, is known as test-enhanced learning (TEL). Distributing retrieval practice over time through practice testing has been characterized as a learning strategy of the highest utility (1). The use of TEL in medical education is well-documented and is supported by a growing evidence base(2). At one time preaching the benefits of distributed practice and active self-testing were the province of learning specialists, but now these principles are embedded in commercial questions banks and electronic flashcards favored by students and are highly cited and instantiated in curricular reform and assessment practices across multiple medical schools. In practice, however, there is a risk that the use of retrieval practice, independently by students and promoted intentionally by faculty, can be at odds with the dominant view over recent decades of how we as a community define medical knowledge competency: the application of biomedical scientific principles and clinical science to patient care and clinical problem solving (3). Retrieval practice need not be limited to isolated recall of facts, but left to their own devices students may retreat into this. Faculty and administrator awareness of options for using test-enhanced learning to promote higher order thinking and the transfer of knowledge to new situations is essential for overcoming the gravitational pull of rote learning that need not be, but can surface, in retrieval practice.

Objectives

Participants will be able to:
1. Describe current uses of retrieval practice as a learning strategy in medical education
2. Identify emerging understandings of how test-enhanced learning (TEL) can promote knowledge transfer and potentiate new learning.
3. Apply principles and models from the workshop to critique and expand the use of TEL by students and faculty in their home institutions

Session Methods and Format

In a highly interactive format, participants will work to identify opportunities to influence student engagement in TEL, on a continuum ranging from shaping student self-directed use of practice resources, to scaffolding faculty development and implementation of TEL items and feedback, to a full system of TEL at a curricular level that intersects with formative and summative assessment programs. Theoretical and empirical findings summarized by the presenters along with reflective participant activities will bring the challenges and promise of test-enhanced learning for developing higher order thinking into focus. The time frame of the session will be:

A. Introduction and overview (5 minutes)
B. Definitions, key principles and examples of test-enhanced learning practices (15 minutes)
C. Participant use of criteria to analyze their own existing or planned use of test-enhance learning and to identify challenges (small/large group, 15 minutes)
D. Practical examples in a case-based format illustrating emerging directions in test-enhanced learning and key choices over item types, timing, types of outcomes and feedback that influence transfer (small/large group, 25 minutes)
E. Joint (presenters and participants) summary of principles for moving forward (15 minutes)

Experience

All speakers are learning specialists, supporting student self-regulation, evidence-based learning, faculty development, and assessment practices at Rutgers Robert Wood Johnson Medical School.

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Workshop 11

Team Science in Medical Education Research: How to Create Successful Scholarship by Committee

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[1]SUNY Downstate, [2]Icahn School of Medicine at Mount Sinai,
[3]Columbia University Vagelos College of Physicians and Surgeons, [4]AAMC, [5]Harvard Medical School

Rationale

Team science is evolving in many disciplines.1 Professional organizations often form teams to produce scholarly work, yet it can be difficult to accomplish this lofty goal. The research committee of the Directors of Clinical Skills Courses (DOCS), the professional organization for pre-clerkship clinical skills course directors, created a truly integrated research team2 that has produced two published papers3,4 and several presentations. Committee members used an iterative consensus-building process to develop a national survey of pre-clerkship physical exam curricula at LCME-accredited medical schools. Viewpoints of faculty from a diverse range of schools allowed us to craft survey items that were applicable to all schools. We were also able to leverage the strengths of each team member by working collaboratively through regular team conference calls, divvying up tasks and working collaboratively on a common, electronically shared manuscript. Critical to our success were deeply committed team members who persevered over time from project concept to publication. While some advocate for creating a team by intentionally choosing individuals, our team was a self-selected group, and we discovered many of our team members hidden talents as the process evolved. Over time we developed trust in each other and became comfortable sharing honest critique. In this workshop, we will share the process by which we achieved successful scholarship by committee and help participants create a roadmap for their own pursuit of team science in medical education research.

Objectives

Define team science and examine the theoretical frameworks that facilitate effective team formation
Recognize characteristics of successful and high performing teams
Identify stages of team development and employ the steps to construct an effective team
Apply effective team skills to manage diversity and harness differences among team members

Session Methods and Format

10 min Introduction: Practical overview of Team Science
15 min Breakout1
Constructing a research team
Case discussion Group decides to collaborate on research following a AAMC table topic discussion. What steps should members take to move the group forward?
Consider strengths and weaknesses of teams you have worked with in the past.

10 min Report out
15 min Breakout2
Negotiating obstacle How to bypass hurdles to team formation.
e.g. discrepancy of goals, members not meeting timelines set by team, too many leaders, no one taking the lead.
10 min Report out
10 min Sharing DOCS Twelve Tips for Teamwork in Medical Education Scholarship
5 min Wrap up

Experience
Robin Ovitsh is Assistant Dean of Clinical Competencies at SUNY Downstate, member DOCS Research Committee.

Joanne Hojsak is course co-director, Art and Science of Medicine, Icahn School of Medicine at Mount Sinai, Chair of DOCS Research Committee.

Deepu Gowda is course director, Foundations of Clinical Medicine Tutorials, Columbia University College of Physicians and Surgeons, Co-Chair of DOCS Research Committee.

Angela D. Blood is Director of Curricular Resources for AAMC and a doctoral candidate in health professions education at the University of Illinois at Chicago, member DOCS research committee.

Ron Silvestri is site director, Practice of Medicine, Harvard Medical School, President of DOCS, past Chair of DOCS Research Committee.

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Workshop 12

Precepting Medical Students in the Ambulatory Community Setting: Addressing our responsibility to engage preceptors to better align educational expectations and outcomes
T. Ahuja[1], B. Barnes[2], A. Fornari[1]
[1]Donald and Barbara Zucker School of Medicine at Hofstra/Northwell, [2]University of Pittsburgh School of Medicine

Rationale
Medical student education has shifted to earlier clinical experiences and increased use of ambulatory settings. In addition, increasing numbers of community-based health systems are developing GME programs. Medical schools and academic medical centers face barriers to recruiting physicians to teach in the ambulatory setting for many reasons, including time required to teach, loss of productivity when learners are present, and physicians' uncertainty about how to teach. Community-based instruction is invaluable, as it provides "real-world" opportunities for observing and following patients over time while refining history taking, physical examination, differential diagnosis, and patient management skills, as well as offering exposure to different systems of care delivery, Community-based ambulatory settings can be more conducive to practicing these skills than highly specialized, academically based practice sites. There is a national concern about

recruitment and retention of preceptors to provide high-quality educational experiences in community-based practice sites. Continuing Professional Development (CPD) and Faculty Development (FD) interventions have been designed with the intent that the ensuing changes in preceptors competence will result in better teaching, clinical practice, and professional role modeling. In addition, medical school and health system leadership must value education in the clinical setting and address focus on the current challenges and ensure high-quality, community-based clinical learning opportunities for all students. Strategies for Improving education in the clinical setting may be informed by innovative models, such as the longitudinal Integrated Clerkship (LIC).

Objectives
1. Compare and contrast the unique characteristics and needs of preceptors who live in an academic practice vs a community-based practice.
2. Identify strategies for the recruitment of community preceptors.
3. Discuss preceptor incentives provided in exchange for the teaching of students.
4. Discuss innovative faculty development and CPD interventions designed to address the needs of and challenges confronted by community preceptors.
5. Discuss opportunities to increase retention of preceptors and best practices to avoid attrition.
6. Reflect on a student perspective of their role in the ambulatory care setting as a novice learner.

Session Methods and Format
1. There will be a short talk to frame the medical education issue of ambulatory clinical education (10 min.)
2. This will be followed with round table discussions on selected topics (see objectives listed as to be topics) related to community preceptors-each table will complete a worksheet to report out to the group (40 min.)
3. Reconvene for a report out on each topic (10-15 min.)
4. Questions and reflection (10-15 min.)

Experience
1. Taranjeet Ahuja, DO, is the Director of the ambulatory experience for MS 1/2/3 year students and is responsible for each aspect of this rotation including being accountable to students, preceptors and the medical school leadership to assure a quality experience.
2. Barbara Barnes, MD, MS, has over 25 years of experience across the continuum of medical education in academic and community settings and has held leadership positions in a number of professional and accrediting organizations.
3. Alice Fornari, EdD, has 15 years of experience overseeing all of the faculty development efforts across UGME, GME and CME in all settings, including ambulatory practices.

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Workshop 13

Demystifying the Peer Review: Tips and Insights from Experienced Reviewers

C. Mooney[1], P. Haidet[2], J. Shea[3]
[1]University of Rochester School of Medicine and Dentistry,
[2]Pennsylvania State University College of Medicine,
[3]Perelman School of Medicine at the University of Pennsylvania

Rationale

It is considered good academic citizenship to review journal manuscripts, conference submissions, and grant applications. Writing a thoughtful review and providing constructive feedback takes practice and time. Unfortunately, training for peer reviewers is often haphazard, and few may be aware of available resources. This panel discussion provides insights into the peer review process from experienced educators that are recognized for providing outstanding, constructive feedback to colleagues.

Objectives

Identify resources to improve ones ability to function effectively as a peer reviewer for health professions journals and conferences.
Recognize and discuss strategies to provide constructive feedback when serving as a peer reviewer.
Appreciate the personal and professional benefits of serving as a peer reviewer.

Session Methods and Format

Dr. Mooney will begin the session with a brief PollEverywhere survey where audience members will rate their experience as peer reviewers and post any questions they have about the peer review process. This exercise will take approximately 5 minutes and will provide important insights about audience members prior experience.

After briefly discussing audience members responses, Dr. Mooney will give a 10-minute presentation describing the peer review process for journals in health professions education and summarizing resources for peer reviewers (distributed as a handout at the session). Then, acting as session moderator, Dr. Mooney will pose the following questions to a panel of educators recognized by the editor of Academic Medicine for writing excellent peer-reviews:

How did you become a peer reviewer?
What benefits, if any, do you gain from reviewing for journals and professional meetings?
How do you approach a manuscript when invited by a journal to submit a review?
What do you strive to accomplish when providing constructive feedback to an author?
What advice do you have for others as they become peer reviewers?
What advice do you have for others who wish to disseminate their scholarship, based on your experience as a peer reviewer?

Dr. Mooney will allot approximately 5-10 minutes for panelists to address each question, recognizing that responses to some questions may take less time than others.

The remaining 15 minutes of the session will provide opportunities for audience members to pose questions to the panelists or share their experiences as peer reviewers or the recipients of peer reviews.

Experience

Christopher J. Mooney, PhD, MPH is Director of Assessment and Education Research at the University of Rochester School of Medicine and Dentistry and has published widely in health professions education.

Paul Haidet, MD, MPH, is professor of medicine and Director of Medical Education Research at Penn State Hersheys College of Medicine and has published widely on a variety of topics related to teaching, communication, and the humanistic care of patients.

Judy A. Shea, PhD, is professor in the Division of General Internal Medicine, Department of Medicine, University of

Pennsylvania and associate dean of Medical Education Research and director of the Office of Evaluation and Assessment in the Academic Programs Office, School of Medicine.

Workshop 14

Searching for the Forest Amid the Trees: A Comprehensive Approach to Clinical Reasoning Remediation

K. Warburton[1], E. Goren[2], C. Clancy[2], A. Parsons[1]
[1]University of Virginia School of Medicine,
[2]Perelman School of Medicine at the University of Pennsylvania

Rationale

Clinical reasoning deficits are common among struggling trainees of all levels. Due to the internal nature of the reasoning process, these deficits can be challenging to detect and to remediate. This workshop, led by remediation and clinical reasoning experts from two institutions, offers attendees the theoretical basis, then a practical approach, to identifying and remediating learners who struggle with clinical reasoning. The innovation in this approach resides in the practical application of clinical reasoning theory to the remediation of struggling learners combined with novel diagnostic and coaching strategies that are more feasible than traditional ones. The presenters will offer a novel and reproducible approach to translating the clinical reasoning skills acquired in a coachs office to the clinical setting, focusing on the specifics of direct observation, feeding forward, and solicitation of high quality feedback from evaluators.

Objectives

1. Outline key theories in clinical reasoning assessment and remediation
2. Demonstrate a process for identifying learners struggling with clinical reasoning
3. Create individualized remediation plans for learners with clinical reasoning deficits
4. Implement clinical reasoning remediation at the program level

Session Methods and Format

Intended audience: program leaders, core faculty, clerkship directors, faculty members interested in remediating learners with clinical reasoning deficits.
(10 mins) Overview of our approach to recognition and remediation of clinical reasoning deficits. We will review key theories pertinent to clinical reasoning remediation (dual process, self-regulated learning, cognitive load and control-value theory) and introduce practical strategies and tools for assessing these skills in the clinical setting.
(15 min) In small groups, attendees will practice clinical reasoning assessment using role plays featuring a scripted struggling learner, reporting back to the larger group for discussion.
(20 min) Presenters will outline a program-level approach to clinical reasoning remediation, including faculty development and training of a lead clinical reasoning coach. We will provide a step-by-step approach to translate and monitor the skills developed in coaching sessions in the clinical setting, focusing on direct observation, solicitation of high quality feedback, and feed-forward of progress to subsequent supervisors. We will share our algorithm for deficit identification and referral to a clinical reasoning remediation program, demonstrating portability across all learner levels and to other institutions.
(15 min) In small groups, attendees will prepare sample remediation plans for the struggling learners from the previous role-play exercise, discussing the pros, cons and feasibility of different clinical reasoning remediation strategies.
(5 min) Summary, invite attendees to set goals and reflect on strategies to implement clinical reasoning remediation at their institution.

Experience

Dr. Warburton co-developed remediation programs at two institutions and currently chairs the GME remediation program at the University of Virginia.
Dr. Parsons is the lead clinical reasoning coach for GME and director of the Clincial Skills Course focused on teaching clinical reasoning skills to medical students, both at the University of Virginia.
Dr. Goren co-developed and now leads the remediation program at the University of Pennsylvania.

Dr. Clancy is a research fellow for the Society to Improve Diagnosis in Medicine, currently conducting research on clinical reasoning assessment and entrustment decisions.

Workshop 15

Sending the right message: using the team-based learning format to teach clinical skills

L. Caines[1], R. Ovitsh[2]
[1]University of Connecticut School of Medicine, [2]SUNY Downstate

Rationale

Team-based learning (TBL) is an approach to teaching where a minimal amount of time is spent ensuring students master course content and the majority of time is spent on application of that knowledge1. The benefits of this teaching methodology are numerous and have been well-documented in a number of sources2. TBL is traditionally used to teach medical knowledge in basic science courses in the pre-clinical years. There is a paucity of literature on the use of TBL to teach clinical skills (CS). TBL has several attributes that make it an attractive option for use in a clinical skills course including fostering a collaborative approach to learning and promoting interprofessionalism by involving different types of learners (medical, dental, registered dietetics students, social workers) on the same teamboth important messages to send to medical students in our clinical skills courses.

Objectives

By the end of this workshop, participants will be able to:
1. Identify a skill in their clinical skills course that could be taught effectively using a TBL format.
2. Participate in a mock TBL using nutrition counseling as a model in order to learn the steps needed to create and facilitate a TBL unit in a Clinical Skills curriculum.
3. Articulate possibilities, facilitators and barriers for use of TBL in a clinical skills course.

Session Methods and Format

Introductions (5 minutes)
Literature Review (10 minutes)
Participants read a short excerpt from an article in preparation for TBL3 (5 minutes)
Participants take a 3 question Individual Readiness Assurance Test (iRAT) on nutritional counseling (5 minutes)
Participants take the same 3 question assessment as a group, Group Readiness Assurance Test (GRAT) (5 minutes)
Workshop leaders facilitate the GRAT discussion (5 minutes)
Teams work on 1-2 application questions (15 minutes)
Team exercise where participants will answer several questions including:
1) Where in the clinical skills curriculum can TBL be implemented at my home institution?
2) How might I integrate learners from different disciplines into my course/curriculum using TBL?
3) What are potential challenges and benefits of using the TBL modality at my institution to teach clinical skills? (10 minutes)
Report out of team exercise to the group at large (10 minutes)
Wrap-up/conclusions (participants will leave with a tip sheet for creation and facilitation of TBL in a clinical skills course) (5 minutes)

Experience

Laurie Caines is a course director of Clinically Oriented Essentials E at the University of Connecticut School of Medicine which is the basic science course taught entirely using a TBL format and also the course director for the Delivery of Clinical Care A where she uses this format to teach exercise counseling in this course.
Robin Ovitsh is Assistant Dean of Clinical Competencies at SUNY Downstate, leads clinical skills education and assessment, and participates in TBL session development.

References

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Workshop 16

Catch Them Before They Fall: Early Identification and Referral of At-Risk Students and Residents

E. Magen
Center for Supportive Relationships

Rationale

Despite high rates of distress, burnout, and substance abuse, many medical students and residents in need do not make use of wellness resources that are available to them, either at their medical school or outside of it. Too often, administrators learn of trainee distress only after trainees have already fallen behind academically, exhibited profoundly unprofessional behaviors, or tragically taken their own lives. This reactive approach severely limits medical schools' ability to intervene effectively at an early stage and to pull students and residents out of the sinkhole into which they fell. It is critical for schools to adopt more proactive approaches for earlier identification of at-risk trainees, to facilitate earlier referral and treatment, before the trainee becomes overwhelmed.

In this highly interactive session, we will explore a variety of proactive approaches that schools can and do employ to identify at-risk trainees as early as possible. We will succinctly review a variety of monitoring and early-alert solutions, including formal wellness surveys, anonymous mental health screener apps, mini-surveys via text messages, "faculty concern" reports, and random-sampling interviews, among others. We will facilitate a conversation among participants, which will allow us to learn from colleagues in other institutions and consider new approaches for detecting and preventing trainee distress and its potentially tragic sequelae.

This workshop is geared toward medical educators and administrators who seek to learn about and approaches to identifying at-risk trainees as early as possible.

Objectives

Participants will (1) Analyze multiple methods for identifying at-risk trainees across a variety of communication modalities; (2) Compare different approaches that medical schools take to achieve early identification of at-risk trainees; (3) Identify new early-identification approaches to implement at their home institution.

Session Methods and Format

5 minutes: Introductions
5 minutes: Review of medical student and resident distress, burnout, substance abuse, and suicide
20 minutes: Review of proactive approaches to early identification of at-risk trainees

10 minutes: Breakout-group discussion: What are your institution's current approaches to early identification? What are advantages and disadvantages of each early identification modality?
5 minutes: Whole-group sharing
10 minutes: Breakout group discussion: What are barriers to implementing other modalities of early identification? How can they be overcome?
10 minutes: Breakout group discussion: Takeaway and next steps from this session
10 minutes: Whole group sharing and closing

Experience

Eran Magen, PhD, is the scientific director for the Center for Supportive Relationships and the former research director of the department of Counseling and Psychological Services at the University of Pennsylvania.

References

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Workshop 17

Beyond Observation: Using the Visual Arts to Teach Core Clinical Capacities

R. Dubroff[1], C. Capello[1], D. Gowda[2]
[1]Weill Cornell Medicine,
[2]Columbia University Vagelos College of Physicians and Surgeons

Rationale

The visual arts are being increasingly used to promote medical students observational skills.(1,2) Our extensive bi-institutional experience has demonstrated that they can also serve as an exciting and effective venue to teach other core clinical capacities that can be difficult to address through more traditional educational approaches; these include augmenting communication skills, increasing learners tolerance of uncertainty, and stimulating reflection.(3) The visual arts can also promote student wellness by providing opportunities for restoration and a unique and meaningful setting in which to connect with peers.(3)

This workshop will demonstrate innovative methods of utilizing the visual arts and explore best practices of bringing them into traditional curricula.

Objectives

1. Apply visual arts in educational settings to augment communication skills.
2. Implement approaches to visual arts teaching to improve tolerance of uncertainty.
3. Develop visual arts exercises intended to stimulate reflection.
4. Consider how to implement visual arts programs, and anticipate and manage barriers to establishing such programs.

Session Methods and Format

1. Introductions and Workshop Overview (5 minutes)

2. What role does visual arts education play in medical education at your home institution? (5 minutes)
Individual reflection and brief large group discussion

3. Experience art exercises used at Columbia and Cornell, with discussion of their educational design, objectives, and efficacy/impact of those exercises. The large group will be divided into three small groups, each with a self-selected reporter and facilitated by a workshop leader.

A. Using art to augment communication (10 minutes)
Artwork shown to whole group
Interactive viewing exercise in small groups
Small group reports out to large group

B. Using art to improve tolerance of uncertainty (10 minutes)
Artwork shown to whole group
Interactive viewing exercise in small groups
Small group reports out to large group

4. Designing an exercise to stimulate reflection (20 minutes)
With the assistance of the workshop leaders, each small group will design its own educational exercise to stimulate reflection using a pre-selected piece of visual art
Small groups share with large group

5. Small group brainstorm (15 minutes)
How to introduce (or enhance) visual arts education at your home institution
Reflect on resources and potential barriers
Consider next steps

6. Wrap-up and Final Thoughts (10 minutes)
Small groups report out summary of discussion and next steps
Workshop leaders share experiences related to barriers and catalysts for success at their institutions

Experience
Rachel Dubroff, MD, is an Assistant Professor of Clinical Medicine at Weill Cornell Medical College, with extensive experience teaching medical students and faculty in museum settings.
Carol Capello, PhD, is an Associate Professor in Geriatrics Education at Weill Cornell Medical College with a doctorate in Humanities Education.
Deepthiman Gowda, MD, MPH, MS, is an Associate Professor of Medicine at Columbia University Vagelos College of Physicians and Surgeons, and Director of Clinical Practice in the Program in Narrative Medicine, who has taught students and residents in museum settings.

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Workshop 18

How to launch a successful medical education podcast
K. Liu, A. Mostaghimi
Brigham and Women's Hospital, Harvard Medical School

Rationale
Technology has transformed medical education from the traditional one-to-many in-person lecture format to targeted, bite-sized educational pearls that can be consumed by students at the time and place of their choosing. Podcasting (creating and disseminating audio programming online) is an underutilized platform for medical educators that fits within the lives of busy students, while maintaining a level of connection with listeners that is easily scalable to a much wider audience.

Objectives
At the end of this workshop, participants should be able to:
1. Explain what constitutes a podcast and its pedagogic utility
2. Identify key steps in the design of a medical education podcast
3. Choose appropriate equipment for podcast production
4. Understand basic recording and editing concepts
5. Formulate a sample podcast concept and introductory episode

Session Methods and Format
1. Planning your podcast (10 minutes)
a. Identify your target audience
b. What is the problem you are trying to solve
c. What is your unique angle and approach

Description: This segment primes the participants to brainstorm ideas that may be conceptually novel and fulfill a need within medical education.

2. Branding your podcast (5 minutes)
a. Whats in a name?
b. Designing a logo
Description: We share insights on how to make the most impact with naming and branding while being time- and cost-conscious.

3. Get your feet wet (10 minutes)
a. Plan a sample episode
b. Identify strengths and weaknesses
Description: Participants will have time to sketch out a sample episode, specifically focusing on topics, length of the podcast, and format.

4. Fine-tune your format (5 minutes)
a. What / how much is quality?
b. Sustainability
Description: An often-neglected aspect of podcasting is balancing the need to produce quality episodes with sustainability. We will give the participants an idea of the time requirements for production, editing and publishing.

5. Picking the right equipment (5 minute)
a. Microphone(s)
b. Finding the right recording space
c. Skype and other considerations
Description: The production quality of our podcast has evolved dramatically over the past 30+ episodes. When choosing amongst hundreds of choices for equipment, we breakdown what qualities to look for in a variety of price ranges.

6. Recording and editing (10 minutes)
a. Editing software
b. Parts of a podcast (intro, content, outro, etc)
Description: Introduction on basic editing techniques in GarageBand, how to find the right theme music and copyright considerations.

7. How to publish your podcast (10 minutes)
Description: How to publish your podcast and establish a RSS feed. How to publish the podcast to iTunes, Google Play, Stitcher, etc.

8. How to promote your podcast (10 minutes)
a. Social media
b. Guest speakers
Description: Once content is created, the podcast needs promotion in order to reach its audience. We will share tips on using social media and guest speakers to broaden the reach of your podcast.

9. Q&A (10 minutes)

Experience
Kristina and Arash are co-creators of Topical (www.topicalpod.com), an education podcast on mentorship, academic medicine and dermatology, which has reached international audiences with over 8000 downloads from our website.

Workshop 19

Entrustable Professional Activities Implications for the Preclinical Curriculum and Leadership Roles for the

Preclinical Faculty

HC. Chen[1], MJ. Ho[1], E. Meyer[2], D. Mears[2]
[1]Georgetown University School of Medicine, [2]Uniformed Services University of the Health Sciences F. Edward Hebert School of Medicine

Rationale

There is increasing interest in the use of entrustable professional activities (EPAs) to define and assess competencies in health professions education (1, 2). Individual schools as well as national organizations in multiple countries have begun defining and adopting EPAs for undergraduate medical education (2,3). Typically these initiatives engage faculty in the clinical curriculum and focus on learning and assessment in the workplace. Yet an effective competency framework must engage faculty throughout the curriculum and address the preclinical as well as clinical curriculum (4). The goal of this workshop is to consider the roles of the preclinical faculty and the preclinical curriculum within an EPA context. Participants will discuss and proactively develop potential leadership roles for the preclinical faculty to effectively engage in and lead EPA implementation efforts to ensure ongoing relevance of the classroom curriculum.

Objectives

After attending the workshop, participants will be able to:
Discuss the concept of entrustment and its application to classroom learning and assessment
Develop strategies to incorporate entrustment into preclinical course expectations
Analyze opportunities for improved partnership with the clinical curriculum within an EPA framework
Engage in institutional conversations and help lead EPA implementation efforts at their home institutions

Session Methods and Format

Facilitators will provide a brief introduction to EPAs, the key principles underlying EPAs including entrustment, and share their perspectives on its implications for the preclinical curriculum (20 min). Working in small groups with a facilitator, participants will analyze provided scenarios and explore opportunities for entrustment in the preclinical curriculum (beyond typical doctoring courses) and develop strategies for incorporation into assessments of classroom learning (15 min). They will also consider strategies preclinical faculty can take to 1) become equal partners with the clinical faculty in preparing students for entrustment in the clinical workplace, and 2) effectively engage with and be leaders in EPA implementation efforts (15 min). Each small group will report out their ideas for large group discussion (15 min), and key ideas will be summarized in the context of next steps for participants at their home institutions (5 min).

Experience

HC Chen is Associate Dean of Assessment and has expertise in EPAs, including the implementation of EPAs in the preclinical curriculum. MJ Ho is Director of a Teaching Academy and has expertise in professionalism curricula and faculty development. E Meyers is Director of a preclinical module and has expertise in the literature on EPAs in undergraduate medical education and experience directing preclinical curricula. D. Mears is previous Chair of the Preclinical Curriculum and has experience leading preclinical faculty in curricular implementation.

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Workshop 20

Debrief Relief: How to Facilitate Learner Debriefs after Challenging Patient Encounters

M. Cohen, L. Dingfield, J. Kim, N. Bennett

Perelman School of Medicine at the University of Pennsylvania

Rationale
Fifteen to thirty percent of patient encounters are identified as challenging or difficult by physicians(1). These encounters tend to invoke strong feelings, including anger, frustration, dread, and a sensation of being overwhelmed. Providers with high levels of difficulty with patient relationships report higher levels of burnout(2). Moreover, oppositional or unprofessional patient-physician communication may lead to decreased ability to convey empathy or facilitate productive discussions and physicians may project pent-up emotions at work or home(3). Recent studies show that, similar to practicing providers, medical students also experience negative feelings surrounding difficult patient interactions(4). Given the risks of burnout and emotional exhaustion in learners, strategies to provide support and process these encounters is critical.
A key component of managing difficult patient encounters involves near-time debriefing to assist learners in analyzing events, identifying contributing patient and physician factors and processing emotional responses(5). Many clinical educators have not received training in this realm and are unprepared to guide learners through these high-impact interactions. This session prepares participants to debrief difficult patient encounters with medical student and resident learners.

Objectives
1. Identify challenging patient encounters that would benefit from debriefing
2. List steps to successfully debrief after challenging patient encounters
3. Conduct a role-play debrief session with directed peer feedback in a manner that supports learners and maintains a positive team atmosphere

Session Methods and Format
5 minutes
- Session overview (introductions, summary of agenda and objectives)
10 minutes
- Review literature surrounding prevalence, patient/learner/situational factors influencing challenging patient encounters, and overview of challenging patient subtypes
10 minutes
- Small group (3-4 people) discussion of individual experiences with challenging patient encounters involving learners (e.g. learner involved in or witness to interaction)
- Discuss attending/learner emotional response, concerns surrounding learner processing of encounter and positives/negatives to debriefing approach
5 minutes
- Large group share-out of key themes from small-group discussion
10-15 minutes
- Overview of approach to debriefing with learners after challenging patient encounters including demonstration of debrief role-play by presenters
20 minutes
- Role-play (2-3 people) of debrief after challenging patient encounter. One individual in role of supervising physician, one individual in role of learner (optional 3rd individual observes and provides feedback) --> 5 minutes role-play, 5 minutes feedback and debriefing; switch roles
10 minutes
- Large group debrief of role-plays including challenges and lessons
- Wrap-up

Experience
Margot Cohen MD is a hospitalist and Assistant Professor of Clinical Medicine at University of Pennsylvania. She is completing her Masters in Medical Education with interest in ethics and communication.

Laura Dingfield MD, MSEd is an Assistant Professor of Clinical Medicine at University of Pennsylvania and Program Director of the Hospice and Palliative Medicine fellowship program with interest in communication education and

professionalism.

Joyce Kim MD is a hospitalist and Clinical Assistant Professor of Medicine at University of Pennsylvania. She is director of inpatient medicine services at Hospital of the University of Pennsylvania.

Nadia Bennett MD, MSEd is a hospitalist and Associate Professor of Clinical Medicine at University of Pennsylvania. She is an Internal Medicine Clerkship Director at Perelman School of Medicine.

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Workshop 21

Getting Your Educational Resources Published in MedEdPORTAL, The Journal of Teaching and Learning Resources

GM. Cohen[1], A. Fornari[2]
[1]University of Massachusetts Medical School,
[2]Donald and Barbara Zucker School of Medicine at Hofstra/Northwell

Rationale

Medical education is changing at an amazing rate with an exponential increase in medical knowledge and advances in educational technology. The learning preferences of todays students are also evolving with a demand for more independent learning, peer teaching, interactive small groups, simulations, and digital resources. To address these changes, more educational resources are being developed to meet the needs of educators and learners. MedEdPORTAL, The Journal of Teaching and Learning Resources, offers the opportunity for authors to share in an open-source, peer-reviewed online database their innovative educational resources with the world and advance their careers by publishing their scholarship. Often educators wonder if their educational resources are worthy of a MedEdPORTAL publication and question if MedEdPORTAL is the appropriate venue for their work, or they lack the confidence in writing a submission for publication. The purpose of this workshop is to address these concerns by walking participants through the steps for MedEdPORTAL submission for publication, by providing a forum for them to ask questions, and by giving best practices to help educators develop their proposals for successful submission to MedEdPORTAL.

Objectives

By the end of the MedEdPORTAL Workshop, the participants will be able to:
1. Identify the components of the MedEdPORTAL online journal
2. Differentiate publishing in MedEdPORTAL from other research journals
3. Determine the scholarship of an educational resource to meet submission criteria
4. Describe the MedEdPORTAL author guidelines to submit a publication proposal
5. Synthesize the best practices and tips to begin writing a submission for MedEdPORTAL

Session Methods and Format
1. Introductions and MedEdPORTAL TourAn interactive speaker presentation about the components of MedEdPORTAL and its difference from other journals, and its submission standards (10 minutes)
2. Brainstorming Session: Getting Started with a Checklist An individual checklist-guided activity and sharing of their proposed general topics with the workshop to elicit Q & A (15 minutes)
3. Anatomy of a Proposal: Roadmap for Your Writing A video presentation on the Education Summary Report (ESR) (10 minutes)
4. Dissect the ESR Game Teaming with others to identify and critique given proposals by answering specific questions and sharing their findings with the workshop participants (20 minutes)
5. Packaging Your Submission Submission steps presented by the speakers with Q&A (10 minutes)
6. Best Practices and Hot Tips Presenters lead a group discussion on best practices (10 minutes)

Experience
Gail March Cohen, Ph.D., Assistant Dean of Undergraduate Medical Education, University of Massachusetts Medical School, is a MedEdPORTAL Faculty Mentor and Reviewer who has worked successively for many years with educators and students to compose their MedEdPORTAL submissions and has published in MedEdPORTAL.

Alice Fornari, EdD, Professor and Associate Dean of Educational Skills Development at Donald and Barbara Zucker School of Medicine, is a MedEdPORTAL mentor and a reviewer. She has advised more junior faculty on MedEdPortal submissions and has successfully submitted in MedEdPORTAL. In addition, she mentors faculty and trainees on academic scholarship, which includes a comparison of traditional journal submission vs MedEdPORTAL submissions.

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Workshop 22

The Good Doctor: Interactive Resilience Techniques in Medical Education
A. Orr, F. Hussain, O. Tomescu
Perelman School of Medicine at the University of Pennsylvania

Rationale
Provider burnout remains a serious problem facing both medical residents and faculty members.1,2 Characterized as a constellation of emotional exhaustion, depersonalization, and low personal accomplishment, the burnout syndrome begins in undergraduate medical education and increases further among residents and practicing physicians.3 Previous studies have clearly identified external drivers of burnout, including the complexity of the US healthcare system and the fast-paced nature of our work environments.4-6 Internal factors, such as individual personality traits and coping strategies, also contribute to burnout.7 Recovery from (and prevention of) burnout is a shared responsibility: individual physicians, training programs (medical schools and residency/fellowship programs) and the health system as a whole all should be involved in this effort. This workshop focuses on individual-focused strategies that have been shown in the literature to increase physician resilience and wellbeing8,9 and discusses the logistics, timing, and optimal practice of emerging resilience techniques in medical education.

Objectives
1. To introduce three innovative and evidence-based resilience techniques (mindfulness, narrative medicine, and visual artistic analysis)
2. To lead workshop participants through guided practice of these interactive exercises
3. To provide participants with the skills and strategies to implement these low-cost, reproducible burnout interventions at their institutions.

Session Methods and Format
The session will begin with a brief review of the efficacy of mindfulness, narrative medicine, and visual artistic analysis as

burnout interventions. Each presenter will then lead a separate small group to guide participants through experiential, hands-on practice of these exercises. The breakout sessions promote resilience by exploring common barriers to and methods of realizing ones full potential as a healthcare provider. Specifically, the mindfulness station introduces strategies to enhance ones presence, the narrative medicine station guides participants in drafting a personal oath, and the visual arts station reviews careful observation of artwork as a means for rediscovering meaning in ones work. After all small groups have rotated through each of the three stations, participants will reconvene in a large group debrief where the presenters will discuss take-away points and share examples for translating the medical humanities into concrete curricular interventions for all levels of medical trainees.

Experience

Dr. Andrew Orr is an Assistant Professor of Clinical Medicine at the University of Pennsylvania with a passion for the medical humanities and experience with the Philadelphia Museum of Art in resilience training through visual artistic analysis.

Dr. Farah Hussain is an Assistant Professor of Clinical Medicine at the University of Pennsylvania. She founded the Writers in Residency initiative during her residency at Columbia University Medical Center and was recently awarded the Williams Fellowship for the development and implementation of a Narrative Medicine curriculum for Internal Medicine residents.

Dr. Oana Tomescu is an Associate Professor of Clinical Medicine and Pediatrics at the University of Pennsylvania. She is Director of Wellbeing for Learners in the Department of Medicine and Director of the Perelman School of Medicine Personal Resilience and Reflection Curriculum. She has been leading workshops at national meetings since 2014 and teaches Mindfulness-Based Stress Reduction (MBSR) techniques.

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SMALL GROUP DISCUSSIONS

Small Group Discussion 1

External and internal factors influencing specialty differentiation in early medical education: how best to mentor students in the search for their tribe

C. Moore[1], K. Thom[2], J. Reid-Adam[3], R. Gallo[4]
[1]University of Rochester School of Medicine and Dentistry, [2]University of Maryland School of Medicine, [3]Icahn School of

Medicine at Mount Sinai, [4]Pennsylvania State University College of Medicine

Rationale
As medical students progress along the path of professional identify formation, they face the critical decision of specialty choice. There is considerable interest in factors that influence medical career choice, although most investigations in this arena are borne from a need to align learners with open residency positions or work force demands. As a result, most discussions regarding career choice focus on strategies to influence students toward specific specialties or practice in underserved areas. Although system-based workforce needs are important, failing to consider individual characteristics in this matching process carries great risk. A mismatch between career choice and core values can lead to anxiety, residency attrition, and burnout. We aim to review the factors influencing career differentiation in medical education, particularly within the context of professional identity formation, and to explore strategies to support students through this process.

Objectives
1. Describe intrinsic and extrinsic factors affecting medical specialty choice.
2. Apply the professional identity framework to the process of specialty choice.
3. Discuss consequences of career-vocation mismatch for students and health-care organizations.
4. Develop strategies to support learners through the process of career differentiation.

Session Methods and Format
This 60-minute discussion session will begin with a brief presentation (~10-15 minutes) to review the concept of professional identify formation and outline how residency specialty selection fits into the professional identity framework. The remainder of the session will consist of small group discussions in which we will address the following: 1) intrinsic and extrinsic factors influencing specialty choice of participants/discussants using the professional identity framework; 2) specialty choice mismatch repercussions of a choice that does not align with personal mission and strengths and how this may be addressed in various stages of training and 3) methods for incorporating professional identify frameworks regarding specialty choice into medical curricula (discussants can identify strategies used at their own institutions and/or generate new ideas).

Experience
RG is the faculty advisor for the student Orthopaedic Interest Group and Associate Director of the Orthopaedic Surgery Residency Program; he is responsible for coordinating mentoring program for students considering orthopaedics as a potential career choice.
CM is an Assistant Professor of Medicine (Nephrology) and Associate Director of the Nephrology Fellowship program as well as the co-director of the 2nd year medical student renal pathophysiology course; in these roles she works with learners across the spectrum of medical education, and advises students interested in subspecialties in medicine.
JRA is an Assistant Professor of Pediatrics (Nephrology) and Medical Education, and is the director of the 3rd year medical student pediatric clerkship as well as the medical schools pediatrics specialty advisor; she meets regularly with students to explore, plan and prepare for a career in pediatrics.
KT is an Assistant Dean and Director of Student research in the Office of Student Affairs; in this capacity she meets with medical students and discusses specialty selection in the context of medical student experiences.

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Small Group Discussion 2

On Parallel Tracks: Towards a More Holistic Medical School and Residency Admission Process

N. Gabbur[1], M. Haughton[2], G. Sugiyama[1], S. DeOliveira[3]
[1]Donald and Barbara Zucker School of Medicine at Hofstra/Northwell, [2]Weill Cornell Medicine, [3]SUNY Downstate Medical Center College of Medicine

Rationale

It is not surprising that Medical Schools and Residency Programs have the same dilemma. They are both related along the continuum of medical education and as such face similar issues. They both rely on MCAT and USMLE Step 1 scores to respectively screen out applicants to their programs. However, performance on the MCAT and Step 1 are not necessarily predictive of future performance as a medical student or physician. There have been many calls for a holistic admissions process but how can this be achieved? Is there another metric that may be predictive of future performance? Is an MMI the answer? Many schools/residency programs are unable to do an MMI due to time and faculty constraints. The AMCAS and ERAS applications are similar in that they ask for the same information so conceptually the admissions process for medical school or residency should look similar. Ostensibly, the rationale for relying on these exams is to choose applicants who will be able to pass USMLE or specialty board exam. Participants in this workshop will be presented this problem that is similar at the UME and GME level. At the end of the workshop, participants will be given a paper survey as to what is most important to them during review of an application. These results will be shared at next years NEGEA Meeting.

Objectives

1. To understand how UME and GME face similar issues and problems in the admissions process
2. To discuss what information is currently available on the AMCAS and ERAS Application
3. To assess the external and internal driving forces involved in making the MCAT And USMLE Step 1 so important.
4. To discuss other methods of assessing applicants besides test scores

Session Methods and Format

5 min - Introduction of Problem and Survey of Audience
5 min Discussion of the similarity of the AMCAS and ERAS Application
15 min Discussion of what is qualities are important for medical school and residency
20 min Small group formation and breakout. Each group will be handed either an AMCAS Application or ERAS sample application for perusal for possible selection for interview.
25 min Groups report out and discussion of applicant
5 min Conclusions, Survey and Future Follow-Up

Experience

Nagaraj Gabbur, MD is a former Clerkship Director and is currently a Program Director and was on the Admissions Committee at SUNY Downstate for 12 years and has interviewed prospective residents for 20 years.
Shushawna DeOliveira, DHA is currently the Director of Admissions at SUNY Downstate Medical Center for the past 10 years and serves on the Admissions Committee.
Gainosuke Sugiyama, MD was a former Surgery clerkship director for 7 years and is now an Associate Program Director for one year and interviews prospective residency applicants.

Michelle Haughton, MD was a Ob/Gyn Clerkship director for 5 years and Program Director for one year and has interviewed applicants for both the medical school and residency.

Small Group Discussion 3

Opioid Crisis: Diversifying Medical School Curricula to Empower Learners to Better Respond to the Cries of Our Communities

S. Kapoor, M. Pawelczak, B. Goldman, L. Block, E. Pearlman
Donald and Barbara Zucker School of Medicine at Hofstra/Northwell

Rationale

We are amidst of a large-scale epidemic that impacts our patient population and communities with no sense of discrimination or short-term relief. The misuse and abuse of alcohol, illicit and prescribed opioids, has motivated important dialogue throughout the Nation, throughout the State, in our homes, our workplaces, within our health system and medical school. Transparently inventorying health professional training, it is apparent that little time is dedicated to develop basic competencies, yielding discomfort, lack of training and experience, manifesting as barriers to addressing substance use.

The session will focus on illustrating the experiences of incorporating an 11 hour "opioid epidemic" themed inter-clerkship week, part of a larger "Addressing Substance Use Curriculum", within an allopathic medical school. The discussion will include a detailed breakdown of the themed week, which included perspective panels (1. patient in recovery; 2. families dealing with addiction/loss; 3. healthcare professionals in recovery), six dynamic skills-based workshops (opioid overdose prevention/Naloxone rescue, judicious prescribing guidelines, alternatives to pain mgmt., assessment/diagnosis of opioid use disorder, medication assisted treatment, landscape of addiction treatment services), and capped with a team-based session encouraging learners to formulate better processes using quality improvement science/tools. With over 55 faculty/facilitators representing 25 clinical and non-clinical departments, the interprofessional interdisciplinary approach we were able to execute served to reinforce the reality that the current opioid crisis spans every discipline and aspect of healthcare.

We are at a crossroads where we can effectively diversify the current educational infrastructure to improve knowledge, attitudes, competency and comfort in response to the evident demands and needs of our communities and patients. Why reinvent wheel? Let's embark in a thoughtful conversation exploring how we challenged the norm, and how you can do the same!

Objectives

This session will highlight lessons learned while infusing an "opioid epidemic" themed inter-clerkship week as part of a dedicated Addressing Substance Use curriculum. To facilitate participants engagement, commitment and confidence in spearheading a similar initiative, thoughtful discussions will enable attendees to:
a) Organize focused curricular enhancements for students and faculty to enhance awareness and comfort in utilizing communication skills in addressing substance use
b) Identify opportunities to incorporate an interdisciplinary inter-professional team-based approach for development and delivery of educational experiences
c) Formulate processes to evaluate knowledge, attitudes, and skills utilizing qualitative and quantitative tools

Session Methods and Format

5mins: Session overview (introductions; brief summary of session agenda and objectives)
10mins: Review prevalent gaps in clinical care and highlighting practical role of focused curricular efforts
- Interactive poll
- Think-pair-share
5mins: Describe 4-year longitudinal Addressing Substance Use curriculum: iterative development, implementation, and evaluation
15mins: Describe MS3 "opioid epidemic" themed inter-clerkship week
15mins: Interactive participant-driven debrief/discussion: elements necessary for successful implementation and

sustainability of curricular efforts
10mins: Group Discussion (including Q&A, comments, concerns)

Experience
The team involved has received regional and national recognition for successfully incorporating interdisciplinary, inter-professional team-based
approaches to universally address substance use as part of usual clinical care, and in doing so, building bridges into the educational setting to empower the next generation of healthcare professionals to confidently challenge clinical/cultural norms.

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Small Group Discussion 4

It Takes a Village: Empowering Parents, Partners and Friends to Prevent Medical Student Burnout

KT. Pham[1], V. Rajput[2], E. Magen[3]
[1]Frank H. Netter MD School of Medicine at Quinnipiac University,
[2]Ross University School of Medicine, [3]Center for Supportive Relationships

Rationale
Medical students are at high risk for burnout, isolation, depression and suicide, with a 2016 JAMA meta-analysis estimating the prevalence of depressive symptoms at 27.2% and the prevalence of suicidal ideation at 11.1%. This interactive session calls for innovation in wellness programming, by focusing on an important protective factor that is often ignored by medical schools: Students' relationships with their families, spouses/partners and friends, which a 2003 JAMA consensus paper highlighted as a protective factor against suicide. Transition into medical school often leads to a disconnect between students and their loved ones, who struggle to understand the experience of their medical students. Similarly, students transitioning from pre-clinical to clinical UME often experience difficulty explaining the intense change in their daily realities to loved ones, and as a result risk losing this important source of support.

In this session, we share our experience as part of five medical schools implementing "My MD-to-Be", an innovative program that helps support givers understand, empathize with, and support medical students, in order to strengthen the social support available to medical students and reduce burnout rates. My MD-to-Be allows students to identify support givers of their choice (typically parents, spouses/partners and friends), who receive educational resources about common medical student experiences, tailored to each school's curriculum, every 1-2 weeks.

Following our presentation, participants will discuss how their schools harness the powerful protective power of support from family and loved ones and barriers to such approaches. This small group discussion is geared toward medical educators and administrators who seek to learn about and share their own approaches to preventing medical student burnout.

Objectives
Participants will (1) Analyze the challenges and importance of maintaining strong personal relationships while in medical school; (2) Compare different approaches employed by medical schools to help students maintain strong personal relationships.

Session Methods and Format
5 minutes: Introductions
5 minutes: Review of medical student burnout
5 minutes: Review of personal relationships as a protective factor against burnout
5 minutes: Whole-group discussion: How does your institution involve loved ones as support givers for students?
10 minutes: Review of My MD-to-Be, an innovative program that helps families and loved ones offer effective support to medical students
10 minutes: Breakout-group discussion: What are advantages and disadvantages of involving loved ones as support givers for students? / What are institutional barriers to involving loved ones as supporters of students and how can they be overcome?
10 minutes: Whole-group sharing
10 minutes: Whole-group conversation and closing

Experience
Kim Pham, MD, MPH is the Associate Dean for Student Affairs at the Frank H. Netter MD School of Medicine at Quinnipiac University.
Vijay Rajput, MD, Chair & Professor of Medicine at Ross University School of Medicine, has presented abstracts and published a book chapter on well-being.
Eran Magen, PhD, is the scientific director for the Center for Supportive Relationships and the former research director of the department of Counseling and Psychological Services at the University of Pennsylvania.

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POSTERS

#	
	Career Advisement & Wellness: Across the Continuum
1	***Delaware Valley Medical Student Wellness Collaborative*** K. Trayes, M. Wintersteen Sidney Kimmel Medical College at Thomas Jefferson University **Objective or purpose of innovation** In 2016, the Delaware Valley Medical Student Wellness Collaborative (DVSWC) was established to bring stakeholders from seven medical schools in the area together to address wellness in the medical student population. Physician wellness is an increasingly prevalent issue and schools nationwide are charged with graduating students who are equipped with the tools needed to combat the ever-increasing prevalence of physician burnout. Given the magnitude of the issue, the DVMSWC was established to bring leaders including student affairs deans and mental health providers from local medical schools together several times a year to discuss hot topics contributing to burnout. To complement the faculty meetings, each school has selected student representatives who meet on a regular basis to discuss concerns, brainstorm ideas to combat the concerns and plan events. A poster contest was held to develop a campaign to raise awareness and an image drawn by a medical student depicting the elephant in the room was created for display at all the medical schools. A story slam and social events have been held to bring together students and encourage collaboration. These social events include opportunities for students to write down their thoughts and concerns and these are posted live during the event and become topics of conversation among attendees. Currently, the students are working on creating an Instagram account entitled RealMedTalk and planning is underway for a speaker series which is held on a rotating basis at the schools. Limitations of the DVMSWC include balancing the different school calendars and recruiting and retaining motivated student leaders who are invested in the program and dedicated to its development. Additionally, funding is an issue and we exploring grant opportunities. We hope to seek qualitative improvement data through survey platforms which are currently in development. Background and/or theoretical framework and importance of the field see above Design see above Outcomes see above Innovation's strengths and limitations see above Feasibility and generalizability see above **References** Dyrbye LN, West C, Satele D et al. Burnout Among U.S. Medical Students, Residents, and Early Career Physicians Relative to the General U.S. Population. Academic Medicine. 2014: 89(3): 443-451.

	Shanafelt T, Goh J, Sinsky C. The business case for investing in physician well-being. JAMA Intern Med. 2017;177(12):1826-1832.
2	***MD Compass: A Co-Curricular Career Development Program*** K. Trayes, S. Rosenthal, J. Smith, T. Paskey Sidney Kimmel Medical College at Thomas Jefferson University **Objective or purpose of innovation** In 2017, the implementation of JeffMD, a systems-based curriculum at SKMC, provided many new opportunities for innovation and improvement in all aspects of medical education. This forward-thinking model cultivated motivation to provide a similarly engineered, student- driven 4-year program to develop areas such as leadership and career exploration. Year 1, Introduction to Careers in Medicine, is centered around career discovery, shadowing and leadership development. A career fair highlights all 26 specialty interest groups on campus represented by a physician(s) with prepared standardized informational guide sheets about the career. In October 2018, this event drew 40+ physician representatives and 300+ medical student attendees. Furthermore, a portfolio week in the spring teaches students how to best showcase leadership experiences. Year 2, Career Exploration features a Dinners with Doctors series which groups related specialties to provide an informal setting for mentorship and networking. Additionally, sessions on preparing for the USMLE and transition to clerkships are provided. Year 3, Defining Your Career Interest supplements the standardized clinical exposure through workshops and leadership development with a focus on residency applications. Year 4, Transitioning to a Career in Medicine, prepares students for the Match with an OSCE-style mock interview. Periodic reflection sessions offered with interns in students future fields of study will also help combat the imposter syndrome as they transition to residency. Limitations of MD Compass include ensuring the recruitment of motivated students who are invested in the program and dedicated to its development. We hope to seek qualitative improvement data from future workshops through survey platforms and long-term assessments of students readiness to navigate careers in medicine. Through MD Compass, we anticipate students will have improved confidence in their abilities to navigate career planning which will have a secondary impact of promoting student wellness. Background and/or theoretical framework and importance of the field See above Design see above Outcomes see above Innovation's strengths and limitations see above Feasibility and generalizability see above
3	****The Medical Student Mental Health Panel: A powerful approach to overcoming barriers to medical students seeking mental health care*** L. Rosen[1], L. A. Holterman[1], M. Bitterman[2], E. Lynch[1], O. Larkin[1] [1]Robert Larner MD College of Medicine at the University of Vermont, [2]Northwestern University the Feinberg School of Medicine

	Research Statement/Research Question Does a student-organized Mental Health Panel (MHP) for M1s -- in which senior students share experiences seeking mental health care -- reduce stigma around and barriers to seeking care during medical school? **Background and relevance of the study** Alarming rates of student depression and anxiety have spurred medical schools to work to improve wellbeing1.Schools must address barriers to treatment and students willingness to seek it. Recently, Larner College of Medicine (LCOM) students developed the MHP, described above. Prior work suggests LCOM students seek professional help more frequently than others2. Thus, we hypothesized the panel is an intervention that helps break down multiple barriers to students seeking care. **Design and Methods** 2017: 63 students completed a post-MHP questionnaire measuring attitude change surrounding mental health treatment . Frequencies examined reported attitude change. 2018: 24 students completed identical pre-panel and post-panel questionnaires. Wilcoxon Signed Rank tests examined attitude change. **Results** Students reported similar attitude change both years. Students reported increased likelihood to seek treatment in 2017 (73% - more likely) and 2018 (T= 49.5, p = .01). Students were less likely to believe they would be stigmatized by supervisors in 2017 (47% - less likely) and 2018 (T= 0, p = .01), or peers in 2017 (71% - less likely) and 2018 (T= 4.0, p < .05). Students were marginally less likely to feel inadequate seeking support in 2017 (65% - less likely) and 2018 (T= 4.0, p = .06). **Conclusions** Results suggest the MHP increased openness and reduced barriers to seeking treatment - a critical accomplishment. Limitations include sample size, lack of comparison group, social desirability bias, and self-report. In 2017, we could not measure actual change pre- to post-panel. Future directions include a multi-institutional intervention with matched comparison groups. This suggests that peers may positively influence attitudes toward mental health treatment3, ultimately increasing wellbeing. **IRB Review** Has the IRB reviewed your project? Yes If you answered No or NA above, please explain why. N/A **References** 1. Chang E, Eddins-Folensbee F, Coverdale J. Survey of the prevalence of burnout, stress, depression, and the use of supports by medical students at one school. Acad Psychiatry. 2012;36(3):17782. 2. Rodriguez, M.L, Corse, A. K., Rosen, L.D. 2017. Mental health service use among medical students: Perceived stigma and barriers to care Medical Science Educator 27(2):267-272. 3. Scientific American. Peer pressure has a positive side. 2015. https://www.scientificamerican.com/article/peer-pressure-has-a-positive-side/ . Accessed November 9, 2018
4	***The Impact of Changing to a Pass/Fail Curriculum on Burnout at the Perelman School of Medicine at the University of Pennsylvania*** A. Jamil, S. Ginzberg, E. Duckworth, O. Tomescu Perelman School of Medicine at the University of Pennsylvania

Research Statement/Research Question
How has transition to a pass/fall preclinical curriculum impacted burnout at the Perelman School of Medicine (PSOM) at the University of Pennsylvania?

Background and relevance of the study
High rates of burnout amongst medical students have highlighted the need to address a growing mental health crisis in medicine. Studies show that when medical schools using grading schemes of three or more levels switch to pass/fail curriculums, medical student stress decreases and well-being improves (1-3). At the start of the 2017-2018 academic year, the PSOM instituted pass/fail grading for the entire preclinical curriculum which had previously been graded honors/pass/fail starting in the spring semester of first year.

Design and Methods
An anonymous wellness survey which includes the Maslach Burnout Inventory (MBI) is distributed to PSOM students every six months (4). In this study, we compared MBI scores of the Entering Class of 2016 (EC16) to the Entering Class of 2017 (EC17) at 3 time points: baseline, 6 months, and 12 months. EC16 was graded pass/fail in the fall semester and honors/pass/fail in the spring semester, whereas EC17 was graded pass/fail for the entire first year of medical school.

Results
Approximately 66% of each class completed the MBI on each occasion. Scores from the MBI can be classified as low, medium, or high (4). Two-tailed t-tests compared class means. EC16 reported a significantly lower sense of personal accomplishment at all time points ($p=0.009$, 0.006, 0.001); they also experienced significantly higher emotional exhaustion at the end of the fall semester ($p=0.046$) and at the end of the spring semester ($p=0.023$). A chi-square analysis of MBI score classifications by class revealed significantly higher emotional exhaustion in EC16 (52.7% vs. 33.8%) at the end of the spring semester ($p=0.042$).

Conclusions
Transition to a pass/fail curriculum at PSOM may be associated with lowered rates of burnout, particularly in the sub-domains of personal accomplishment and emotional exhaustion.

IRB Review

Has the IRB reviewed your project?
Yes

If you answered No or NA above, please explain why.
NA

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5 ***Combating Apathy on L&D: Using Multimedia to Set the Tone***
H. P. Shukla, D. Matseoane-Peterssen, O. Myrick
Columbia University Vagelos College of Physicians and Surgeons

Research Statement/Research Question
To determine whether viewing a Labor and Delivery promising practices video during clerkship orientation improves students awareness, understanding, and comfort in approaching their time on the unit.

Background and relevance of the study
When rotating through L&D, the acuity, intensity, and inherent chaos frequently leave students feeling ignored during the Ob/Gyn clerkship, in the way, and not valued as members of the medical team(1). This can lead to apathy, hindering meaningful participation and education. Keeping in mind that the current generation of students has been raised alongside technology and share a deep familiarity with it(2), a video was created by residents, focused on creating mindsets that optimize clinical learning for medical students on L&D.

Design and Methods
On orientation day, medical students were shown an 8-minute video covering scenarios encountered on L&D, exhibiting contrasts between effective, and ineffective, approaches to them. A voluntary, anonymous survey was given before and after viewing the video, assessing students levels (Not at all, Somewhat, Definitely) of awareness, understanding, and comfort regarding the units unique nature and their approach to it.

Results
A cohort of 20 students viewed the educational video. After the intervention, 75% of respondents reported increased awareness of the contrast between L&D other inpatient units (53% definitely aware). 56% reported an increased level of understanding strategies that facilitate being engaged and prevent feeling overwhelmed (90% definitely understood). 71% reported increased comfort level in formulating personal strategies to maximize participation/education (75% definitely comfortable).

Conclusions
An orientation video focusing on the unique atmosphere of L&D, mindset, and strategies that facilitate participation, addresses an abstract challenge for students who are increasingly responsive to multimedia sources for education.

IRB Review

Has the IRB reviewed your project?
No

If you answered No or NA above, please explain why.
The project was initiated for internal purposes, namely improving the clerkship experience. As it is being submitted for a poster, it has been submitted for expedited review, as all responses were anonymous and reported in aggregate form

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6 ***The Impact of Journaling on Resident Burnout***
T. Sunder, V. Sunder, G. Diemer
Sidney Kimmel Medical College at Thomas Jefferson University

Research Statement/Research Question
The aim of this educational intervention is to expose internal medicine residents to journaling as a way to mitigate burnout

Background and relevance of the study
Burnout is a concern for many residents. Journaling is a known way to relieve stress. Studies have been done to see if wellness curricula help decrease resident burnout. While journaling is at times part of the intervention, the data is still limited on the benefit of journaling in the resident population.

Design and Methods
46 internal medicine residents were given a journal at residency orientation. Each week, a writing prompt was sent via text message along with a voluntary, anonymous survey to assess burnout based on the Maslach Burnout Inventory. A three month follow-up survey was distributed via email.

Results
The response rate to the survey was 41%. 68% of responding residents reported they felt burned out from work up to once a month or more. 32% of responding residents journaled before residency. 42% of responding residents used their journal since receiving it at orientation. 59% of responses stated that time and/or fatigue were the biggest barriers to journaling. 65% of the responses stated the weekly prompts were helpful to think about and reflect on, even if they did not write in their journal. 82% thought the weekly text message was effective for delivering the prompts and offered no alternative, but 18% of responses offered verbal prompts and email as alternatives.

Conclusions
The qualitative data showed that residents who journaled found it beneficial. More survey data is needed to study the effect of journaling on resident burnout. Incorporating journaling into their routine and lack of time were the biggest barriers to journaling at home. Future directions would include more structured journaling time during residency to increase exposure to journaling.

IRB Review

Has the IRB reviewed your project?
Yes

If you answered No or NA above, please explain why.
NA

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7 ***Elective in Narrative Medicine for First Year Medical Students at Weill Cornell Medicine***
S. Ball
Weill Cornell Medicine

Objective or purpose of innovation
This course recognizes different forms and goals of NM, improves narrative competence through close reading and reflective writing, and students gain understanding of themselves and the role of illness in ones

	own life through reflective writing exercises. **Background and/or theoretical framework and importance of the field** An increasing body of literature supports the role of narrative in medicine as a model for empathy, reflection, profession and trust (Charon, 2001). Narrative Medicine (NM) employs tools of close reading, reflective writing and open discussion to improve narrative competence (the understanding of stories) and to promote personal and professional identity formation. We describe here an elective course for 1st year medical students in Narrative Medicine. **Design** This non-credit elective met for 2 hours a week over 6 weeks. Personal illness writing and an academic article were assigned weekly. Discussion of the article was followed by reading and discussing a short piece of literature or poetry. In-class reflective writing and sharing of this writing concluded each session. Students completed a short evaluation in 2018. **Outcomes** An average of 11 students per year have taken the elective since 2011. In 2018 twenty-three students participated. A total of 19 evaluations were submitted. 96% of respondents said the course met its objectives. 100% of respondents agreed that: this course will contribute to the development of my personal and professional identity as I go through medical school. 100% of respondents would recommend the course to interested students. **Innovation's strengths and limitations** A six week elective in NM for first year medical students has been positively evaluated by the students. Students found the course valuable, informative and thought provoking. Limitations include the self-selection and qualitative versus quantitative assessment. **Feasibility and generalizability** Further studies will help determine if this course has longer term outcomes such as enhanced communication skills, improved reasoning, better critical reflection, resilience and/or sustained focus. Offering the course more frequently and broadly has been proposed. **References** 1. Narrative medicine: a model for empathy, reflection, profession, and trust. R Charon JAMA, 286:1897-1902, 2001. 2.Beyond the margins: reflective writing and development of reflective capacity in medical education. HS Wald, SP Reis - Journal of General Internal Medicine, vol 25:746-749, 2010.
8	***Foundations on Doctoring- An Elective for Students in Their Clerkship Year at Weill Cornell Medicine*** S. Ball, R. Diamond Weill Cornell Medicine **Objective or purpose of innovation** Develop and preserve empathy; listen actively to patients and colleagues; respect differences in opinions, cultures and beliefs; recognize and accept ambiguity and uncertainty in biomedical information, clinical care and medical decision-making; enhance professional identity formation. **Background and/or theoretical framework and importance of the field** Students in their clerkship year face situations that can be difficult intellectually and emotionally. Experiences may be rich learning events but may not have formal teaching ascribed to them. Students professional identities are molded by many of these important moments. We developed a course, at the

	request of a group of students, which provided a structured and safe forum to process and discuss some of these challenging situations. **Design** Students signed up for the elective, meeting over dinner for 2 hours, 9 times in the year to discuss different themes, including bias and discrimination, honesty, social media, choices, making mistakes and professional boundaries. Sessions opened with students sharing their current rotation and impressions, the theme was discussed, followed by the reading and discussion of a poem or short piece of literature related to the theme. Students then wrote briefly to a prompt and shared their writing. Students completed an 8 question survey at the last session. **Outcomes** Survey questions asked how well the course helped identify and respond to challenging situations. 48 students took the course between 2014 and 2018 and 38 completed surveys. 98-100% of all responses were well, very well, or to a great extent (highest rating). **Innovation's strengths and limitations** Students appreciated the opportunity to bond as a group and to explore many aspects of the hidden curriculum. Limitations included absences due to perceived need to perform on a given clerkship. **Feasibility and generalizability** Whether this course could be mandatory for students in the clerkship year requires further discussion and would necessitate significant administrative support.
9	***Critical Transitions: Guiding Diverse Trainees in Selecting an Academic Residency, Fellowship or First Academic Position*** JP. Sanchez, G. Valdez, I. Obiakwata Rutgers New Jersey Medical School **Objective or purpose of innovation** The purpose of this innovation entitled "Critical Transitions Seminar" is to provide diverse trainees (e.g. under-represented racial and ethnic minorities, women, and LGBT) with the knowledge and skills to make a more informed decision about an academic residency, fellowship, or first academic position. **Background and/or theoretical framework and importance of the field** Transitioning between educational and professional stages can be quite anxiety-provoking for trainees especially given increasing autonomy along their journey. Higher anxiety and lower self-efficacy may be especially pronounced for diverse trainees.(1) **Design** 22 faculty and trainees utilized the Kern model to develop 11 interactive modules to help trainees navigate the process of selecting and applying to an academic program. **Outcomes** Among our sample of 42 survey respondents, 22 identified as males; 32 as URM; and 4 as lesbian/gay/bisexual. Using the paired sample T-test to compare pre- and post-test responses, participants were more confident in finding an academic residency/fellowship/position that aligns with their personal interest ($p<0.05$); being a successful candidate to an Academic Residency/Academic Fellowship/First Academic Position ($p<0.01$); succeeding in academic medicine given their gender ($p<0.01$) or race/ethnicity ($p<0.01$); and negotiating a contract for their first academic position ($p<0.01$).

Innovation's strengths and limitations
The strength of this curriculum innovation lies in the diverse perspectives that contributed to its development. The Critical Transitions Seminar has been piloted at one location and has yet to be submitted for publication consideration in MedEdPORTAL.

Feasibility and generalizability
The Building the Next Generation of Academic Physicians (BNGAP) Inc. is a national 501c3 organization dedicated to advancing diverse trainees awareness of, interest in, and preparedness for academic medicine careers. BNGAP has a history of working with medical schools to implement conferences and seminars, such as the Academic Medicine Career Development Conference for Diverse Trainees, which has been implemented among 27 medical schools. The ten modules have been published in AAMC MedEdPORTAL.(2-11) Similarly, BNGAP applied the Kern model to develop the Critical Transitions Seminar.

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10	***Does a medical students residency decision influence their perceived value of basic science?*** Y. Elfanagely[1], H. L. Copeland[1], H. Rashid[1], M. Proano[1], R. Pulido[2] [1]Rutgers Robert Wood Johnson Medical School, [2]New York University School of Medicine **Research Statement/Research Question** Does a medical students residency decision influence their perceived value of basic science? **Background and relevance of the study** Basic science is the foundation for clinical reasoning and diagnostic accuracy1. The perceived value of basic science has implications for learning and achievement2. Student perceptions of the value of basic science may be shaped by a number of factors3. This multi-institutional study investigates fourth-year medical students perception of the value of basic science and their corresponding specialty choice. **Design and Methods** A 23 item anonymous survey assessed student perception and integration of basic science using a 5-point Likert scale and a final question asked students to indicate which specialty they would be going into. Fourth-year students from two medical schools participated in the study. Independent t-tests were calculated to determine statistically significant items between different specialties. **Results** Surveys were completed by a total of 122 medical students from two medical schools. Medical students who have chosen to specialize in Internal Medicine more strongly agreed with items in the survey underscoring the value of basic science ($p=0.04$) and feeling adequate with their basic science knowledge ($p=0.041$). On a continuum, Family medicine and Emergency medicine valued basic science behind Internal Medicine respectively. Medical students who selected Orthopedic Surgery and Anesthesiology as their expected specialties more strongly believed basic science information to be of minimal usefulness in clinical medicine ($p<0.05$) and more strongly disagreed a physician values basic science ($p<0.001$). **Conclusions** Specialty choice may influence medical students perceived importance of basic science, which has implications for learning and long-term retention4. Primary care residencies correlated with higher perceptions of the clinical value of basic science and perceived recall of basic science material. The results of this study may suggest the importance of a more transparent incorporation of basic science in certain specialties to promote its utility. **IRB Review** Has the IRB reviewed your project? Yes If you answered No or NA above, please explain why. NA **References** 1. Woods NN, Neville AJ, Levinson AJ, Howey EH, Oczkowski WJ, Norman GR. The value of basic science in clinical diagnosis. Acad Med. 2006;81(10 Suppl):S124-127.

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11	***Implementing an Admissions Pipeline to MSTP: Is Early Assurance viable for the MSTP Program?*** J. Chudow, V. Parkas, T. Swartz, M. Baron, B. Chen, M. Chatterji Icahn School of Medicine at Mount Sinai **Objective or purpose of innovation** ISMMS created the FlexMed Program, for college sophomores from any undergraduate institution to gain early assurance to the ISMMS MD Program. Once accepted, students pursue their undergraduate studies without the traditional science requirements and MCAT. This program is beneficial to potential MSTP applicants to spend more time on their undergraduate research studies. As such, the MD and MSTP teams established a partnership to allow FlexMed students to apply to the Program. Tracking of students indicates they integrate well, are academically successful, and enter laboratories aligned with their research background. **Background and/or theoretical framework and importance of the field** Mentorship through educational pipeline programs play a critical role in increasing diversity and this presentation will highlight how the partnership has attracted a more diverse and more diversely prepared cohort to MSTP. **Design** Students are identified and aligned with potential research mentors. Students then apply to MSTP the summer before matriculation. **Outcomes** For the incoming class of 2016, 3 FlexMed students applied and gained admission to the MSTP; of these, one deferred matriculation until 2017. In 2018, 3 out of the 5 students were admitted; 2 of the 3 students self-identify as underrepresented in science and medicine. The 2016 students have begun their dissertation research after successfully completing their preclinical training. All of these students have identified research interested that aligns with their previous work. **Innovation's strengths and limitations** Strengths: Success rate of partnership; support from stakeholders; given the success, the MSTP has expanded its recruitment pipeline to other programs; aiming to decrease the length of time to dual degree; diversifying the MSTP Limitations: Facultys time in providing mentorship to students; outcomes data are limited; navigating students career goals; identification of potentially successful MSTP applicants at the time of FlexMed admissions **Feasibility and generalizability** Participants will identify best practices in promoting an innovative pathway and its importance to student success. **References** Acad Med. 2017 May;92(5):628-634. doi: 10.1097/ACM.0000000000001478. Gateways to the Laboratory: How an MD-PhD Program Increased the Number of Minority Physician-Scientists.

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National MD-PhD Program Outcomes Study

Clinical Skills & Curriculum Design: Across the Continuum

12 ***Hands-On UltraSound Education: Sonography Training Aimed at Fourth-year students transitioning to First year residents***

C. Azzo, W. Chan
Perelman School of Medicine at the University of Pennsylvania

Research Statement/Research Question
The goal of this study was to evaluate whether an ultrasound review course tailored to different specialties could improve fourth-year medical students self-reported and objectively-assessed knowledge, confidence and preparation for intern year.

Background and relevance of the study
Ultrasonography is a useful, inexpensive and relatively easy-to-learn imaging modality. Ultrasonographys utility rests largely on the sonographers expertise; thus it is crucial to develop medical providers ultrasound skillset. For two decades, the World Health Organization has emphasized training skilled sonographers as a means of providing a lower cost form of radiation-free diagnostic imaging (WHO Technical Report Series, 1998). Nearly 80% of U.S. medical institutions believe ultrasonography should be a core component of Undergraduate Medical Education (Bahner et al., 2014).
Due to numerous scheduling demands, fourth-year medical students unfortunately experience decreased exposure to patients and procedures throughout the last six months of medical school. This led me to

	investigate the utility of a specialty-specific ultrasound course in preparing students for intern year. **Design and Methods** I designed and implemented a 20-hour course with 21 organ-based sessions reviewing basic anatomy, physiology, pathology and procedures. Students were assigned schedules based on each session's relevance to their specific specialties (Fox, 2017). **Results** By using pre- and post-course quizzes, I found that students' average specialty-specific knowledge test scores improved from 63% to 88%, with statistically significant individual average improvements of 24% ($p<0.001$). Students reported statistically significant improvements in their preparedness to start intern year (6%, $p<0.05$), comfort levels in evaluating a patient without labs or other imaging available (6%, $p<0.05$), confidence in using an ultrasound machine to evaluate a patient (39%, $p<0.001$), and likelihood of using an ultrasound machine as part of a patients initial workup (35%, $p<0.001$). **Conclusions** In light of these results, this ultrasound review course was successful in achieving its goals of improving students specialty-specific knowledge base, ultrasound skillset, and individual confidence and preparedness levels. **IRB Review** Has the IRB reviewed your project? NA If you answered No or NA above, please explain why. IRB approval not applicable/appropriate for my study **References** 1. Training in Diagnostic Ultrasound: Essentials, Priniciples and Standards. WHO Technical Report Series 875. Geneva, 1998. 2. The State of Ultrasound Education in U.S. Medical Schools: Results of a National Survey. Bahner, David P.; Goldman, Ellen; Way, David; Royall, Nelson A.; Liu, Yiju Teresa. Academic Medicine, Journal of the Association of American Medical Colleges. Volume 89: 12; 1681-1686. December, 2014 3. Powerpoint presentation, John Christian Fox, 2017. World Congress on Ultrasound in Medical Education, 2017. Montreal, Canada. http://wcume2017.org/program/plenary-speakers/
13	***Nutritional education on the wards: A self-directed module for improving medical student knowledge of nutrition assessment and interventions*** B. Dutra, M. Lissauer, H. Rashid Rutgers, Robert Wood Johnson Medical School **Objective or purpose of innovation** To provide medical students at Rutgers RWJMS an introductory education module on nutritional assessment, nutritional needs and the use of enteral and parenteral nutrition support. **Background and/or theoretical framework and importance of the field** Nutrition plays a key role in the prevention and treatment of disease. Hospitalized patients are often malnourished which is a major contributor to medical complication, decreased quality of life, lengthened medical stay and increased health care costs (1). However, current data reveals inadequate nutrition training in medical schools and residencies in the United States and medical students and physicians report feeling poorly trained. (2,3,4).

	Design An IRB-approved study involving third and fourth year medical students at Rutgers RWJMS in medicine, surgery and critical care clerkships who were given access to a nutrition education module and a pre and post-module survey aimed at measuring nutritional knowledge. A one-sample T-test was used to assess the relationship between the mean scores of the pre and post-module surveys. **Outcomes** 109 of 255 students responded to the pre-module survey. Of these, 82% reported no formal nutritional education, yet 64% encountered cases that required nutrition intervention, and 51% reported poor understanding of the recommendations. 32 students completed the module and post-module survey. There was a significant difference in the mean score between students who completed the module and post-module survey (M=4.51, SD=0.68) compared to the overall student population score prior to having access to the module (M=2.42, SD=1.49; t=22.7, p=0.0001). **Innovation's strengths and limitations** Medical students have limited training in nutrition education and our findings show that a self-directed online module could improve students knowledge (2,3). However the study is limited by its power, which can be partially explained by the limited independent study time noted in prior studies (3). **Feasibility and generalizability** An online module is easily accessible to students and could serve as a tool to increase medical student knowledge of nutrition management. **References** 1. Consensus Statement: Academy of Nutrition and Dietetics and American Society for Parenteral and Enteral Nutrition: Characteristics recommended for the identification and documentation of adult malnutrition (undernutrition). JPEN J Parenter Enteral Nutr. 2012;36(3):275-283 2. Frantz DJ, Munroe C, McClave SA, Martindale R. Current perception of nutrition education in U.S. medical schools. Curr Gastroenterol Rep. 2011;13(4):376-379 3. Daley BJ, Cherry-Bukowiec J, Van Way III CW, Collier B, Gramlich L, McMahon MM, McClave SA, A.S.P.E.N. Task Force on Postgraduate Medical Education. Current Status of Nutrition Training in Graduate Medical Education From a Survey of Residency Program Directors: A Formal Nutrition Education Course Is Necessary. J Parenter Enteral Nutr. 2016 40 (1): 95-99 DOI: 10.1177/0148607115571155 4.Frantz DJ, McClave SA, Hurt RT, Miller K, Martindale RG. Cross-sectional study of U.S. Interns Perceptions of clinical nutrition Education. J Parenter Enteral Nutr.2016; 40 (4):529-35. doi: 10.1177/0148607115571016
14	***Can a women's health program at a student-run free clinic increase perceived readiness for core clinical rotations?*** A. Fein[1], H. Paladine[2] [1]Columbia University Vagelos College of Physicians and Surgeons, [2]Columbia University Irving Medical Center **Objective or purpose of innovation** Identify weaknesses in womens health pre-clerkship curriculum, build an educational intervention, and incorporate an educational curriculum into a student-run free clinic (SRFC). **Background and/or theoretical framework and importance of the field**

	Womens health is only briefly explored in the U.S. pre-clerkship medical curriculum, but selectives and simulation improve student knowledge and interest (1-6). Volunteering in SRFC increases clinical confidence (7); such service learning may bridge the gap between limited curriculum and student desire for womens health exposure. **Design** The project has three parts. First, chart review of female SRFC patients was performed to evaluate care provided. Second, focus groups were held to elicit feedback about the established womens health curriculum and service learning opportunities. Audio recordings were transcribed and reviewed for themes by two independent researchers. Third, a workshop was devised to review topics identified as knowledge gaps based on the chart review and focus groups. Participation included workshop attendance, pre- and post-intervention surveys, volunteering at SRFC, and 3-month follow-up. A control group completed baseline and follow-up surveys. **Outcomes** 151 second-year students were invited to participate: six consented to complete study and 21 served as controls. There were no significant differences between the two groups regarding age, prior womens health experience, confidence in related skills, and subjective readiness for clinical rotations (p-values>0.05); the control group had more men (71.4% vs. 16.7%, p-value=0.02). After the workshop, students reported significantly increased confidence in several womens health-related skills and in readiness for obstetrics and gynecology and primary care clinical rotations (p-values<0.05). Three month data are pending. **Innovation's strengths and limitations** This initiative is student-led, reproducible, and flexible. It fills an important medical education gap and potentially benefits students and patients utilizing SRFC. Limitations include small number of study participants and dependence upon optional student involvement. **Feasibility and generalizability** This educational program could be replicated at other medical schools as an adjunct to established SRFC. **References** 1. Steinauer J, LaRochelle F, Rowh M, Backus L, Sandahl Y, Foster A. First impressions: what are preclinical medical students in the US and Canada learning about sexual and reproductive health? Contraception. 2009;80(1):74-80. 2. Aluko OE, Beck KH, Howard DE. Medical Students' Beliefs About Screening for Intimate Partner Violence: A Qualitative Study. Health promotion practice. 2015;16(4):540-549. 3. Henrich JB, Viscoli CM, Abraham GD. Medical students' assessment of education and training in women's health and in sex and gender differences. Journal of women's health (2002). 2008;17(5):815-827. 4. Johnson K, Rullo J, Faubion S. Student-Initiated Sexual Health Selective as a Curricular Tool. Sexual medicine. 2015;3(2):118-127. 5. Shinnick J, Spelke MB, Martinez AR. Student-Led Training Day Increases Student Confidence in Women's Primary Care Skills. Family medicine. 2016;48(7):551-555. 6. Nitschmann C, Bartz D, Johnson NR. Gynecologic simulation training increases medical student confidence and interest in women's health. Teaching and learning in medicine. 2014;26(2):160-163. 7. Nakamura M, Altshuler D, Chadwell M, Binienda J. Clinical skills development in student-run free clinic volunteers: a multi-trait, multi-measure study. BMC medical education. 2014;14:250.
15	***Catch Them Early: A Study of Quantifiable Predictors of Step 2 CS Failure*** J. L. Grossman, M. Sapozhnikov, V. J. Sinatra, B. Granat SUNY Downstate Medical Center College of Medicine

Research Statement/Research Question
To determine the relationship between OSCE exams, pre-clinical Clinical Skills Multiple Choice (CSMC) exams, NBME shelf exams, MCAT, Step 1, and Step 2CK scores and failure on Step 2CS (2CS).

Background and relevance of the study
The Step 2CS failure rate is increasing nationally (1). This study identifies students who are at risk of 2CS failure for purposes of early intervention and remediation. Previous literature found a significant correlation between performance on OBGYN and Family Medicine OSCE exams during clinical years and 2CS scores, and that OSCE scores only explained a small portion of the variance on numerical 2CS scores (2) (3). No previous study used success/failure as the dependent variable even though examinees receive a score of pass/fail only.

Design and Methods
Scores of 342 SUNY Downstate students on 5 OSCE exams, 5 NBME shelf exams, MCAT, CSMC, Step 1 and Step 2CK were collected. Students were divided into two groups: Pass (n=326) and Fail (n=16) on 2CS. Independent two-tailed t-tests were performed to compare scores between the groups ($p =< 0.05$).

Results
We found a statistically significant difference between the 2 groups on all shelf exams: medicine, surgery, OBGYN, pediatrics, psychiatry, and neurology. The Fail group performed worse on all OSCE exams, although only 2/5 reached statistical significance. MCAT, Step 1 and Step 2CK scores were all significantly correlated with a score of fail.

Conclusions
Poor performance on general standardized MCQs, such as Step 1 and MCAT, are just as good predictors of failure on 2CS as tests that focus on clinical skills. OSCE exams and even MCAT scores can be used to identify students who may fail 2CS for purposes of remediation during the preclinical years. The failure rate on 2CS is only 4% (1). Further research should concentrate on the correlation between the bottom tail of the standardized test scores and 2CS failure.

IRB Review

Has the IRB reviewed your project?
NA

If you answered No or NA above, please explain why.
IRB approval was not needed for this project because there is no access to identifiable private information. There was no personally identifiable information in the data that we received.

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16 ***How Do Internal Medicine Residents Perceive Direct Observation for Education in Goals-of-Care Communication?***

L. Dingfield, C. Stankiewicz, R. Miller
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Research Statement/Research Question
To describe resident perspectives on use of direct observation as a method for improving GOCC among residents.

Background and relevance of the study
Effective communication with patients and families is a core competency of residency education. While internal medicine residents frequently hold goals-of-care discussions with patients and families, they report inadequate training in goals-of-care communication (GOCC). Direct observation is an educational strategy that presents opportunities for formative feedback and competency-based assessment of resident GOCC. However, resident perceptions of direct observation as a teaching modality for enhancing goals-of-care communication have not been described.

Design and Methods
Fifteen semi-structured interviews were conducted and recorded. Recordings were transcribed, de-identified, and thematically analyzed in grounded theory framework using NVivo 11. A codebook representing salient themes was created. Two reviewers established strong post-inter-rater reliability, = .98 with 3 (20%) of the interviews.

Results
Residents broadly shared negative attitudes towards direct observation as a learning tool, such as feeling uncomfortable or anxious or that the experience was artificial (53%). However, they reported a willingness to be observed, noting that the observation exercise is valuable in their development of GOCC skills (53%). The majority of residents described GOCC as higher stakes than other patient-provider communication (60%). Careful preparation and structuring of the direct observation encounter helped mitigate resident unease about direct observation of GOCC. Residents expressed preference for direct observation by faculty with expertise in GOCC (53%). The primary barrier to direct observation of GOCC was time conflicts (60%).

Conclusions
Residents described the experience of direct observation for GOCC as an uncomfortable, yet useful exercise due to the higher stakes nature of these discussions. The challenges to conducting direct observations did not stem from resident unwillingness, but rather logistics.

IRB Review

Has the IRB reviewed your project?
Yes

If you answered No or NA above, please explain why.
NA

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17	***Stop The Bleed: Effective Bleeding Control Training for Incoming Medical Students*** P. de Angelis, B. Lubor, A. Sholi, L. Tufts, C. Berkowitz, J. Mok, D. Zappetti, M. Narayan Weill Cornell Medicine **Research Statement/Research Question** We hypothesized that training first year medical students in basic bleeding control would improve confidence in their skills and likelihood of response to emergent medical situations. **Background and relevance of the study** Uncontrolled bleeding is one of the leading causes of preventable death. The American College of Surgeons has designed Stop the Bleed (STB), a basic bleeding control course to educate bystanders. Most medical students have no prior clinical training before entering school; thus they may feel unconfident and unprepared to respond to an emergency situation. **Design and Methods** All first year students were enrolled in the STB course and completed pre- and post-training surveys. Questions were on a 5-point Likert scale. Chi-square and student t-tests were used for analyses. Trainees were interviewed to investigate themes and subjective experience of the training. **Results** 106 students participated; 96% completed all surveys. 93% of students reported having no prior medical training. Post-training surveys demonstrated that participants felt more confident about responding to emergency medical situations ($p < 0.001$), stopping bleeding ($p < 0.001$), applying pressure to wounds ($p <0.001$), packing wounds ($p <0.001$), and using tourniquets ($p < 0.001$). Participants reported they were more likely to help someone who had been hurt ($p < 0.001$). Four themes emerged from interactions with trainees: 1) enthusiasm about learning applicable skills, 2) confidence building through hands-on training, 3) appreciation for direct peer-to-peer mentoring and 4) willingness to train members of the non-medical community. **Conclusions** This was the first time an entire incoming medical school class was trained in basic bleeding control. This simple simulation session significantly increased students' likelihood of responding to an emergency medical situation; the training provided students with applicable skills for bleeding control management and boosted their confidence. Future research should investigate the long-term effects on clinical performance of this early intervention. **IRB Review** Has the IRB reviewed your project? NA If you answered No or NA above, please explain why. IRB approval was not necessary for this study. No patient or personal data was used. **References** https://www.bleedingcontrol.org/

18 ***Bolstering undergraduate medical education through service-learning in influenza vaccination training and practice***

C. Zaw[1], G. Chen[2], M. Kazmi[2], J. Phillips[2]
[1]University of Miami Leonard M. Miller School of Medicine, [2]Stony Brook University School of Medicine

Objective or purpose of innovation
To develop a sustainable and replicable influenza service-learning model through integration of public health concepts, clinical skills knowledge, and interdisciplinary teamwork.

Background and/or theoretical framework and importance of the field
Knowledge in public health is critical to a physicians ability to effectively contribute to todays healthcare system that poses increasingly complex public health challenges. Major national medical organizations have pushed for greater incorporation of public health curricula into medical education, however, there continues to be a lack of program models described in literature.

Design
Over the past year, Stony Brook University School of Medicine has developed a service-learning model to teach first-year medical students about influenza. The program includes a didactic session and clinical skills competency component, taught by nursing faculty. Students then engage in clinical volunteer opportunities throughout flu season in University-organized vaccination events or student-run free clinics alongside nursing students. Changes in students attitudes and knowledge of public health concepts are assessed using pre- and post-surveys.

Outcomes
Improved medical student comfort in interacting with and educating patients, reinforced appreciation for the significance and role of public health in medicine, additional opportunities for leadership and clinical exposure, increased interdisciplinary collaboration

Innovation's strengths and limitations
This program reinforces self-directed education with a combination of different learning modalities and provides early interactions with other healthcare professionals, including nursing faculty and students. However, this program may confer greater benefit to students who already have a baseline interest in public service and has a limited number of vaccination opportunities for students.

Feasibility and generalizability
Strong interest and investment is required to develop a curriculum within the confines of undergraduate medical education, as well as in establishing and maintaining community partnerships. Provided a medical school has existing relationships between its departments and in its community, as well funding for vaccines and supplies, this model of service-learning is feasible for medical schools of a variety of sizes and locations.

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	on Medical Education; 2013. Available from: http://www.lcme.org/ publications/functions.pdf. Accessed November 2, 2018.
19	***Standard Setting for Pre-Clerkship Competency-Based Assessments: A Modification of The Ebel Method*** J. Kobrin, T. Chen Hackensack Meridian School of Medicine at Seton Hall University **Objective or purpose of innovation** As a new medical school, we have the opportunity to develop assessment systems to align with our competency-based curriculum. We implemented a modified version of the Ebel Method to set the passing standard on our first summative exam based on a minimum competency level for each course learning objective (CLO). **Background and/or theoretical framework and importance of the field** A competency-based curriculum requires a move from norm-referenced to criterion-referenced assessment2,3. Students must attain pre-defined competencies to indicate readiness for the next stage of training. Whereas most standard setting methods result in a single passing score, our modification of the Ebel Method sets standards simultaneously for multiple competencies in our pre-clerkship courses. **Design** Before the exam was administered, items were tagged to one or more CLOs. The Ebel Method traditionally involves classification of items by importance and difficulty, and collects judgments on the percentage of items a borderline student would answer correctly in each category. Our modification added CLO to the classification to obtain a minimum score for each CLO as well as an overall passing score on the exam. **Outcomes** At the standard setting meeting, faculty and administrators reviewed data on the number of CLOs that students met. There was a clear difference in the performance of students missing three and four CLOs, so the decision was made to set the passing standard at three CLOs. Students who missed one or more CLOs, including those passing the exam, were required to meet with faculty to review performance. **Innovation's strengths and limitations** This innovation provides a way to make competency-based decisions at the pre-clerkship level, which is not possible with most other standard setting methods. Limitations include a lack of validity evidence, the amount of faculty time needed, and subjectivity in the categorizations and judgments. **Feasibility and generalizability** Our modification of the Ebel Method is relatively easy to implement and provides data that are consistent with a competency-based approach. **References** 1Cizek GJ, Bunch MB. Standard Setting; A Guide to Establishing and Evaluating Performance Standards on Tests. SAGE Publications Ltd; 2007. 2Holmboe ES, Sherbino J, Long DM, Swing SR, Frank JR. The role of assessment in competency-based medical education. Medical Teacher. 2010;32: 676-682. 3Pereira AG, Woods M, Olson AP, van den Hoogenhof S, Duffy BL, Englander R. Criterion-Based Assessment in a Norm-Based World: How Can We Move Past Grades?. Academic Medicine. 2018 Apr 1;93(4):560-4.

20	***P&S Partners in Pregnancy: A Longitudinal, Patient-Centered Program for Preclinical Students*** E. Auran[1], L. Mauney[2], E. McMillen[1], R. Ratan[3] [1]Columbia University Vagelos College of Physicians and Surgeons, [2]Brigham and Women's Hospital, Harvard Medical School, [3]Columbia University Medical Center **Objective or purpose of innovation** To develop a longitudinal program pairing first-year medical students with prenatal patients. **Background and/or theoretical framework and importance of the field** Students who participate in early clinical, longitudinal experiences report greater confidence in communication, comfort in clinical settings, and self-esteem during transition to clerkship year. However, few longitudinal experiences exist for preclinical students at our institution. **Design** A retrospective needs assessment evaluating interest, motivating factors, and perceived barriers to participation was distributed to second-year students. In response, we utilized a small grant to develop a student-run pilot program pairing ten first-year students with pregnant patients. Students partake in lectures and accompany patients to appointments. Initial perceptions about the patient-physician relationship were assessed in both groups using the Patient-Practitioner Orientation Scale (PPOS), with 1 indicating doctor-/disease-centered, and 6 indicating patient-centered. To assess the comprehensive impact of the program, all participants retake the PPOS after programs completion, and participate in focus-groups assessing overall experience. **Outcomes** 49% of students completed the needs assessment. 90% reported that they would be at least somewhat interested in a longitudinal prenatal pairing program. Motivating factors included desiring longitudinal experience (87%), early clinical exposure (82%), and patient advocacy/community engagement (78%). Our program was designed accordingly. All first-year students were invited to apply; ten were accepted. At recruitment, mean student PPOS score was 4.64 compared to 3.95 for patients. **Innovation's strengths and limitations** Our goal is to maintain and cultivate patient-centeredness in both patients and students, with the potential to improve student communication skills and patient satisfaction1, and to create positive attitudes towards medical student involvement in prenatal care. Limitations include challenges with recruitment, patient retention, time constraints for students, and communication barriers with patients. **Feasibility and generalizability** Our program is generalizable on a similarly small scale, recognizing challenges around recruitment and the need for a small budget and student coordinator. We believe that students and expectant mothers from other communities could benefit from a similar program. **References** 1) Krupat E et al. Patient orientations of physicians and patients: the effect of doctor-patient congruence of satisfaction. Patient Educ Couns 2000;39:49-59.
21	***USMLE Step 2 Clinical Skills Mock Exam: A twelve station OSCE preparatory exam at Zucker School of Medicine at Hofstra Northwell*** R. Dougherty, ML. Barilla-Labarca, J. Bird, J. Brenner, M. Pawelczak, E. Pearlman Donald and Barbara Zucker School of Medicine at Hofstra/Northwell **Objective or purpose of innovation** This 12 station OSCE exam provides comprehensive resources to students, helping ensure 100% pass rate

	on the USMLE Step 2 Clinical Skills exam. This intervention targets at risk students. **Background and/or theoretical framework and importance of the field** The NBME recently increased the fail rate. We designed a predictive model for failure and mock exam to help at risk students. The predictive model and mock exam have become more sophisticated, and our failure rate decreased. **Design** Variables used to identify at risk students include: shelf scores, overall clerkship grades and OSCE grades from the six core third year clerkships (Medicine, Surgery, OB/GYN, Pediatrics, Neurology and Psychiatry). Non at-risk students can take the exam. Mock exams are administered prior to the students USMLE Step 2 CS testing date. The OSCE mock exam has twelve stations and is held at the Clinical Skills lab. Step 2 Clinical Exam test conditions are simulated including the number and duration of stations, post-encounters, breaks, and overhead notifications. Encounters feature medicine, surgery, pediatrics, ob/gyn, neurology and psychiatry cases and Standardized patients are utilized. A telephone format is utilized. All cases have a post-encounter utilizing the USMLE Step 2 CS note format. Following the mock, the student and clinical preceptor have an hour meeting to discuss performance. Standardized patient checklists, videotape and written post-encounters are reviewed. The student and preceptor work to identify common themes and strategize improvement techniques, including additional practice if needed. **Outcomes** Cumulative Pass Rate Classes 2015-2017: 96.43% Class of 2018: 100% Pass rate on USMLE Step 2 Clinical Skills **Innovation's strengths and limitations** Strengths are: (1) a simulated USMLE step 2 CS exam which students can experience prior to their test date, and (2) personalized feedback and tailored remediation provided by a skilled coach. Limitations: resource intensive design, faculty time, clinical skills staff time and cost. **Feasibility and generalizability** Feasibility is dependent on institutional resources. Experience is generalizable to other schools. **References** Bird, J et al. Can We Predict Step 2 CS Performance? Exploring the Relationship between Assessment Data and Step 2 CS Performance. Presented at NEGEA April 2018.
22	***Impact of an Online Elective on End-of-Life Care for Medical Students*** P. Ludmer, I. Bedzow, D. Risucci New York Medical College **Objective or purpose of innovation** To report on the development and impact of an asynchronous online course on end-of-life care for fourth year medical students. **Background and/or theoretical framework and importance of the field** With the aging of the United States population, calls to improve end-of-life care education of medical

trainees have increased.Trainees and residents recognize this gap and often report feeling under-prepared to care for patients at the end of life.

Design
Guided by national recommendations, we developed an eight-week, interactive asynchronous online elective for fourth year medical students covering a) non-beneficial care, b) right to refuse treatment, c) death with dignity, d) palliative care, e) pediatric issues, and f) severe neurological injury. This interactive course utilizes best practices in education and includes weekly video presentations, readings, discussion boards, written assignments, a final paper, a pre-course/post-course survey, and a final course evaluation.

Outcomes
Students reported increased comfort and preparedness to engage in end of life care. Greatest improvements were in comfort discussing palliative and hospice care and in arriving at ethical solutions. Comfort in discussing ethical issues in pediatric end-of-life care improved significantly, but remained low. Thematic analysis of pre- and post-course survey responses demonstrated increased complexity of responses regarding definitions of non-beneficial care, and differentiating between palliative and hospice care.

Innovation's strengths and limitations
Strengths include diverse representation of faculty in course design, use of national recommendations, and use of best practices in educational design principles. Limitations include small sample size (n=13) at one institution and potential selection bias given the elective nature of the course. Furthermore, the fully online nature of the course did not demonstrate impact on patient care.

Feasibility and generalizability
The online nature of this course makes it feasible for any educational program, however generalizability may be limited to 4th year medical students with particular interest in improving knowledge and comfort in end-of-life care.

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23	***Examination of Pediatric, Internal and Family Medicine residents skills and practice in delivering cross-cultural clinical care*** E. J. Kim, L. Marrast, O. Uwemedimo, J. Martinez Donald and Barbara Zucker School of Medicine at Hofstra/Northwell **Research Statement/Research Question** How does graduate medical education (GME) in social determinants of health (SDH) translate into residents preparedness, skillfulness and clinical practice to address their patients' SDH? **Background and relevance of the study** SDH encompasses conditions arising from where people are born, live, learn, work, and age. Strong evidence suggests that addressing patients' SDH can affect more than half of patients health outcomes. However, there are a limited number of studies examining trainees education/training in SDH and the effect of this education on their practice and behavior. **Design and Methods** Residents in Internal Medicine, Pediatrics, and Family Medicine were asked to complete a survey. In addition to sociodemographic questions, residents were asked to rate their prior education/training, preparedness, self-perceived skillfulness, and clinical practice addressing SDH. We conducted descriptive analysis of residents responses to the survey. **Results** The study included residents from Internal Medicine (n=87), Pediatric (n=63), and Family Medicine (n=10); they were 36.9% Whites, 6.9% Blacks, 8.1% Hispanics, 36.9% Asians, and 11.2% Others. About a quarter (27.5%) of residents reported coming from a disadvantaged background (low income, limited English proficient, attending a school with high dropout rate, etc.). A majority of the residents had prior education or training in health disparities (75.6%), SDH (83.8%), and community health (57.5%). Despite having prior education (reported range 63.1-98.1%) in various cross-cultural topics, there were wide variations in preparedness in addressing patients with cross-cultural differences (24.4% prepared to care for patients with a distrust of healthcare system and 51.3% prepared to care for patients with limited English proficiency or from a different culture). Residents infrequently or never asked questions addressing SDH health during their patient care. **Conclusions** Prior training/education did not necessarily translate into preparedness, skillfulness, or clinical practice of addressing a wide spectrum of patients SDH. There is great potential in the role GME can play to improve trainees exposure and clinical practice in addressing SDH. **IRB Review** Has the IRB reviewed your project? Yes If you answered No or NA above, please explain why. NA **References** Empathic Inquiry: A patient-centered approach to social determinants of health. https://www.orpca.org/initiatives/empathic-inquiry. Accessed on November 11, 2018.

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	Curriculum Design & Assessment: Across the Continuum
24	***Insights and Best Practices from A Longitudinal MS4 Medical Student as Teacher Elective (MST)*** E. F. M. Schlegel, M. Cassara, D. M. Olvet, A. Fornari Donald and Barbara Zucker School of Medicine at Hofstra/Northwell **Research Statement/Research Question** Teaching is considered a physician core skill1,2,3. We introduced a longitudinal medical student as teacher (MST) elective offering a comprehensive program reinforced with practical teaching experience to prepare MS4 students to become educators of excellence. This mixed-method study aims to determine (1) improvement in medical education knowledge, (2) course satisfaction (3) meaningful learning experiences through active participation in diverse educational settings and (4) applying their knowledge to a project. **Background and relevance of the study** Similar to the various models reviewed by Erlich & Shaughnessy (2014), didactic foundations of medical education, experiential learning as participating educators, flexible independent study, and a capstone project prepare MS4 students to deliver different pedagogies across a variety of instructional settings. Tools such as reflective teaching logs (RTL) enable students to be accountable and report to the course directors their individualized teaching opportunities. The findings of this study will demonstrate how a combination of didactic foundation, program development and experiential learning can successfully prepare graduating medical students for teaching during residency and after. **Design and Methods** Perceived knowledge was assessed before and after the initial boot camp sessions. Teaching reflections were captured in the RTL. Surveys and semi-structured exit interviews were conducted to assess the curriculum, logistics and satisfaction. Capstone presentations demonstrated transfer and application of educational design and curriculum development skills. **Results** Preliminary results show a significant improvement in perceived knowledge on 12 of the 16 items. Students appreciated the didactic foundations, and they preferred active over passive learning. Areas of improvement included scheduling considerations, especially accommodating fourth year residency interviews and away electives.

Conclusions
This generalizable program provides tools for reflection and diverse teaching opportunities accommodating the needs of students individualized schedules. The longitudinal model can easily be adopted by schools with elective time and faculty resources to support the students expansion and knowledge of skills specific to medical education during the MS4 year.

IRB Review

Has the IRB reviewed your project?
Yes

If you answered No or NA above, please explain why.
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25 ***Flipping the Classroom on Respiratory Physiology: The National Neonatology Curriculum***

H. French[1], M. Gray[2], M. Gillam-Krakauer[3], R. Dadiz[4], S. Izatt[5], L. Johnston[6], M. Vasquez[7], A. Payne[8], A. Falck[9], M. Carbajal[10], E. Bonachea[11], H. Karpen[12], P. Chess[13]
[1]Perelman School of Medicine at the University of Pennsylvania, [2]University of Washington School of Medicine, [3]Vanderbilt University School of Medicine, [4]University of Rochester School of Medicine and Dentistry, [5]Duke University School of Medicine, [6]Yale School of Medicine, [7]University of Texas Health Science Center San Antonio, [8]Case Western Reserve University School of Medicine, [9]University of Maryland School of Medicine, [10]Baylor College of Medicine, [11]Ohio State University College of Medicine, [12]Emory University School of Medicine, [13]University of Rochester School of Medicine and Dentistry

Research Statement/Research Question
A flipped classroom (FC) is an acceptable, feasible, and effective educational method in GME.

Background and relevance of the study
The FC is an adult-centered learning strategy that engages higher level cognitive skills (ie application and analysis) that are not often employed in traditional didactics (TD). A respiratory physiology curriculum for neonatology fellowship programs based on ABP content specifications was created to standardize content and distribute the work of creating educational materials across programs.

Design and Methods
Fourteen peer-reviewed respiratory videos and FC discussion guides were created. An anonymous survey was sent to 379 online video users about acceptability, learner engagement, and perceptions of efficacy compared to TD.

Results
Survey response rate was 47% (99 fellows, 74 faculty). Despite many neonatology faculty being

inexperienced with FC (40/74, 54%), the mean time for faculty preparation was 60 (FC) vs. 210 (TD) min ($p<0.001$). 80% of fellows watched most/all of the videos prior to the FC and spent more time preparing for FC vs. TD (15-60 vs. <15 min, $p<0.001$).

The program was well-accepted; 69% of fellows and 53% of faculty reported that they prefer FC to TD. 82% of fellows found FC content and case discussions helpful. >90% of faculty agreed there is value in a standardized, national FC curriculum. Faculty reported greater satisfaction and efficacy facilitating a FC session, compared with TD.

Faculty and fellows reported improved engagement in learning. Faculty and fellows noted the same benefits of the FC: engaging discussion relevant to clinical care, peer-to-peer teaching, and supportive learning environment. Challenges identified were participant under-preparation and tendency to lecture instead of facilitate discussion.

Conclusions
The FC physiology curriculum was well accepted by users, increased fellow engagement, and reduced preparation time for faculty. The FC appears to build a collaborative, learner-centered environment. Additional work is underway to expand the content, train faculty on optimal facilitation, and measure knowledge retention.

IRB Review

Has the IRB reviewed your project?
Yes

If you answered No or NA above, please explain why.
NA

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26 ***Formalizing student LCME element 6.3 Self-Directed Learning opportunities in a non-PBL curriculum***
R. Gordon[1], A. Fox[1], A. Getselman[2], S. Dathatri[2], A. Ly[1], T. Bates[2], A. Swan-Sein[1]

[1]Columbia University Vagelos College of Physicians and Surgeons, [2]Columbia University Irving Medical Center

Objective or purpose of innovation
LCME-element 6.3 requires students engage in self-directed-learning (SDL): self-assessing learning needs, independently identifying/analyzing/synthesizing relevant information, appraising information source credibility, sharing knowledge, and receiving feedback on SDL practice. Helping students develop self-regulated learning skills promotes long-term learning,[1,2,3] and prepares for EPA-7: forming clinical questions and retrieving evidence to advance patient care.

Background and/or theoretical framework and importance of the field
We sought to fully integrate SDL, a fundamental component of medical education, more explicitly into our culture and curriculum (which includes preceptor-led sessions with 4 teams of 6-7 students) without launching a pure, Problem-Based Learning (PBL) program. Major consideration was given to limited time for faculty development.

Design
We followed PBL by having students work though a patient case in teams, identify what is known/unknown about the case, and distribute learning tasks. Students independently researched learning objectives and completed brief reports, explaining why they used each credible resource, and synthesizing learning findings. We deviated from PBL during class-time; preceptors guided students sharing results of their SDL research throughout the case discussion. Students received individual feedback on their SDL process/brief reports.

Outcomes
In quantitatively and qualitatively evaluating each SDL activity, we found it crucial to clearly communicate the purpose and importance of SDL to students and set clear expectations. Leading the in-class session requires skilled preceptors. Providing substantive feedback (rubric/narrative) to individual students on their reports necessitates trained faculty. The process benefited from collaboration with library informationists. Students enjoyed being the experts and sharing knowledge with classmates.

Innovation's strengths and limitations
Were iteratively tweaking SDL activities to develop best practices. Preceptors must be skilled, and providing students individual feedback is resource-intensive. Our goal is for SDL to become fully-integrated into the curriculum and to be a vital component of the student learning experience.

Feasibility and generalizability
This SDL innovation is straightforward to implement and could be adopted by other medical schools looking to incorporate more SDL into the curriculum.

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27

I***ntegrating student feedback in medical education: A necessity and a challenge***

A. Motta-Moss, M. Etheridge, L. Ridgeway
CUNY School of Medicine

Objective or purpose of innovation

To offer a framework for integrating student feedback as a key component of curriculum development.

Background and/or theoretical framework and importance of the field

Course evaluations are essential to medical education and an accreditation requirement for US medical schools [1, 2]. The literature recommends a comprehensive approach linked to curricular development/modification [3], but there is no identified best practice. The most common model involves student evaluations completed at the conclusion of course/clerkship. Complexities associated with implementing high quality medical programs involving multiple instructors in numerous settings can make the delivery/use of student evaluations challenging.

Design

Nearly 1000 evaluations were launched measuring curricular, teaching and student performance areas. Assessments required a learning management system that fit the variability of course structures and instructors, enabling timely feedback. Ratings included overall course quality, effectiveness of teaching/course materials, quality of faculty presentation, responsiveness to students, and overall teaching effectiveness. Open-ended items covered course/instructors' strengths and areas for improvements.

Outcomes

Summary ratings and qualitative thematic data compared courses/faculty ratings within and across modules/courses; tracked student course evaluations overtime; and monitored critical scores in performance. At the close of each course/clerkship, aggregate evaluation data were shared with course directors, department chairs and deans. Summary findings were shared with the curriculum committee, and action items were discussed by committee members for approval.

Innovation's strengths and limitations

Paper outlines mechanisms for sharing results in a transparent and systematic way with stakeholders within medical schools. Limitations include that it relies primarily on data from the first three years of medical education, providing initial feedback on curricular strengths and weaknesses. Preliminary findings introduce a framework for analyzing and identifying best practices, as well as areas requiring improvement.

Feasibility and generalizability

Consensus suggests that multi-item, anonymous forms work well, and mixed methods are recommended when designing course evaluations. The framework discussed requires the allocation of specific technological and personnel resources but it can be replicated by medical schools.

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28	***Enabling Self-Directed Life-Long Learning through Entrustable Professional Activity 7: The Educators Role*** J. M. Spak[1], N. Adams[2], E. Brennan[3], H. Collins[4], I. Kovar-Gough[5], E. Lorbeer[6], J. Nicholson[7], R. Ogawa[8], R. Riley[9], K. Thormodson[10], M. von Issenberg[11] [1]Yale School of Medicine, [2]Penn State College of Medicine, [3]Medical College of South Carolina, [4]American Academy of Family Physicians, [5]Michigan State University College of Human Medicine, [6]Western Michigan University Homer Stryker MD School of Medicine, [7]NYU School of Medicine, [8]UCLA, [9]University of South Carolina School of Medicine, [10]University of North Dakota School of Medicine and Health Sciences, [11]Duke University School of Medicine **Research Statement/Research Question** This poster reports on research pertaining to librarian involvement in teaching and assessing the functions included in EPA 7 and discusses the relevance of these activities to self- directed learning. **Background and relevance of the study** Medical students, trainees, and clinicians must effectively identify and appraise authoritative information and address knowledge gaps to provide optimal patient care. These same evidence-based information-seeking competencies are foundational for self-directed learning. Librarians frequently teach in medical curricula, but the extent to which they are involved in competency-based medical education, specifically the activities included in EPA 7, is emerging. **Design and Methods** The Association of Academic Health Sciences Libraries (AAHSL) Competency-Based Medical Education task force conducted a literature review, environmental scan, and interviewed librarians at schools implementing EPAs (including pilot schools). The survey,(1) based on previous work by Blanco et al. (2) and the Wilder Collaboration Framework(3), was distributed to the libraries of 164 AAMC-associated medical schools in September 2016. The survey measured levels of engagement regarding the teaching and assessment of EPAs and associated competencies. **Results** The survey garnered a 52% response rate (n= 85), and 90% of responding librarians were teaching and/or assessing functions of EPA 7. Chi-square analyses showed no significant difference in the amount of teaching or assessing EPA 7 between librarians who identified their work as EPA-related and those who did not. **Conclusions** As discussed in Pearlman(4) and Lindeman(5), Program Directors do not think that residents can proficiently form or answer clinical questions using the biomedical literature. The inclusion of librarians in teaching and assessing student EBM skills will directly support self-directed learning by developing problem-based learning and improving students ability to identify and perform learning activities that address their gaps in knowledge, skills, or attitudes. Students will also be able to independently identify, appraise, and assimilate evidence from scientific studies related to patients health problems. **IRB Review** Has the IRB reviewed your project? Yes If you answered No or NA above, please explain why. N/A

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29 ***A Blended Learning Model for Ultrasound Education in Pulmonary and Critical Care Medicine Fellowship***

K. I. Ullah, S. Ahmad
Stony Brook University School of Medicine

Research Statement/Research Question
Is Blended Learning a feasible learning modality for Ultrasound at the Pulmonary and Critical Care Medicine Fellowship Level?

Background and relevance of the study
Blended Learning is an educational model that integrates multimedia technology-based learning with live instructor-led learning. This approach has been shown to be effective in limited medical education studies, however no existing Blended Learning model exists for Ultrasound (US) education at the level of Pulmonary and Critical Care Medicine (PCCM) Fellowship. Our aim is to enhance the learning environment with a Blended Learning course targeted for PCCM Fellows and study its efficacy as an educational model.

Design and Methods
Participants were incoming PCCM Fellows at our institution. A blended learning course was constructed which combined traditional didactics with selected online modules from Sonosim®. Surveys evaluating learner demographics, attitudes and confidence as well as assessment tools evaluating US knowledge and skills prior to and immediately following the Blended Learning course were administered and used for statistical analysis.

Results
(N=5) of PCCM Fellows were subjected to the Blended US course. Mean(± standard deviation) scores on US knowledge and skills tests prior to course were 24.7±26.8 and 39.3±33.3 respectively. Immediately following a Blended learning model, knowledge and skills scores were 56.5±13.5 and 80.4±11.0 respectively. There were significant increases in knowledge and skills scores as computed by the Wilcoxon Signed-Rank Tests (Z=-2.02,p=0.43). Post-course survey showed learner satisfaction with the Blended US course with 100% of participants reporting a well-designed course and effective learning modalities of appropriate content and detail.

	Conclusions Our findings are the first of its kind to demonstrate that a Blended Learning Model is an effective approach in US education amongst PCCM Fellows. There is a meaningful relationship between pre-test and post-test scores in all participants. However, long-term retention testing of knowledge and skills from the Blended US course is to follow as well as comparisons to former traditional models. **IRB Review** Has the IRB reviewed your project? Yes If you answered No or NA above, please explain why. NA
30	***Linkage of Case Based Learning and Team Based Learning Promotes Life-long Learning Skills While Conserving Faculty Time*** D. Russo, V. Weber Drexel University College of Medicine **Objective or purpose of innovation** To develop a curricular model that promotes both life-long learning and team collaboration skills while conserving faculty time. **Background and/or theoretical framework and importance of the field** The use of instructional modalities that promote life- long learning, reduce passive lecture time, and provide a venue for narrative feedback are LCME driven initiatives in many medical schools. We implemented a new curriculum in 2017 -18 that addressed these issues as well as promotes team formation skills. **Design** While developing a new curriculum we considered various instructional modalities, including problem-based learning, that promote life-long learning and team formation skills. We understood the benefits of faculty facilitated small groups but struggled to translate this format into a curricular model that would serve our large student body (~260) without putting undue burden on faculty. We also appreciated the benefits of team-based learning (TBL) which utilizes faculty that are experts in the content areas being taught. To address this, we developed a curriculum that intentionally links small group, case-based learning (CBL) with TBL sessions on a weekly basis. Each week opens with a small group faculty facilitated session that explores a clinical case that exposes basic, clinical and social science content areas that are further explored in TBL settings later in the week. **Outcomes** Student satisfaction with the curriculum has been positive with 74% of students rating the CBL/TBL linkage format highly and 82% found that CBL provided context for basic science content. We have reduced passive learning by ~40% and 87% of students reported enhanced team skills. **Innovation's strengths and limitations** We have achieved our curricular goals while conserving faculty time however, both instructional formats require intensive faculty training and ongoing development **Feasibility and generalizability** This approach is exportable to schools with large and small student bodies and offers variations that can address the unique strengths of an individual school.

31	***Creating standardized active learning instructional methods to replace lecture in a medical school curriculum*** J. Moore, R. Wilcox, K. Lounsbury, LA. Holterman, C. Simone, K. Huggett Robert Larner MD College of Medicine at the University of Vermont **Objective or purpose of innovation** Mounting evidence supports active learning in medical education (1,2). The Larner College of Medicine (LCOM) is converting all lecture to active learning modalities. While LCOM provides faculty development and support, a varied understanding of active learning among faculty marks this stage of the transition. Students shared that inconsistency in active learning modalities limited their effectiveness. This highlighted a need to document the details of each modality that could replace lecture. **Background and/or theoretical framework and importance of the field** Standard operating procedures (SOPs) are a type of organizational routine (3) to support learning and performance. Thus, we created SOPs for our standardized active learning modalities. **Design** A committee of faculty, students, and educators performed an inventory of current teaching methods. Course directors provided review of the inventory and needs assessments for new modalities. The committee created SOPs for six active learning methods based on evidence and best practices. Students evaluations of the curriculum were adapted to rate the new modalities. Students provided additional feedback through surveys. **Outcomes** The SOPs have been used in seven preclinical courses. The percentage of active learning sessions has increased from 44-80% to 60-100%. The modality Integrative Review received the highest rating from students. Students rated new modalities with more operational variability, often taught by faculty new to active learning, lower than established modalities taught by faculty more familiar with active learning. **Innovation's strengths and limitations** This research suggest SOPs support faculty adoption of active learning across disciplines and courses. Limitations include the use of data only from the preclinical years. **Feasibility and generalizability** This work suggests that SOPs for standardized instructional modalities enhance experiences with active learning. Implementation is facilitated by an instructional design team which requires institutional commitment of resources. Future research is needed to understand differences in student ratings and faculty perceptions. **References** 1. Friedlander MJ, Andrews L, Armstrong EG, Aschenbrenner C, Kass JS, Ogden P, Schwartzstein R, Viggiano TR. What can medical education learn from the neurobiology of learning? Acad Med. 2011 Apr;86(4):415-20 2. Versteeg M, van Blankenstein FM, Putter H, Steendijk P. Peer instruction improves comprehension and transfer of physiological concepts: a randomized comparison with self-explanation. Adv Health Sci Educ Theory Pract. 2018 Oct 20. [Epub ahead of print] 3. Argote L. Organizational memory. In Organizational Learning 2013 (pp. 85-113). Springer, Boston, MA.
32	***A systematic approach for trauma team members (TTMs) to cope after mass casualty incidents (MCIs)*** C. Berkowitz[1], S. de Gijsel[1], R. Winchell[1], B. Lown[2], A. Gupta[1], M. Narayan[1]

[1]Weill Cornell Medicine, [2]Harvard Medical School

Research Statement/Research Question
We hypothesized that conducting a formal Schwartz Center Rounds (SCR) after the second deadliest terror attack in New York City history would enhance well-being.

Background and relevance of the study
TTMs caring for injured patients and families after MCIs often have no structured mechanism to cope with stress, emotions, and feelings and are at increased risk of post-traumatic stress disorder (PTSD).

Design and Methods
SCR was conducted including physicians, nurses, social workers, psychologists, allied health professionals and chaplains who had an opportunity to share experiences, thoughts and feelings after a deadly terror attack. After presentation, caregivers in audience shared their perspectives. Post SCR survey was conducted to assess impact.

Results
86 SCR participants included nurses (48.8%), doctors (10.5%), social workers (9.3%), or other professions (27.9%). 45 of 86 (52.3%) participants completed evaluations. 20 (44.4%) were nurses, 6 (13.3%) social workers, 3 (6.7%) doctors, and 16 (35.6%) other. All 45 participants (100%) responded that SCR discussed challenging social and emotional aspects of patient care. 45 (100%) said SCR provided insights into perspectives and experiences of coworkers and 44 (97.8%) into perspectives and experiences of patients and/or families. 38 (84.4%) felt better prepared to handle MCI situations in the future, 39 (86.7%)felt less isolated in work with their patients, and 43 (95.6%)felt more open to expressing thoughts, questions, and feelings about patient care surrounding the attack with colleagues. 33 (73.3%) rated SCR as excellent, while 12 (26.7%) rated it as good.100% responded that SCR was well-facilitated, 97.8% felt the program was free of commercial bias, and 97.8% responded they planned to attend SCR again. 95.6% responded that departments/institutions should do more to deal with PTSD in TTMs.

Conclusions
TTMs are at significant risk of PTSD after MCIs. SCR is a platform to enhance the well-being of TTMs in MCIs. More work is needed to incorporate such structured coping platforms at the departmental/institutional level.

IRB Review

Has the IRB reviewed your project?
No

If you answered No or NA above, please explain why.
Anonymized surveys, no risk of harm

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	Disparities & Bias: Across the Continuum
33	***Development of a Student-Led Social Determinants of Health Curriculum at Larner College of Medicine that Does Not Require Creation of New Lectures*** R. Goyal, S. Epstein, C. Dawson, T. Thornburgh, E. Lynch, R. Hausser, S. Rowlandson Robert Larner MD College of Medicine at the University of Vermont **Objective or purpose of innovation** The Social Justice Coalition, a student leadership group at the Larner College of Medicine (LCOM), has developed a comprehensive Social Determinants of Health (SDH) Curriculum at LCOM without creating new lectures or hiring new faculty. **Background and/or theoretical framework and importance of the field** President/CEO of the AAMC, Dr. Darrell Kirch, stated in the AAMCs 2016 Health Equity Brief that medical institutions must be on the front lines not only in times of natural disaster or sudden crisis but also in periods of Social Upheaval. The contribution of social factors to health is well-documented and we believe it is incumbent upon medical schools to respond to the growing importance of Preventative and Equity-driven healthcare. **Design** Other Medical Schools have documented SDH didactics, but many of these require new lecture creation, or only target already interested students. Our Social Medicine Theme of the Week builds on existing lectures in the Larner curriculum, and targets the entire medical student body using three components: 1. Anchor in weekly 90-minute small group session called Professionalism, Communication and Reflection (PCR) 2. Note on students weekly calendar, and in-class introduction 3. Faculty buy-in to include new lecture slides or case presentations. **Outcomes** We have developed a SMTW for every week of the first year curriculum, rewritten 15 PCR sessions, built 200+ learning objectives, and engaged faculty early-adopters to make changes to lecture content. **Innovation's strengths and limitations** Strengths: The SMTW does not require new lectures or faculty, integrates SDH with other medical curricula, diverse involvement students and faculty. Limitations: lack of formal support for faculty in teaching SDH content, and lack of top-down mandate means many professors have not participated. **Feasibility and generalizability** This is a feasible approach to implementing an SDH curriculum as it builds on existing coursework and unlocks grassroots knowledge of students and faculty. It is highly generalizable after formal survey of curricula. **References** CSDH (2008). Closing the gap in a generation: health equity through action on the social determinants of health. Final Report of the Commission on Social Determinants of Health. Geneva, World Health Organization.

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34

The Design and Implementation of a Novel Medical Student Curriculum for Social Determinants of Health and Caring for the Underserved

R. Belforti, K. Hinchey, J. Ayala, S. McAdoo, A. Sweeney, R. Blanchard
University of Massachusetts Medical School - Baystate

Objective or purpose of innovation

To describe the design and implementation of the Population-based Urban and Rural Community Health (PURCH) track, integrating community members and creative teaching strategies in an experiential UME curriculum focused on social determinants of health (SDOH) and care for the underserved.

Background and/or theoretical framework and importance of the field

SDOH education for UME must be experiential and cut across education, organization, and community (1). Many programs use service learning projects or regular placements in the community to address this need (1,2). However, these projects can be limiting and rely on "exposure" as the only teaching strategy. Our program engages students and community members in a variety of experiential learning opportunities to activate awareness, knowledge, and skills in SDOH.

Design

Two primary elements make the PURCH track innovative.
First, Springfield community members (CF) are integrated into the implementation of the curriculum. CF contribute in many ways, including serving as SPs for the students, hosting students in their organizations, and volunteering as facilitators, sharing their own experiences.

Second, the PURCH curriculum is housed within the interview course, and includes:
-Poverty simulation with other health professions students
-Interviewing patients in a homeless shelter and local prison
-Interviewing CF and marginalized patients (e.g., transgender, veteran patients)
-Learning diagnostic reasoning from a car mechanic
-Deliberate self-reflection with faculty feedback
-Discussing advocacy with local legislators
-Walking food tour in the community with CF

Outcomes

Now in its second year, the PURCH track has 46 students. Quantitative data show that PURCH students rated their experience and their faculty highly. Qualitative data reflect the unique effect of PURCH, providing

	a sense of community and developing a sense of self-awareness. **Innovation's strengths and limitations** PURCH has connected the community to med students in an authentic, purposeful way. At present, the amount of curriculum time limits additional experiences. **Feasibility and generalizability** Presentation will cover opportunities for PURCH track to inform SDH education at other medical programs. **References** 1. Ratcliffe G, Spitzer-Shohat S, Stroud L, Essa-Hadad J, Rudolf M. Can non-clinical community placements enhance medical students understanding of the social determinants of ill health? Public Health. 2018;159:144-147. 2. Bryant-Moore K, Bachelder A, Rainey L, Hayman K, Bessette A, Williams C. Use of Service Learning to Increase Masters Level Nursing Students Understanding of Social Determinants of Health and Health Disparities. J Transcultural Nursing. 2018;29(5):473-479.
35	***Call to Action! Using a 4th Year Retreat to Encourage the Development of Advocacy Skills*** M. Luke, B. Bentson, K. Cabrera, V. Fort, E. Feldman, B. Guttadauria, C. Hartman, K. McLeod, K. Minaya, S. Moore, V. Papagermanos, K. Reese, A. Slamowitz, E. Stave, J. Strawser, A. Tchaconas, S. McGeechan-Chianese, R. Samuels, J. Oestreicher, S. Barone Donald and Barbara Zucker School of Medicine at Hofstra/Northwell **Objective or purpose of innovation** 1. Instill a passion for advocacy in a group of future pediatricians. 2. Empower students to develop a comprehensive advocacy initiative. 3. Disseminate the students advocacy projects to the community. **Background and/or theoretical framework and importance of the field** Fourth year students at the Zucker School of Medicine (SOM) at Hofstra/Northwell applying to pediatric residencies expressed interest in developing a group advocacy project. To ensure a student-driven process with vested support, faculty at Cohen Childrens Medical Center (CCMC) organized a day-long retreat to foster camaraderie among the 22 students and identify areas of advocacy interest. **Design** At the retreat, students chose firearm safety as their focus, self-selected into 3 working groups (advocacy, education, and research), and formulated a list of goals which were presented to the CCMC faculty. **Outcomes** The advocacy team worked with the AAP in designing a candidate forum on firearm safety, and met with legislators to discuss the issue. The education team built a toolkit to prepare pediatricians for firearm counseling, and incorporated this training into the CCMC residency curriculum. The research team created a survey assessing pediatricians knowledge of firearm safety to be distributed to NY-AAP Chapters. Qualitative and quantitative surveys on the importance of pediatric advocacy were administered pre- and post-retreat. A follow-up survey will be administered in the early spring. **Innovation's strengths and limitations** The retreat successfully fostered a culture of motivation, collaboration, and innovation. While students had competing priorities in their fourth year, the dedicated time and team-based model allowed for actionable agenda setting and group accountability.

	Feasibility and generalizability An annual 4th year retreat to develop a collaborative advocacy project amongst students seeking a similar career path can be easily replicated in other institutions, in any given specialty. Similar pediatric group advocacy initiatives may be easily transferred to the next group of eager and innovative fourth year students, and may create a legacy of positive impact on their community. **References** Press V, Fritz C, Vela M. First year medical student attitudes about advocacy in medicine across multiple fields of discipline: analysis of reflective essays. J Racial Ethn Health Disparities. 2015 Dec 1; 2(4): 556564.
36	***What They See: An analysis of Faculty Diversity and Exposure to Medical Students*** M. Katz, S. Alvarado University of Connecticut School of Medicine **Research Statement/Research Question** Identify baseline demographics of medical school faculty who teach in the preclinical years and quantify their exposure to medical students. **Background and relevance of the study** Diversity among faculty in medical schools has been a recent focus of the AAMC, which has been highlighted in the demographics of educators of different ranks and titles. However, it is also imperative to ensure that students are exposed to a representative body of diverse educators (Baken et al). During the pre-clinical years, students spend the majority of their time in classroom-based settings. Our institution sought to evaluate the extent to which students are exposed to faculty of varied demographics during their preclinical years. **Design and Methods** Demographic information was obtained from Faculty Affairs for all faculty members who are responsible for any component of pre-clinical education, excluding elective educational experiences. Demographic information included gender, race, and academic degree. The relative exposure of each faculty member was calculated based on the number of hours spent in direct education and the number of students present during those hours. Faculty members were also ranked according to the extent of their role in the educational activity. Additionally, students in the preclinical stage of the curriculum were surveyed regarding their perceptions of diversity of pre-clinical educators. **Results** Data is pending at this time, but will be available in time for the meeting to present. Data presented will include demographics of Stage 1 faculty, exposure calculation for each faculty member (including time spent educating and number of students educated), and results from student surveys. **Conclusions** While improving diversity among faculty is a nationwide goal of medical schools, there also needs to be close attention paid to the exposure that medical students get to a broad demographic of educators throughout their training. This analysis will better determine where we stand at achieving diversity of faculty in the preclinical years. **IRB Review**

	Has the IRB reviewed your project? No If you answered No or NA above, please explain why. Plan to submit shortly **References** Striving Towards Excellence: Faculty Diversity in Medical Education. Association of American Medical Colleges, Diversity Policy and Programs. Summer 2009 Milem, J.F. (2003). The educational benefits of diversity: Evidence from multiple sectors. In M. Chang, D.Witt, J. Jones, & K. Hakuta (Eds.). Compelling interest: Examining the evidence on racial dynamics in higher education (126-169). Palo Alto, CA: Stanford University Press Bakken, L.L. Who are physician-scientists' role models? Gender makes a difference. Academic Medicine, 2005, 80 (5), pp. 502-506.
	Global Health: Across the Continuum
37	***A Pilot Curriculum for the Implementation of 3-D Conformal Breast Radiation Therapy (3-D CRT) in a Developing Country*** O. Balogun[1], N. Karamyan[2], L. James[3], L. Chepkemoi[1], S. Zeitner[4], M. Hissourou[1], R. Kayende[3], T. Saghatelyan[2], E. Belembaogo[3] [1]Weill Cornell Medicine, [2]National Center of Oncology, [3]Institut de Cancerologie de Libreville, [4]New York University School of Medicine **Objective or purpose of innovation** To pilot test a two-week curriculum for 3-D breast conformal radiation therapy **Background and/or theoretical framework and importance of the field** Radiation therapy centers in developing nations are now beginning to adopt 3-D CRT. A standardized curriculum for assisting RT professionals as they transition from 2-D to 3-D CRT is lacking. We pilot-tested a two-week curriculum to provide the basic foundations for RT professionals to implement 3-DCRT for breast cancer. The pilot site was the National Center of Oncology in Yerevan, Armenia. The second site was the Institut de Cancerologie de Libreville in Gabon. **Design** The training curriculum for radiation oncologists (ROs), therapists (RTTs) and medical physicists (MPs) included: Week 1 (Days 1-5): 1) Assessment of workflow and scheduling of the course 2) Lectures on differences between 2-D and 3-D CRT, 3-D CRT benefits & prone positioning 3) Review of the RTOG Breast Cancer Atlas 4) 10 questions test pre- & post-training 5) Practical training in supine and prone CT simulation Week 2: 1) Contouring of tumor and normal organs using online modules 2) Practice in designing beam shapes & angles 3) Simulate, plan and treat first patient 4) Feedback from the participants using focus groups and questionnaires

Outcomes
In Armenia, ten RT professionals attended the lectures. Three ROs, 2 MPs and 2 RTTs participated in the CT simulation. Five ROs participated in contouring exercises. In Gabon, a separate RTT curriculum was introduced. Six ROs, five RTTs and three MPs participated in the curriculum.

Innovation's strengths and limitations
In Armenia, contouring was considered the most useful aspect of the curriculum while in Gabon, hands-on demonstration of prone breast treatment was most valued. Key challenges included (1) group participation in all aspects of the curriculum in a high-volume department, (2) limited use of the CT simulator due to cost and (3) language barriers.

Feasibility and generalizability
Implementation of the breast 3-D CRT curriculum is feasible in diverse settings.

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38	***Factors that Govern Specialty Choice in Northern Tanzania and Madagascar: The Medical Student Perspective*** A. V. Chaet, N. Fessehaie Perelman School of Medicine at the University of Pennsylvania **Research Statement/Research Question** This study characterizes medical student aspirations and demographics within two geographic regions in sub-Saharan Africa: Tanzania and Madagascar. **Background and relevance of the study** Sub-Saharan Africa faces the highest relative need of healthcare workers in the world (1). A number of factors influence this workforce shortage including number of medical graduates, physician preference for urban areas, emigration, and specialty maldistribution (2-4). Understanding the factors that influence these choices requires knowledge of student experience during medical school. **Design and Methods** A 29-item questionnaire was distributed to 870 3rd, 4th and 5th year medical students at the largest medical college in Northern Tanzania - Kilimanjaro Christian Medical College (KCMC) and to two medical colleges in Madagascar (Antananarivo and Mahanga). A total of 445 responses were received a response rate of 51.1%. A demographic profile of each student was documented followed by desired specialty choice, preferred work setting, and a series of open-ended questions. **Results** The majority of KCMC students (74.7%) prefer to practice within Tanzania, while 25.3% prefer to go abroad. However, in Madagascar, 50.6% prefer to work within Madagascar, while 49.4% prefer to go abroad. Students select Pediatrics (17.6%), Ob/Gyn (15.1%), General Surgery (14.6%) and Internal Medicine (14.1%) as their top specialty choices. The factors that best determine career choice include personal interest (49.7%), ability to conduct research (35.6%) and possibility to travel abroad (29.1%). **Conclusions** Students express a strong desire to work abroad. Building research infrastructure may be a strategy to retain physicians in country given high level of student interest in scientific advancement/research as a component of their career. In addition to potential loss of trainees abroad, there is a critical shortage of physicians trained in sub-specialty surgical fields. A focus on improved clinical exposure to a diverse array of disciplines will help ameliorate deficits within the workforce. **IRB Review** Has the IRB reviewed your project? Yes If you answered No or NA above, please explain why. na **References** 1. Guilbert JJ. The World Health Report 2006: working together for health. Educ Health (Abingdon). 2006

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39 ***World Trauma Education: Hemorrhage control training for Healthcare Providers in India***

L. Smith, S. Caughey, S. Liu, C. Villegas, M. Kilaru, A. Gupta, R. Winchell, M. Narayan
Weill Cornell Medicine

Research Statement/Research Question
To assess the hypothesis that Indian healthcare providers are given little to no formal hemorrhage control training but are very eager to receive it.

Background and relevance of the study
Hemorrhage remains a major cause of death around the world. Eighty percent of trauma patients in India do not receive medical care within the first hour. The etiology of these poor outcomes is multifactorial. To date, there has only been one documented first-responder civilian training course for basic trauma care in India. The first Stop the Bleed (StB) course was recently offered to a group of medical providers.

Design and Methods
A cross-sectional survey of 101 participants who attended StB trainings in India was performed. Pre- and post-training questionnaires were collected from each participant. In total, 88 healthcare providers responses were analyzed. Three bleeding control skills were presented: wound compression, wound packing, and tourniquet application.

Results
Among participants, only 23.9% had received prior bleeding control training. Participants who reported feeling extremely confident responding to an emergency medical situation rose from 68.2% prior to StB training to 94.3% post-training. Regarding hemorrhage control abilities, 37.5% felt extremely confident before the training, compared to 95.5% after the training. For wound packing and tourniquet application, 44.3% and 53.4%, respectively, felt extremely confident pre-training, followed by 97.7% for both skills post-training. Importantly, 90.9% of StB trainees felt comfortable teaching newly acquired hemorrhage control skills. A significant majority of participants said that confidence in their wound packing and tourniquet skills would improve with more realistic mannequins.

Conclusions
Disparities in access to care, long transport times, and insufficient numbers of prehospital personnel contribute to significant trauma burden. Dissemination of these critical lifesaving skills in India and the resulting civilian interventions will increase the number of trauma patients who survive long enough to reach a trauma center. Additionally, the course should be translated into local languages to increase reach.

IRB Review

Has the IRB reviewed your project?
Yes

If you answered No or NA above, please explain why.
NA

References
https://www.bleedingcontrol.org/

40 ***A Cross-Cultural Near-Peer Module to Improve Musculoskeletal Medical Education in the U.S. and Haiti***

C. A. Pean[1], G. Poitevien[2], R. Israelski[3], K. A. Egol[1]
[1]NYU Langone Orthopedic Hospital, [2]Universite Quisqueya, [3]Bone and Joint Center-Orange Regional Medical Center (ORMC)

Research Statement/Research Question
Hypothesis 1: There will be a significant improvement from baseline MSK fund of knowledge and physical examination skills for the student and resident cohorts in the U.S. as well as in Haiti as demonstrated by pre-and post-module validated examination score improvement and self-efficacy questionnaire scores.

Background and relevance of the study
Haiti, like many other low and middle-income countries (LMICs) is a country that continues to suffer from deficiencies in medical education infrastructure as well as physician manpower and healthcare capacity. These deficiencies are more pronounced in the aftermath of the 2010 earthquake and are perhaps most detrimental in emergent situations. MSK disease and orthopedic trauma have been demonstrated to compose a significant proportion of medical conditions encountered in Haitis emergency rooms.

Design and Methods
A group of medical students, orthopedic surgery residents, and EM residents from NYU and ISMMS participated in the design of an MSK module and trained as instructors for a cohort of 40 Haitian medical students and residents at UniQ and HUEH. This initiative took place in May, 2015 in Port-au-Prince, Haiti and consisted of four different two-hour near-peer taught sessions over a one week period. Statistical analyses assessing pre and post-exposure grasp of MSK knowledge was completed. The program gradually became a surgical capacity building program

Results
Twenty-one Haitian students completed the pre- and post-workshop questionnaires for paired analysis. Significant increases in MSK physical exam confidence (1.67±0.97 vs. 2.81±0.93, p-value <0. 01), and percent correct questions on MSK clinical knowledge (24% vs. 54%, p-value <0. 001) were observed. Logistical and Institutional barriers prevented more robust data collection that was initially planned. Over 40 surgical cases were completed through a subsequent iteration of the program.

Conclusions
Initial results suggest that this project modeled a successful platform for increasing medical student MSK knowledge as well as interest in orthopedic trauma in partner sites spanning two countries.

IRB Review

Has the IRB reviewed your project?
Yes

If you answered No or NA above, please explain why.
NA

	Innovation & Assessment: Across the Continuum
41	***Opportunities for Enhancement of Student Experience in an Accelerated MD Program: Lessons from a Qualitative Program Evaluation*** S. Dathatri, J. Barasch Columbia University Vagelos College of Physicians and Surgeons **Research Statement/Research Question** How can students accelerated MD program experiences provide insights for program enhancement? **Background and relevance of the study** Accelerated MD programs designed for students having earned PhDs in scientific disciplines are increasingly being implemented. The efficacy of these programs and graduate outcomes are being more carefully examined. An evaluation was conducted of one such accelerated MD program, with the goal of presenting recommendations about strategies for program improvement based on student experiences in the first three program cohorts. **Design and Methods** Students shared their program experiences through 12 semi-structured interviews. Through exploration of analytic domains, responses were categorized and themes clarified. Students were asked to complete a survey gauging perspectives on their educational experience. **Results** Based on qualitative analyses of interview data, several themes are identified as opportunities for further exploration and improvement. -Transition to Major Clinical Year (MCY): Increased communication from the program about the transition to and strategies to better prepare for MCY. -Board Exam Preparation: Increased structured advising. -Balanced Exploration of Specialty Disciplines: Early, frequent, clear communication to students about program support of specialties. -Tailored Ready-for-Residency Experience: The program can consider providing supplemental experiences (e.g., Ready-for-Residency) to enhance students feelings of clinical preparedness for residency. -Physician-Scientist Career Mentorship: Students will benefit from education sessions focused on physician-scientist strategies to effectively balance clinical and research efforts during training and in practice. To supplement interview data analyses, survey results are summarized using heat map analysis. **Conclusions** Overall, students share insights about program-improvement approaches. Program challenges include issues associated with time (for engaged clinical experience, Step I preparation, deciding on specialties) and communication of expectations. Program strengths include ability to complete the MD in a shorter timeframe and mentorship opportunities. Limitations of this evaluation include exclusive focus on self-reported student experience. Moving forward, faculty/program leadership perspectives will be addressed in articulating balanced strategies for program improvement. **IRB Review** Has the IRB reviewed your project? Yes

	If you answered No or NA above, please explain why. NA **References** Abramson SB, Jacob D, Rosenfeld M, Buckvar-Keltz L, Harnik V, Francois F, Rivera R, Hopkins M, Triola M, and Grossman RI. A 3-Year M.D.: Accelerating Careers, Diminishing Debt. N Engl J Med 2013 369;12: 1085-1087. Cangiarella J, Fancher T, Jones B, Dodson L, Leong SL, Hunsaker M, Pallay R, Whyte R, Holthouser A, and Abramson SB. Three-Year MD Programs: Perspectives From the Consortium of Accelerated Medical Pathway Programs (CAMPP). Acad Med. 2017; 92:483490. Raymond JR, Kerschner JE, Hueston WJ, and Maurana CA. The Merits and Challenges of Three-Year Medical School Curricula: Time for an Evidence-Based Discussion. Acad Med. 2015; 90:13181323.
42	***Implementing a Self-Directed Learning Plan During an Emergency Medicine Clerkship*** D. Wald, K. Ioannides, J. Fujimoto, J. Barrett, K. Fane Lewis Katz School of Medicine at Temple University **Objective or purpose of innovation** To develop a program allowing senior medical students to identify and accomplish an educational goal during a 4 week clerkship. Background and/or theoretical framework and importance of the field Self-directed learning is an important part of one's growth, it allows students to take initiative and identify their own learning needs. **Design** Guidelines for this project including a process to identify an educational goal and learning plan were developed. Each student was assigned a mentor. The students used a SMART acronym approach and reviewed the revised Blooms taxonomy to help them develop their goal and learning plan. **Outcomes** In the summer of 2018-2019 all 39 students participated in the pilot. 33 (85%) completed a post-clerkship questionnaire. 28 (85%) accomplished their goal. 19 (58%) goals were categorized as procedural skills, 7 (21%) clinical skills and 7 (21%) were knowledge base goals. The most common (7, 21%) goal was performing an ultrasound guided peripheral intravenous line. All felt it was helpful to use the SMART approach, 30 (91%), felt it was helpful to incorporate the revised Blooms taxonomy. 32 (97%) reported that it was worthwhile to develop a goal and try to accomplish it. All felt it was helpful to be assigned a mentor. All s reported that accomplishing their goal (or attempting to) provided them with new knowledge, a new clinical or procedural skill. **Innovation's strengths and limitations** Other than time, the program required no outside resources. Because of shift work scheduling there were some challenges in arranging mutual times for the mentors and students to meet in person. **Feasibility and generalizability** Empowering students to identify and accomplish a goal is feasible and achievable within a 4 week clerkship. Universally, the pilot was viewed as a worthwhile experience. With oversight and guidance this program can be implemented across other clerkships or institutions. A program like this may allow students to gain

	additional knowledge or skills based on their individual needs. **References** Tagawa, M. Physician Self-Directed Learning and Education. Kaohsiung J Med Sci 2008;24:3805.
43	***Incorporating a Grading Rubric to Evaluate an Evidence Based Medicine Assignment*** D. Wald, J. Pierce, N. Tagge, K. Fane, J. Barrett, C. Roepke Lewis Katz School of Medicine at Temple University **Objective or purpose of innovation** To incorporate a standardized grading rubric for an evidence based medicine (EBM) assignment. **Background and/or theoretical framework and importance of the field** For this assignment, we identified the need for a more standardized way of evaluation while providing consistent written feedback to the students. **Design** In conjunction with our health science librarians, we developed a rubric to evaluate the assignment which contains 6 domains; Identifies an article, Describes the importance of the clinical condition, Describes the study methodology, Describes the study results, Correctly applies the study results to the case and Overall write up. The rubric was developed with anchors to assist completion. An overall grade is assigned for each assignment using a 5 point scale. Written feedback is also provided to the students highlighting each domain. **Outcomes** In the summer of 2018, 79 EBM assignments were submitted by 75 students (4 students completed a 2nd rotation and a 2nd assignment). 50 (66%) students completed the post-rotation questionnaire. 49 (98%) reported it was helpful to receive a completed rubric after their assignment was graded. 39 (78%) felt the grade they received was a fair assessment of their submission. The students rated the written feedback they received as; excellent, 30%; very good, 38%; 18%-good, 12%-fair, 2%-poor. 45 (88%) reported reviewing the rubric before completing their assignment. Overall, in applying the rubric to grade the EBM assignments, 50 (63%) assignments were awarded 4 or 5 points, 21 (27%) 3 points and 8 (10%) were awarded 2 points, no assignment received a grade of 1 point. **Innovation's strengths and limitations** The grading rubric was easily applied to evaluate the assignments and allowed for more standardized feedback to the students. However, the instrument has not been validated and the inter-rater reliability has not been established. **Feasibility and generalizability** Incorporating a standardized rubric for evaluating an EBM assignment was feasible. With minimal faculty development, this tool could be applicable to use by others. **References** Snashall J, Fair M, Scott J. A Novel Approach to Incorporating Evidence-based Medicine Into an Emergency Medicine Clerkship. Acad Emerg Med. 2013;20:295-99.
44	***Assessment of a Curriculum in Critical Reading and Research Methodology for Medical Specialty Fellows*** C. Rosenberg, S. Ahmad, P. Richman

Stony Brook University School of Medicine

Objective or purpose of innovation
To determine whether a learning curriculum in critical reading skill improves specialty trainees performance on a validated assessment of these skills and/or changes reading habits. The curricular objectives: trainees learn how to assess study design, data validity, sources of bias and statistical tests.

Background and/or theoretical framework and importance of the field
Postgraduate medical training involves learning how to critically read medical literature. Several interventions have been studied to improve these skills1-3. Our fellowship programs in pulmonary/critical care and nephrology added a unique year-long curriculum in critical reading, with both passive and active components. This study tests its outcomes using a validated assessment.

Design
Our curriculum includes:
Assigned reading of eight articles from a series in the Journal of the American Medical Association about critical reading, and an in-house monograph on study design, data quality, statistical methods and interpretation.
A biweekly journal club newsletter distributed to faculty and fellows, wherein each fellow contributes structured critiques of two key articles of their choice. Faculty provide feedback on the fellows' critiques.

Outcomes
Validated assessment: Three content experts identified 4 domains and 24 sub-domains of critical reading skill. Based on this framework they wrote multiple choice questions about 24 vignettes of hypothetical research studies, using iterative revisions. The test underwent construct validation by piloting on 14 experts and neophytes in evidence-based medicine. Before/after the curriculum, trainees take this test and a Likert survey measuring their reading habits and confidence level in critical reading. Comparison of pre/post results will utilize a paired-samples t-test.

Innovation's strengths and limitations
Strengths:
Curriculum has passive and active components.
Pre-post design: subjects are their own controls.
Assessment developed by content experts, validated by a pilot trial.
Limitations:
The curriculum is time intensive.

Feasibility and generalizability
Large time commitment limits feasibility.
Application in fellowships at one institution limits generalizability. However, the curriculum is designed for either residencies or fellowships.

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	reading habits, knowledge, and critical appraisal skills: a randomized control trial." JAMA 260, no. 17 (1988): 2537-2541.
45	***Evaluation of Complementary Review Material in Enhancing Medical Student Learning*** G. N. Waite, P. Lucchesi, C. Cerra, J. Collins, J. L. Szarek Geisinger Commonwealth School of Medicine **Research Statement/Research Question** This study investigates if complementary high-yield review material benefits second-year medical students learning experience and/or academic performance as part of M2 hematology, cardiology, and pulmonology courses. **Background and relevance of the study** The goal of these flipped-classroom courses is to prepare students for their interactions with patients in year 3. This is more challenging closer to the end of the year when students take the USMLE Step 1 exam, since the score of this national assessment of core medical knowledge is used in deciding whether students get an interview in their desired residency. One way to address the challenge is to integrate highly organized, USMLE-relevant curricular content into existing course preparation material. We found such curricular material in the form of ScholarRx Bricks. Inspired by the LEGO system of play, Bricks are created as independent but interlocking education components that cognitively integrate basic science and clinical concepts. **Design and Methods** In this pilot study, we provide Bricks voluntarily to the class of 105 students and collect feedback. Additionally, a convenience sample cohort is consented to keep a log book and provide more detailed feedback as part of a survey and focus group. Using a mixed-method analysis employing NVivo (QRS International), we report on the frequency of use and perceived usefulness of the Bricks. To assess academic performance, we compare quiz and block exam performances of Brick and Non-Brick-users and use averages of year-1 course exam performances as baseline. **Results** Our study will allow us to test our hypothesis that student satisfaction will improve for Brick-users compared to previous years when Bricks were not used and that the benefit will be larger for poor performing learners compared to high academic performers. **Conclusions** We plan to use the evidence gained from this study for the design of a curriculum that balances the need for standardized academic performance with the students self-directed learning style. **IRB Review** Has the IRB reviewed your project? Yes If you answered No or NA above, please explain why. NA **References** [1] Freeman S, Eddy SL, McDonough M, et al. Active learning increases student performance in science, engineering, and mathematics. PNAS 2014; 111:84108415. [2] Szarek JL, Boardman JM, White M, Holt JT. Integrated and flipped: 5 years experience of integrating active learning in an integrated course. Med Sci Educ 2016; 26: 159-167.

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46	***Bridge to Residency: Implementation of a novel 4th year medical school framework to facilitate a longitudinal, self-directed Pediatric leadership curriculum*** R. Samuels, S. Barone, Stacy McGeechan-Chianese Donald and Barbara Zucker School of Medicine at Hofstra/Northwell **Objective or purpose of innovation** Objectives for the medical students at our retreat intervention were to: 1. Generate a spirit of collaboration among a large cohort of students applying in the same specialty 2. Establish advocacy, mentorship and intergenerational teaching groups to carry out a 4th year longitudinal leadership curriculum **Background and/or theoretical framework and importance of the field** Traditionally, the fourth year of medical school is a loosely structured, potpourri of unconnected experiences without a longitudinal curriculum. The goal of this project at Zucker SOM at Hofstra/Northwell was to facilitate a longitudinal leadership curriculum for early 4th year students with the common aim of specializing in Pediatric medicine. In implementing a retreat dedicated to fostering camaraderie and inspiration in these students, we established a framework for them to improve their mentorship, teaching and advocacy skills in Pediatrics. **Design** Cohen Children's Medical Center Pediatric UME and GME faculty organized a retreat at an Adventure Park for 22 fourth year medical students applying to Pediatric residencies. Interactive discussions introduced the group to a potential advocacy project centered on gun violence safety (GVS). Students then enlisted in self-directed group projects stratified by their personal interests in either advocacy or a mentorship/teaching program. Quantitative survey data and qualitative comments were used to assess the effectiveness of the retreat. **Outcomes** 1. Post-retreat, students felt significantly more connected to their fellow classmates applying to pediatric residency [$t(21)=-2.42$, $p<0.05$]. 2. GVS working groups established at the retreat have developed multiple self-directed initiatives in the advocacy, education and research arenas. **Innovation's strengths and limitations** Short-term survey data of our retreat experience and the initiatives of our advocacy, mentorship and teaching groups demonstrate success in creating the framework for a longitudinal, collaborative,

	student-driven 4th year leadership curriculum for future Pediatric clinicians. **Feasibility and generalizability** This model of a collaborative retreat and longitudinal specialty-specific 4th year experience can be easily replicated in any specialty, as well as other medical schools. **References** 1) Empowering Fourth-Year Medical Students: The Value of the Senior Year Ellen M. Cosgrove, MD,corresponding author Michael J. Ryan, MD, and Marjorie D. Wenrich, MPH Acad Med. 2014 Apr; 89(4): 533535. Published online 2014 Feb 25. 2) Curricular Reform of the 4th Year of Medical School: The Colleges Model Stuart J. Slavin , Michael S. Wilkes , Richard P. Usatine & Jerome R. Hoffman Teaching and Learning in Medicine: An International Journal Volume 15, 2003 - Issue 3 Pages 183-193 | Published online: 20 Nov 2009 3) Medical School Curricular Reform: Fourth-Year Colleges Improve Access to Career Mentoring and Overall Satisfaction Coates, Wendy C. MD; Crooks, Kimberly PhD; Slavin, Stuart J. MD; Guiton, Gretchen PhD; Wilkerson, LuAnn EdD Academic Medicine: August 2008 - Volume 83 - Issue 8 - p 754-760
47	***Can MS4 (4th year medical student) near-peer teachers of MS3s (3rd year medical students) be effective teachers as compared to faculty in the same role?*** S. Ahmad, J. Bird, K. Friedman, E. Pearlman, G. Farina, A. Fornari Donald and Barbara Zucker School of Medicine at Hofstra/Northwell **Objective or purpose of innovation** To compare the effectiveness of 4th year medical students (MS4s) to faculty in conducting the same case-based didactic session to MS3s during their medicine clerkship at two different sites. **Background and/or theoretical framework and importance of the field** Near-peer teaching is increasingly recognized as an effective method for teaching and learning within medical education. Third year medical students (MS3s) traditionally receive their regular didactic sessions from faculty. **Design** The study is being conducted at two tertiary centers with students from the same medical school. A case-based didactic session is delivered by an MS4 at one center and an identical session is conducted by a faculty member at another center using the same material and format. To date there has been a single faculty member and the 4th year medical students have varied. The MS3s complete a validated survey on the effectiveness of the teaching of either the faculty or MS4s. Independent-samples t-tests were conducted to compare differences in survey items between faculty and MS4 teachers. **Outcomes** To date we have 17 completed surveys of faculty-conducted sessions and 16 completed surveys on MS4-conducted sessions. The mean difference on survey items between MS4s and Faculty ranged from 0% to 10%, with only item addressing minimizing of interruptions reaching significance, where MS4s scored higher (4.94 vs. 4.47, $p < 0.05$). Overall teaching effectiveness was scored higher for the MS4s; however, this did not reach statistical significance (4.95 vs. 4.76, $p = 0.14$). Data to date supports that identical sessions conducted by MS4 are non-inferior to faculty in the same role.

	MS4s strongly felt that it enhanced their ability to teach. **Innovation's strengths and limitations** Strengths are the use of a validated instrument to assess teaching effectiveness. Limitations are the small numbers of students from a single institution and the use of a single faculty teacher. **Feasibility and generalizability** This innovation is both feasible and generalizable to many clinical and educational settings. **References** 1. Rees, E. How does peer teaching compare to faculty teaching? A systemic review and meta-analysis. 2016. Medical Teacher. 2016 38: 829-837. 2. Cate, O. Academic achievement of students tutored by near-peers. 2012. International Journal of Medical education. 2012; 3:6-13 3. Litzelman D. Factorial Validation of widely disseminated educational framework for evaluating clinical teachers. Acad Med 1998; 73:688-95.
48	***Medical Students Development of System-1 and System-2 Thinking: A Phenomenological Study*** D. McHugh, W. Sanders Frank H. Netter MD School of Medicine at Quinnipiac University **Research Statement/Research Question** Our objective was to gain an understanding of pre-clerkship medical students lived experiences regarding their development of, and ability to transition between, System-1 and System-2 thinking through qualitative, phenomenological inquiry. **Background and relevance of the study** Clinical reasoning is a crucial skill for all physicians [1]. It can conflict with human use of heuristics to make judgements [2]. Heuristics are simple, efficient, cognitive shortcuts to produce solutions that are often, but not always, good-enough [3]. Dual process theory (DPT) refers to this fast, intuitive mode of cognitive operations as System-1 thinking; System-2 thinking is slow and deliberative [4]. DPT proposes that true experts have the ability to toggle from System-1 to System-2 in a given situation. A critical review of 213 studies investigating cognitive processing, biases and heuristics in medical decision-making reported this topic has been under-investigated and is too reliant on hypothetical vignettes [5]. This is especially true of medical students as a population of physicians-in-training [6]. **Design and Methods** n = 12 students from the Frank H. Netter MD School of Medicine were interviewed. Audio transcripts were independently read and provisionally coded. **Results** Iteratively, similar codes were grouped into categories and six major themes identified: effortful cognitive scaffolding; spaced repetition; learning environment: being alone or being together; prior experience of attaining unconscious competence; stickiness factor (i.e., the quality that compels people to pay close, sustained attention); and impeding heuristics. Learners noted patient interactions, clinical note-taking, knowledge synthesis, differential diagnoses, evaluating evidence, and critical appraisal of literature as areas where they experience Systems-1 and Systems-2 thinking development. **Conclusions** Most of us believe we are capable of distinguishing between situations where we can safely rely on intuition from those that need more careful thoughtbut often we are wrong. Understanding better how

	physicians-in-training experience System-1 and System-2 thinking has implications for medical education strategies, curricular design, and health organizational leadership. **IRB Review** Has the IRB reviewed your project? Yes If you answered No or NA above, please explain why. NA **References** 1. Cutrer WB, Sullivan WM, Fleming AE (2013). Educational Strategies for Improving Clinical Reasoning. Curr Probl Pediatr Adolesc Health Care 43: p248-257. 2. Kelman (2011). The Heuristics Debate. Oxford University Press. New York, NY. 3. Investopedia LLC (2018). Heuristics. Available at https://www.investopedia.com/terms/h/heuristics.asp . 4. Gery G (1991). Electronic Performance Support Systems: How and Why to Remake the Workplace through the Strategic Application of Technology. Boston: Weingarten Publications. In Dirksen J (2012). Design For How People Learn (p69). Berkeley, CA: New Riders. 5. Blumenthal-Barby, Krieger H (2015). Cognitive biases and heuristics in medical decision making: a critical review using a systematic search strategy. Med Decis Making 35(4): p539-57. 6. Tay SW, Ryan P, Ryan A (2016). Systems 1 and 2 thinking processes and cognitive reflection testing in medical students. Canadian Medical Education Journal 7(2): e97-103.
49	***Nutrition as Medicine, Food Sensitivities, and Chronic Disease: A Mini Curriculum Shaped by Transformative Learning Theory*** D. McHugh, A. J. Yanik Frank H. Netter MD School of Medicine at Quinnipiac University **Research Statement/Research Question** Our objective was to pilot the impact on cognition, attitudes, and skills of this three-week curriculum on M1 students. **Background and relevance of the study** Nutrition-related diseases are common, costly, and preventable 21st Century health problems [1-2], yet physicians lack skills to provide effective dietary counseling [3-7] and students report being underprepared [8,9]. Metabolomics, proteomics, and nutrigenomics are ushering in an era of nutrition therapeutics [10-13] that requires a paradigm shift in cognition, attitudes, and skills to prepare physicians-in-training for mid-21st Century healthcare. Medical students learning needs to be increasingly self-directed and amenable to addressing their own education gaps. We used transformative learning theory (TLT) as a conceptual framework to develop a mini, spiral curriculum [14] to kick-start interest and attention to nutrition as medicine. **Design and Methods** We used a demographically-representative sample of n = 7 M1 students. Participants met in-person with a facilitator for 1 hour on Mondays and Wednesdays. De-identified visual (concept map), textual (reflective writing), and verbal (audio-recorded group discussion) data were analyzed and permitted qualitative triangulation. Baseline and 6-month data were also collected. **Results** The curriculum evoked paradigm transformation in knowledge, beliefs, and skills that persisted 6 months later and facilitated opportunities for our cohort to self-identify learning gaps and consider how they related

to their goals for patient care. Learners baseline knowledge focused on food items, diet, health impact, and nutrients; beliefs on food sources and diet change; and performance on cooking and food preparation. Six main themes emerged from curriculum exposure: food sensitivities and gut health, nutrition and chronic disease, food is not inert, self-awareness of learning gaps, nutrition is personalized, and nutrition history-taking. Independent, self-directed learner activities related to these were readily discernible 6 months later.

Conclusions
A TLT-informed model can feasibly be implemented in small groups and kick-start in other learners similar paradigm shifts aligned with preventative health nutrition and nutritional therapeutics.

IRB Review

Has the IRB reviewed your project?
Yes

If you answered No or NA above, please explain why.
NA

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Development of The 15 Minute Histo Check-Up: A quick online self-assessment tool for first year medical students to assess their knowledge of Histology

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Objective or purpose of innovation

We developed an online self-assessment tool tailored to our curriculum for M1 students to use following completion of Histology laboratory exercises. The tool was designed to enable usage as many times as desired to facilitate students benchmarking of their understanding prior to exams.

Background and/or theoretical framework and importance of the field

Histology is the scientific study of the microscopic anatomical structure and function of tissues and requires learning pattern recognition skills to master understanding. General histology is taught as part of the multidisciplinary Human Structure and Function course (HSF 110) for first year medical students at URSMD. HSF110 integrates Histology, Anatomy, Embryology, and Physiology and is taught through large group lectures, instructor-led small group laboratories, self-study modules, and individualized instruction.

Design

The tool provides explanations of correct and incorrect answers for each question, and refers students to pages in their required text for further description. Key aspects of the design and development of The 15 Minute Histo Check-Up tool using STORYLINE 360 software will be highlighted. Additionally, STORYLINE 360 assessment capabilities which are providing further guidance for the development of the tool will be discussed.

Outcomes

Qualitative results from the initial offerings of The 15 Minute Histo Check-Up indicate that students find the tool useful and supportive to their learning, such that they choose this as one of their online tool supports for mastering the fundamentals of histology. Qualitative and quantitative data are being collected.

Innovation's strengths and limitations

The online tool is being developed to provide additional learning assistance for all students, with a particular focus towards including support for students struggling to master the material.

Feasibility and generalizability

The tool is also being developed as part of an initiative to maintain or instill confidence for M1 students during the rigorous HSF curriculum. It is anticipated the tool will be used throughout M1-M4 curriculum to strengthen understanding and application of tissue cellular structure/ function in medicine.

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A pilot nutrition and culinary elective for fourth year medical students increases confidence in counseling patients for the prevention and treatment of diet-associated diseases

J. Rothman[1], W. Duffy[1], M. Mascarenhas[1], R. Schumacher[1], T. Mataraza-Desmond[2], M. Booth[2], K. Herrenkohl[2], M. Olshan[2], H. DeLisser[1]
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Objective or purpose of innovation
To determine the impact of a pilot nutrition and culinary course on the confidence of clinical level students in counseling patients with diet-associated diseases.

Background and/or theoretical framework and importance of the field
Diet-associated chronic diseases are leading causes of morbidity and mortality [1-4], with data demonstrating that counseling on high-quality, whole foods can improve patient outcomes [5]. Graduating medical student, however, feel unprepared to intervene in their patients care in regard to nutrition. This is not surprising as most medical schools fail to provide recommended hours of nutrition instruction and what is presented is typically offered in pre-clinical years, without the benefit of clerkship experiences that would enable correlations between nutrition and clinical outcomes. Medical schools are therefore increasingly utilizing hybrid culinary and nutrition courses [6]. Data are, however, lacking on the impact of culinary medicine courses directed at clinically experienced students.

Design
Nine fourth-year medical students participated in an elective comprised of eight, 2-hour, disease-focused sessions. Students did primary literature reading prior to each session. Individual sessions consisted of culinary skills development, cooking and a case discussion led by physicians and registered dietitians. Students completed pre-and post-surveys to evaluate nutrition knowledge and counseling skills.

Outcomes
Students reported significant increases ($p < 0.01$ 0.001) in the confidence they possessed in (i) their knowledge of pertinent nutrition information; (ii) discussing nutrition with patients; and (iii) their ability to impact patient behavior through their counseling.

Innovation's strengths and limitations
This study shows that a culinary medicine course for clinical-level medical students improves nutrition knowledge and increases confidence in counseling patients on management of diet-associated diseases. Limitations include the small sample size, lack of a control group and no assessments of students competence in counseling patients.

Feasibility and generalizability
This course requires access to a kitchen, cooking supplies and food ingredients, as well as a chef, physician, and registered dietitian, and thus could be readily initiated by medical educators.

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Teaching Health Systems Science and Population Health During Immersion Weeks in Phase 1 Medical Education The Drexel Experience

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Objective or purpose of innovation
Development of an effective method to teach health systems science to phase 1 medical students

Background and/or theoretical framework and importance of the field
The Drexel University College of Medicine launched a revised Phase 1 curriculum which teaches core basic science content through integrated coursework, case-based, and team-based learning. One objective was to improve teaching of health systems science which competes with basic and clinical science topics and is challenging for first and second year medical students with limited clinical exposure. Our goal was to raise the profile of this content and provide students with an experience that they would value and enjoy.

Design
The curriculum uses immersion weeks to teach population health science concepts, highlighting their clinical relevance. The format allows students to focus exclusively on biostatistics, research methods and translation science, health systems science, and public health. Each week builds on prior content. Students work in teams on activities that require critical assessment of medical literature, analysis and application of clinical and population health data, solutions to patient safety and quality improvement problems, evaluation of health systems, and interventions to address population health challenges critical skills for future physicians who will practice in the 21st century.

Outcomes
The curriculum was evaluated through electronic student feedback, focus groups, and student performance on exams/projects. Over 80% of students rated the effectiveness of the course as excellent or good. Students appreciated the benefits of the immersion format including a break from heavy science.

Innovation's strengths and limitations
The immersion weeks promote student wellness and create time in the curriculum for students to develop competencies that often are underemphasized in medical education. The format only allows for an initial exposure to this content and is challenging to deliver in a compressed timeframe.

Feasibility and generalizability
Immersion week experiences can be adapted to research, clinical, or community service experiences.

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53	***Classroom Material; A simple effective tool to engage medical students*** M. Tadros, D. Tristram Albany Medical College **Objective or purpose of innovation** Develop innovative class materials to enhance students engagement in self learning and assess its effectiveness. **Background and/or theoretical framework and importance of the field** Traditional methods (Type one) as lectures are still the cornerstone of teaching for basic science courses. However, effectiveness is limited, even when attendance is mandatory(1). Students are more focused on their USMLE exam and their learning styles have changed in the last decade(2). Flipped classroom designs and other type two educational activities are more effective(3). **Design** During Gastroenterology theme for 2nd year students, we identified forty images, covering key clinical, anatomic, radiologic, surgical/endoscopic, therapeutic, infectious, gross and microscopic pathology of gastrointestinal diseases. With each image we included a board style, two to three Step style questions. No answers were initially available to the students and they had to seek the answers. **Outcomes** Seventy two% of the students used the classroom materials with the following ratings: 27% excellent, 33% good, 15% average, 4% fair and 2 % poor. Twenty five percent did not use. Ninety one percent recommended using it for next year and 56% recommended increasing the number of quizzes. Students were seen in and after class congregating and discussing the quizzes with each other and with the professors as reflected by students comments and faculty observation. The quizzes were posted by the students on their Facebook page. **Innovation's strengths and limitations** This was a simple method that stimulated most students with engagement and cooperative learning but didn't require the additional faculty time. However, it was unsuccessful to engage 25% of the class. Overall assessment of students performance on Step one was difficult as multiple factors are involved. **Feasibility and generalizability** We intend to expand this concept to other themes (another theme has already done) and to monitor the progress of subsequent medical school classes performance on Step 1 in these specific themes. **References** (1)Relationship between classroom attendance and examination performance in a second-year medical

	pathophysiology class; Kauffman CA et al, Adv Physiol Educ. 2018 Dec 1;42(4):593-598. (2)Using the Flipped Classroom to Bridge the Gap to Generation Y; Gillispie V et al, Ochsner J. 2016 Spring;16(1):32-6. (3)Comparison between flipped classroom and lecture-based classroom in ophthalmology clerkship; Tang F et al, Med Educ Online. 2017;22(1):1395679.
54	***Medical Student Education in Pain and Addiction: Identifying and Addressing Gaps in the Curriculum*** C. Cahaney, T. Friedmann, K. Zacharoff, R. Rosenthal, P. Tsui, WH. Lu Stony Brook University School of Medicine **Objective or purpose of innovation** We sought to create an engaging course that addresses gaps in undergraduate medical education in Pain and Addiction medicine. **Background and/or theoretical framework and importance of the field** Chronic pain is one of the most common medical conditions affecting an estimated 110 million American adults in the U.S., and costing $635 billion annually. The Institute of Medicine stated that effective pain management is a moral imperative, a professional responsibility, and the duty of people in the healing professions, highlighting the need to improve trainees understanding of pain as a chronic disease and the potential for abuse and addiction associated with prescription pain medications. According to the NYS Health Department, in 2017, more than 1300 New Yorkers died of a drug overdose; nearly half of those deaths involved fentanyl. Suffolk County, where Stony Brook University Hospital is located, had the highest rate of overdose deaths in New York State. **Design** We created a fourth year 4-week course which includes didactic and clinical case presentations taught by interdisciplinary faculty including Anesthesia, Psychiatry, and Pharmacy as well as student-facilitated discussions and debates. Data collection tools such as the Pain Practice Behavior Scale, Know-Pain 50, and the Clinicians Attitude about Opioids Scale will be administered. **Outcomes** We will compare students attitudes pre and post course towards this patient population, medical knowledge, and confidence in treating these disorders. **Innovation's strengths and limitations** We will use multimodal instructional methods with an interdisciplinary approach to address a pertinent issue and a curricular gap in undergraduate medical education. Due to a limited number of spots for this course, only 32 students will be able to enroll yearly. **Feasibility and generalizability** This course is generalizable to any curriculum but requires buy-in from faculty who are interested in the intersection of Pain management and Addiction medicine. Future iterations of the course will include clinical experiences which would require appropriate clinical facilities. **References** 1. National Research Council: Relieving Pain in America: A Blueprint for Transforming Prevention, Care, Education, and Research. Washington, DC, The National Academies Press, 2011.

	2. Trudeau KJ, Hildebrand C, Garg P, Chiauzzi E, Zacharoff KL. A Randomized Controlled Trial of the Effects of Online Pain Management Education on Primary Care Providers. Pain Med. 2017;18(4):680-692.
55	***Inter-professional Structured Reporting in Radiology*** D. Grassi, L. States, A. Gokli, J. Reid Children's Hospital of Philadelphia **Objective or purpose of innovation** Determine radiologists and oncologists perceived impact of a structured report on clinical workflow, point of care teaching and research in a large academic pediatric institution. **Background and/or theoretical framework and importance of the field** Complex pediatric oncology imaging studies are interpreted using a standard template that is specific to the imaging study and not the diagnosis or tumor type. A structured report may reduce variability in reports and improve quantity and quality of teaching. **Design** Radiologists from both radiology and oncology departments at our institution completed an online survey regarding their perceptions of the impact of the structured report on workflow, teaching and research. Surveys were sent to 42 radiologists and 51 oncologists. Two different surveys were created with specific directed questions for radiology and oncology; there were 7 questions in the oncology and 10 in the radiology survey. Structured report template was included with the survey to server as a convenient reference. **Outcomes** All oncologists claimed their preference of structured over free text reports. 70% of oncologists reported fewer questions for the radiologists after implementation of structured reporting. 64, 3% reported improved workflow efficiency and improved clinical management of their patients. 75% of radiologists preferred structured reporting, with 70% claiming improved accuracy of their reports and a more efficient process when asked to review cases with the referring clinicians. Of interest, 80% of radiologists considered using structured reports as a teaching tool while 50% of the oncologists used them for this purpose. **Innovation's strengths and limitations** Strengths: Improvement on workflow that frees up time for teaching, is easy to implement, and low-fidelity with high impact. Limitations: Takes time to build multiple templates, needs to be integrated into all workstation vendors, difficult to measure impact on patient care. **Feasibility and generalizability** Strong potential to implement and scale across multiple institutions and could become the standard for Children's Oncology Group and offered as an image interpretation tool. **References** Structured reporting in radiology. Ganeshan D, Duong PT, Probyn L, Lenchik L, McArthur TA, Retrouvey M, Ghobadi EH, Desouches SL, Pastel D, Francis IR: Acad Radiol. 2018 Jan; 25(1) 66-73
	Instructional Design & Curriculum Mapping: Across the Continuum

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RADIAL LMS- Quantitative and qualitative assessment of a comprehensive learning management system for pediatric radiology

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Objective or purpose of innovation
RADIAL LMS, a tool to manage and increase timely point of care access to educational content tracking utilization and progress over time, was launched in October 2017. We present the utilization and value of this tool one year later.

Background and/or theoretical framework and importance of the field
Pediatric Radiology is at a cross-roads where accelerating case volumes and rapidly evolving technologies have driven up the workload resulting in decreased time for teaching and learning. Information is pervasive but unfiltered. RADIAL was created to cull and organize high quality vetted resources for working, to free up time and enhance teaching and learning at point of care.

Design
Program design and development included a needs assessment inventory of existing resources analysis and choice of best platform implementation readiness assessment and roadmap. A timeline for staged rollout and scalability outside radiology was also developed. October 2017 we launched RADIAL to radiology trainees and attending radiologists holding institutional sign on. LMS analytics and focus group interview of current fellows and residents were tools used for assessment and evaluation including: Navigation; Rate of development of courses and curriculum Appeal.

Outcomes
Navigation: 178 registered users with 4079 logins per day 120 logins per day 2000h- 0730h 1000 logins per month average time per resource 24 minutes top courses: toolboxes and research onboarding. Course Development: 261 courses and 11 curricula three apps 51 new objects per month. User Interface: Appealing and intuitive interface but inconsistencies with access related to firewall issues at the institution level.

Innovation's strengths and limitations
RADIAL has gained traction as a resource used for working, teaching and learning at point of care. The largest drawback related to inconsistencies in access has a manageable solution.

Feasibility and generalizability
Ongoing program assessment with seamless integration with PACS. Intra-institutional and inter-institutional collaboration to create a universal resource. It has future promise as a game-changer to support the breadth of subspecialty radiology knowledge.

References
McDonald RJ et al. The Effects of Changes in Utilization and Technological Advancements of Cross-Sectional Imaging on Radiologist Workload: Acad Radiol 2015; 22:11911198

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Advance Organizers for medical science: conceptual frameworks that help students to actively construct their knowledge

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The purpose of this study was to implement scaffolded constructive learning using Advance Organizer in

	teaching metabolism. Ausubel proposed that *Advance Organizers* may be used by teachers to more effectively help students learn by first providing an intellectual scaffold for them to appropriately structure ideas and facts(1). Its purpose is to explain, integrate and interrelate the material to increase the stability and clarity of students' cognitive structures, and allowing the students to acquire, organize and retain more information. A deep understanding of basic science leads to greater diagnostic accuracy(2) and fosters retention and the transfer of clinical knowledge(3,4). However, learning and retention of basic science has been challenging. Biochemistry was identified as the least well-retained basic science topic in undergraduate medical education, as measured by repeated questions on NBME exams(5). The use of advance organizer is implemented at the beginning of the metabolism portion of the Digestive Systems, Nutrition and Metabolism to teach students how to use the Pathways of Human Metabolism map, which is approved by the Association of Biochemistry Educators and is currently assessed by NBME to use it in USMLE step exam. Anonymous course evaluations from 2017-2018 were analyzed (N=176). 51.4% of the students agreed or strongly agreed that this new lecture "allowed me to see the relationship between different pathways and macronutrients". Students commented, "This was actually one of my favorite lectures! It was perfect to have right at the beginning of the course and I used it to guide my studies" and "I think it was necessary to introduce us to the map and it gave me a "big picture". Although this study is small, it may act as a prototype to be implemented by other schools in teaching metabolism. Furthermore, advanced organizers may be used throughout the medical education to introduce new knowledge content. References 1. Ausubel, D.P. (1960). The use of advance organizers in the learning and retention of meaningful verbal material. Journal of Educational Psychology, 51, 267- 272 2. Woods NN, Brooks LR, Norman GR: The value of basic science in clinical diagnosis: creating coherence among signs and symptoms. Med Educ 2005, 39(1):107-112. 3. Norman G: Research in clinical reasoning: past history and current trends. Med Educ 2005, 39(4):418-427. 4. Woods NN, Neville AJ, Levinson AJ, Howey EH, Oczkowski WJ, Norman GR: The value of basic science in clinical diagnosis. Acad Med 2006, 81(10 Suppl):S124-127. 5. Ling Y, Swanson DB, Holtzman K, Bucak SD: Retention of basic science information by senior medical students. Acad Med 2008, 83(10 Suppl):S82-85.
58	***Reimagining Health Systems as Patients: The Clinical Problem Solving for QI (CPSQI) Framework*** R. Buckley, J. Myers University of Pennsylvania **Objective or purpose of innovation** We aim to create a problem-solving framework for quality improvement (QI) that aligns with the professional identity of a clinician. **Background and/or theoretical framework and importance of the field** Lean Six Sigma, born out of the Toyota Production System, has been adapted from auto manufacturing as a common methodology used for QI (1). Design Thinking, the brainchild of Silicon Valley innovation consulting firm, IDEO, is now being taught medical schools (2), though many have struggled with how to operationalize it in hospitals (3). Clinicians solve incredibly complex problems in their daily work and yet we adopt problem-solving methodology for QI from these other industries. For trainees to see QI as an integral part of patient care, they must see it as part of their professional identity. **Design** The CSPQI Framework is a mental model of clinical problem-solving using one of the most ubiquitous frameworks in medicine, the SOAP note. This framework combines tools from other popular QI methodologies and presents them in a way that is relevant to a clinicians professional identity.

Outcomes
We will test this framework with a group of fourth-year medical students during a project-based QI elective course in February, 2019. Outcomes will include a mix of validated and unvalidated questionnaire items aimed at evaluating students professional identity as it pertains to creative system-based problem-solving.

Innovation's strengths and limitations
The strengths of this innovation are its relevance and conceptual accessibility to clinicians, as the model is one which they are already familiar. The limitation is that some tools within each step of the framework may be less familiar to clinicians without QI experience.

Feasibility and generalizability
As this is simply a framework that can be substituted into any QI educational experience, it is feasible and widely generalizable. For any curriculum that splits learners into multiple cohorts, this could easily be applied to one cohort for experimentation purposes.

References
1. Glasgow, J.M., Scott-Caziewell, J.R. and Kaboli, P.J., 2010. Guiding inpatient quality improvement: a systematic review of Lean and Six Sigma. The Joint Commission Journal on Quality and Patient Safety, 36(12), pp.533-AP5.
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3. Compton-Phillips A., Mohta, N.S. 2018. Care Redesign Survey: How Design Thinking Can Transform Health Care. NEJM Catalyst. Available online. https://catalyst.nejm.org/design-thinking-transform-health-care/. Accessed 11/9/2018.

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Design Thinking as a Quality Improvement Methodology in Graduate Medical Education
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Research Statement/Research Question
We evaluated Design Thinking (DT) as a strategy to teach Quality Improvement (QI) in graduate medical education (GME). Our research questions were: 1. Can DT foster greater interest in innovative system-based problem-solving compared to Lean Six Sigma? 2. What elements from DT and Lean Six Sigma do residents perceive as positive and negative experiences within QI curricula?

Background and relevance of the study
QI education in GME often lacks key elements of problem analysis and intervention design (1). DT is a problem-solving method popularized by the innovation consulting firm, IDEO, and is used to find creative solutions to complex problems through a human-centered approach (2).

Design and Methods
Four cohorts of second-year internal medicine residents (n=35) participated in an experiential QI curriculum. The experimental cohort (n=11) used DT as the framework for their QI project, while three control cohorts (n=24) used a Lean Six Sigma approach (3). Residents in all groups were compared on The Resistance to Change (RTC) Scale (4) before and after the curriculum. We employed a mixed-methods design to assess satisfaction with the curriculum through a post-curriculum survey and individual semi-structured interviews (n=20).

Results
Neither group showed significant change in the RTC scale. However, within different scale domains, the DT

	group saw an increased propensity for Routine Seeking (effect size 0.52 vs 0.13) and a decreased Emotional Reaction to change (effect size -0.27 vs 0.13). Qualitative analysis revealed 3 major themes: attitudes toward QI, factors influencing creativity, and factors influencing a successful QI curriculum. **Conclusions** Results suggest that there is equipoise between Lean Six Sigma and DT in respect to openness to change. Thematic analysis of the qualitative data suggests that a personal sense of connection to the problem, peer engagement, and facilitator factors were related to positive experiences. These results can inform future QI curricula and help bridge the gap between clinical problem-solving and QI education. **IRB Review** Has the IRB reviewed your project? Yes If you answered No or NA above, please explain why. NA **References** 1. Koh, N.J., Wagner, R., Newton, R.C., Casey, B.R., Sun, H. and Weiss, K.B., 2018. The CLER National Report of Findings 2018: trends in the CLER focus areas. Journal of graduate medical education, 10(4s), pp.69-76. 2. IDEO U. Design thinking. https://www.ideou.com/pages/design-thinking. Accessed November 5, 2018. 3. Glasgow, J.M., Scott-Caziewell, J.R. and Kaboli, P.J., 2010. Guiding inpatient quality improvement: a systematic review of Lean and Six Sigma. The Joint Commission Journal on Quality and Patient Safety, 36(12), pp.533-AP5. 4. Oreg, S., 2003. Resistance to change: Developing an individual differences measure. Journal of applied psychology, 88(4), p.680.
60	***The Use of Apps in Medical Education: Creation of an App Database for Medical Students*** E. Carey, T. Friedmann, R. Iuli, WH. Lu Stony Brook University School of Medicine **Objective or purpose of innovation** All incoming students at our institution receive a tablet to use during their medical school training. We created a database of apps so students can effectively use mobile technology to facilitate learning. **Background and/or theoretical framework and importance of the field** There is some research showing the benefit of apps in medical education, (Martinez, et al, 2017), but the global research landscape on apps in medical education is sparse. **Design** We created a survey on app usage in medical education, and distributed it to two classes in our institution. Students could endorse pre-populated app options or offer suggestions of their own. We used results, as well as personal experience, to create guidance for app usage at our medical school. **Outcomes** The most endorsed apps across pre-clinical courses included UWorld(85% of respondents), Firecracker (50%), and First Aid Rx(35%). For clinical courses and clerkships, apps such as UWorld(100%) for studying, as well as reference apps, like UpToDate(81%), MDCalc(58%), Medscape (30%). and Epocrates(27%), were popular. Many students endorsed locally relevant apps, such as mobile EMR and translator lines. Barriers to use included cost, ease of use, and information quality. Trends indicated apps

	were more useful in the clinical realm than in the preclinical phase of our curriculum. **Innovation's strengths and limitations** Findings of the survey provided guidance for students on recommended apps and settings in which they will be useful in their medical education. **Feasibility and generalizability** Our students experiences corroborate larger studies , where students had overall positive attitudes towards web applications and online resources in medical education (Dhatt et al 2014). Additionally, there is high adoption of apps and mobile phone usage amongst medical students and junior doctors (Payne et al 2012). Further research relies on evaluating long term benefits and effects of apps in education, and finding new avenues to incorporate apps in medical education. **References** 1. Dhatt KS, Kaliaperumal C. Incorporation of web-based applications and online resources in undergraduate medical education in the Irish Republic. Can new changes be incorporated in the current medical curriculum?. J Nat Sci Biol Med. 2014;5(2):445-9. 2. Payne KB, Wharrad H, Watts K. Smartphone and medical related App use among medical students and junior doctors in the United Kingdom (UK): a regional survey. BMC Med Inform Decis Mak. 2012;12:121. 3. Using Technology to Meet the Challenges of Medical Education. Trans Am Clin Climatol Assoc. 2015;126:260-70. 4. Snashall EHindocha S. The use of smartphone applications in medical education. Open Medicine Journal. 2016;3(Suppl-3, M6):32227. 5. Marinez, F., Tobar, C., & Taramasco, C. (2017). Implementation of a Smartphone application in medical education: a randomised trial (iSTART). BMC Medical Education, 17(1).
	Milestones & Competencies: UME & GME
61	***Facilitated Peer- and Self-Assessment Among Clinical Medical Students*** B. Ford, A. Mehta, C. Perri, R. Iuli, WH. Lu Stony Brook University School of Medicine **Objective or purpose of innovation** Mechanisms for giving effective feedback on performance during medical school are currently limited and generally perceived as inadequate.1 We therefore developed a program of facilitated peer- and self-assessment (PSA) among medical students during their clinical clerkship year. **Background and/or theoretical framework and importance of the field** Providing and receiving peer feedback is crucial for personal and professional development in undergraduate medical education.2 **Design** Students in the Medicine clerkship at Stony Brook School of Medicine (SBSOM) are paired based on their assigned clinical teams and asked to assess their clinical performance using SBSOMs Competency-based Common Clerkship (C3) evaluation form, the same form used by residents and attendings to evaluate medical students clinical performance in the domains of patient care, medical knowledge, professional attributes, and systems-based practice. Students in each pairing are also asked to assess one another using the same form, and then meet to discuss their assessments and provide constructive feedback in a session facilitated by a senior medical student. **Outcomes**

	The PSA exercise offers several educational benefits including immediate feedback on clinical performance. Students have an ungraded opportunity to reflect on their personal strengths and weaknesses. This empowers students to incorporate suggestions from their peers into their approach to clinical medicine and creates an opportunity for improvement before the end of the rotation. **Innovation's strengths and limitations** Areas for improvement include choosing more effective timeframes for peer meetings; allowing both time for adequate student interactions and clinical experience, but also time to incorporate feedback before the end of a clerkship. The skills and traits assessed using the C3 form are essential for medical trainees at every level, providing lasting benefit. **Feasibility and generalizability** Peer feedback during clinical clerkships turns classmates into colleagues and can contribute to and influence professional identity formation. This further emphasizes the importance of feeling comfortable with the exercise of peer-to-peer feedback preceding residency. **References** 1. Schopper H, Rosenbaum M, Axelson R. 'I wish someone watched me interview:' medical student insight into observation and feedback as a method for teaching communication skills during the clinical years. BMC Med Educ. 2016;16(1):286. 2. Sargeant J, Bruce D, Campbell CM. Practicing physicians' needs for assessment and feedback as part of professional development. J Contin Educ Health Prof. 2013;33 Suppl 1:S54-62.
62	***The Gender Gap: A Pilot Study Exploring Gender Based Differences in Feedback to Emergency Medicine Trainees*** M. Mamtani, D. Kaminstein, L. Conlon, S. Abbuhl, K. Scott Perelman School of Medicine at the University of Pennsylvania **Research Statement/Research Question** To explore gender differences in written feedback comments to EM residents. **Background and relevance of the study** A gender disparity exists in the assessment of EM residents, with males receiving significantly higher ratings across all milestone competencies as compared to females throughout residency training. Reasons for this disparity are multifactorial and incompletely understood, although implicit bias may play a role. In order to design an effective intervention to address this evaluation inequity, studies better assessing the context and content of evaluator feedback are needed. We performed a pilot study examining evaluation comments to EM residents to better understand the gender assessment gap. **Design and Methods** We conducted a qualitative study examining written free text comments that had been provided by EM attending physicians to EM residents through an online evaluation system, Medhub® over 2.5 years (July 1, 2015- December 31, 2017). A random selection of the comments was coded to identify emerging themes. Of the 3,788 phrases in the dataset, approximately 10% or 379 were individually coded. The codes were developed based on prior qualitative literature on gender bias using a post-positivist approach. In order to reduce confirmation bias, a research assistant who was not part of the study team performed the coding and analysis. All comments were void of potential gender identifying pronouns. **Results** Males overwhelmingly received more feedback mentioning leadership ability and management skills as compared to females (84.6% vs. 14.4% and 70.6% vs 29.5%, respectively). There was an equal distribution

	of comments regarding confidence between male and female residents, but those directed towards females only expressed a need for the resident to be more confident. **Conclusions** Although this is a small sample size from a single study site, there are emerging themes that suggest gender differences in feedback to EM residents and the need for further in depth analysis. **IRB Review** Has the IRB reviewed your project? Yes If you answered No or NA above, please explain why. NA **References** 1. Dayal A, OConnor DM, Qadri U, Arora VM. Comparison of Male vs Female Resident Milestone Evaluations by Faculty During Emergency Medicine Residency Training. JAMA Intern Med. 2017;177(5):651 657. doi:10.1001/jamainternmed.2016.9616 2.Schmader, T., & Johns, M. (2003). Converging evidence that stereotype threat reduces working memory capacity. Journal of personality and social psychology, 85(3) 3.Rudman, L. A. and Glick, P. (2001), Prescriptive Gender Stereotypes and Backlash Toward Agentic Women. Journal of Social Issues, 57: 743762. 4. Hanson J. Qualitative Research Methods for Medical Educators. Academic Pediatrics 2011;11 :375-386. 5. OBrien B. Standards for Reporting Qualitaitive Research: A Synthesis of Recommendations. Acad Med 2014; 46: 943-952
63	***Quality Improvement and Safety Curriculum: Empowering residents with interactive didactic education and experiential learning*** M. DeSain University of Rochester School of Medicine and Dentistry **Objective or purpose of innovation** Empower internal medicine residents with knowledge and experience in quality improvement and patient safety using didactic education sessions and active participation in established QI teams. **Background and/or theoretical framework and importance of the field** Patient safety remains a major public health concern. The ACGME CLER Pathways to Excellence emphasized that young physicians lack proficiency in QI and Safety. Prior to 2016 the University of Rochester Internal Medicine residency program lacked a QI and Safety curriculum **Design** The curriculum is composed of two parts: interactive education sessions and active participation in QI teams. The didactic sessions are based on the Institute of Healthcare Improvement (IHI) Basic Certificate in Quality and Safety and use a flipped classroom approach. All residents attend the education sessions which repeat on a three-year cycle (quality improvement, patient safety and social determinants of health). All upper level residents participate on established QI teams in their area of interest. **Outcomes** We are currently in the third year of the didactic curriculum and first year of connecting all upper level residents to a QI project. Sixty seven percent of residents stated that the QI didactic sessions helped them understand how to develop a QI project. The safety sessions increased resident comfort in entering an

	event report (Pre: 35%, Post: 66%) and increased the number of residents who entered more than one event report in the past year (Pre: 23%, post: 60%). **Innovation's strengths and limitations** Strengths are improved resident culture of safety and connecting residents with established QI projects in their area of interest. Limitations include need for established QI teams for residents to join **Feasibility and generalizability** The curriculum content is easily accessible as it is based on the IHI open school. The success of this curriculum relies on protected time for residents to participate in didactic sessions and a solid foundation of QI teams for residents to gain experience through active participation. **References** Accreditation Council for Graduate Medical Education. Clinical Learning Environment Review (CLER) Program. http://www.acgme.org/CLER Institute for Healthcare Improvement, www.ihi.org/education/ihiopenschool/Pages/default.aspx. Introducing the CLER Pathways to Excellence: A New Way of Viewing Clinical Learning Environments. Kevin B. Weiss, James P. Bagian, Robin Wagner, Thomas J. NascaJournal of graduate medical education2014
64	***An Alternative Method of Engaging Resident Learners*** R. Sangal, U. Khatri, A. Mudan Perelman School of Medicine at the University of Pennsylvania **Objective or purpose of innovation** To implement a group messaging platform where residents can learn from their peers and attendings, despite being temporally and spatially separated due to the shift-style structure of EM. We believe this will be effective because teaching pearls can be consumed in small quantities of time such as commuting to work or standing in a line, similar to the consumption of social media, such as twitter or instagram posts. **Background and/or theoretical framework and importance of the field** Our institutions ACGME survey indicates downtrending emergency medicine (EM) resident satisfaction with the current educational curriculum. Specifically, the lack of teaching outside of dedicated conference time. The root cause is likely multifactorial, stemming from higher patient volumes and acuity, both of which increase residents clinical responsibilities and decreases time for on-shift learning. **Design** A free mobile application, Slack, designed for team communication. **Outcomes** Currently 40 (89%) residents and 34 (49%) clinical faculty have joined Slack. 37 (50%) of users have been active in the last 30 days (October). The primary channels receiving the most traffic include conference, fascinating cases, and post-it pearls. Since July 1st, there is a 17% increase in monthly posting. Further qualitative and quantitative data will be available at the time of the conference after the six month survey is administered. **Innovation's strengths and limitations** This device allows rapid dissemination of easily digestible learning pearls. Qualitatively, residents like the initiative, and attendings feel they are engaging residents even when not directly working with them.

	Barriers include obtaining enough attending participating and resident confidence to respond to posts with questions or comments. **Feasibility and generalizability** This free app is easy to trial in a residency program. It can be implemented in any program that has a desire to extend its educational mission beyond the walls of the institution. As an academic institution, resident education should be prioritized. By finding new ways to engage learners they can provide exceptional care. **References** 1. Gofine M and Clark S. Integration of Slack, a cloud-based team collaboration application, into research coordination. Journal of innovation in health informatics. 2017; 24: 936. 2. Slack. J Med Libr Assoc. 2018;106(1):148151. 3. Chan TM, Gottlieb M, Sherbino J, et al. The ALiEM Faculty Incubator: A Novel Online Approach to Faculty Development in Education Scholarship. Academic medicine : journal of the Association of American Medical Colleges. 2018; 93: 1497-502. 4. https://www.nature.com/news/how-scientists-use-slack-1.21228 5. https://slack.com/
65	***Improving Resident Confidence in Airway Management*** R. Zsilinszka, R. Sangal Perelman School of Medicine at the University of Pennsylvania **Objective or purpose of innovation** We aim to (1) develop a library of airways, (2) create regular case reviews, and (3) develop an airway lecture. **Background and/or theoretical framework and importance of the field** Emergency physicians are responsible for a majority of intubations in the emergency department, and difficult airways make up less than 5% of cases.1 Difficult airways are often triaged to senior residents and require real-time exposure for improvement. These are difficult to teach outside of real time occurrence and are limited to the specific resident(s) involved. Not surprisingly, there is a positive correlation between resident comfort in airway management and the number of airway teaching hours. We hypothesize that implementing an airway recording initiative will improve resident comfort in intubation. **Design** We developed a library of airways by installing all CMAC, Glidescope, and intubating bronchoscopes with secure USB drives. No protected health information or audio was recorded. Physicians were taught how to record and reminded regularly via email and signs on equipment. Recordings were regularly edited to short clips with teaching pearls which were sent to the residency. A didactic presentation was developed for further teaching. **Outcomes** This innovation pilot was conducted for 6 months. We have a total of 156 airways recorded. Of the 36 physicians who responded to the survey, 26 (72%) recorded an airway, and the limiting factor was patient acuity; 27 (75%) watched the teaching pearl videos and 40% felt the pathology was useful. 6 of 7 respondents who attended the airway lecture agreed the talk improved their confidence in airway management.

	Innovation's strengths and limitations There is support for this initiative amongst residents, particularly in seeing the range of pathology. Major drawbacks are encouraging physicians to record routinely and the time required to prepare each video. **Feasibility and generalizability** This is a feasible project for a team that is willing to download, edit, and send teaching points with the videos downloaded from existing equipment. **References** 1. Wong E, Ng YY. The difficult airway in the emergency department. Int J Emerg Med. 2008;1(2):107-11.
66	***POSSUM: Precepting Observations in SubSpecialty clinic Using Mapping*** C. Clancy, J. K. Heath, S. Kassutto, C. J. Dine Perelman School of Medicine at the University of Pennsylvania **Research Statement/Research Question** We aim to develop and test a direct observation tool to characterize the current structure of precepting encounters in subspecialty fellows clinic. **Background and relevance of the study** Pulmonary fellows report feeling underprepared for independent ambulatory practice and dissatisfied with ambulatory clinic structure(1). Pediatric subspecialty fellowship trainees have identified increased autonomy and focus on higher-level skills as crucial elements of the clinic experience(2). While structural changes (e.g., assigning patients directly to fellows) facilitate autonomy, prioritization of diagnostic and management reasoning skill development remains dependent on individual fellow-preceptor interactions. We developed and tested a novel direct observation tool to characterize the structure of precepting encounters in a pulmonary fellow-run clinic. **Design and Methods** An observational tool was created, iteratively revised, and reviewed by expert medical educators and preceptors in Pulmonary and General Internal Medicine. The tool facilitates documentation of precepting interactions by allowing observers to indicate the speaker, presentation domain (history, exam, studies, radiology, assessment, plan, or teaching), and timing data simultaneously. Two observers (CC, JH) used the tool during direct observations of precepting encounters in pulmonary fellows clinic at the Hospital of the University of Pennsylvania during a three-month period in 2018. Timing and domain data were extracted, and summary statistics were performed. **Results** Fourteen direct observations were performed, capturing four first-year, six second-year and four third-year fellows. One session was observed simultaneously by both observers, with >98% agreement. The mean total precepting time was 10.1 minutes (SD 5.6, 95% CI 6.9 - 13.4), ranging from 2 to 24 minutes. Mean time to interruption by preceptors was 2.1 minutes (SD 1.3), and the average proportion of time spent on assessment and plan was 47%. **Conclusions** Our direct observation tool was feasible for use in the subspecialty fellowship ambulatory setting, and demonstrated that precepting in pulmonary clinic, while variable, is characterized by early interruptions from preceptors and insufficient focus on higher-level skills. **IRB Review**

	Has the IRB reviewed your project? Yes If you answered No or NA above, please explain why. Answered yes **References** (1) Kassutto SM, Dine CJ, Kreider M, Shah RJ: Changing the Ambulatory Training Paradigm: The Design and Implementation of an Outpatient Pulmonology Fellowship Curriculum Ann Am Thorac Soc 2016; 13(4): 540-4. (2) Gangat M, Klein GW, Cohen HW, Heptulla RA. National study of continuity clinic satisfaction in pediatric fellowship training. Adv Med Educ Pract. 2013;4:165-9.
67	***A Self-evaluation of the AAMC Core EPAs during Residency*** D. Nelson, N. Gabbur Donald and Barbara Zucker School of Medicine at Hofstra/Northwell **Research Statement/Research Question** To have residents at all PGY levels self-evaluate their competence with regard to the Core Entrustable Professional Activities for Entering Residency (CEPAER). **Background and relevance of the study** The AAMC has described thirteen areas in which all graduating medical students should be proficient and that these areas should be evaluated for potential deficiencies early in residency. However, these areas of weakness may extend well into residency as these skills may not specifically be taught during residency. **Design and Methods** All residents in an Ob/Gyn program (42 in total) were asked to self-evaluate in each of the thirteen EPAs at the beginning of the academic year using Miller's Pyramid. Each resident marked his or her competency as either, "knows," "knows how," "shows how," or "does. " The responses were dichotomized, grouping the "knows," and "knows how" as "non-entrustable" and "shows how" and "does" as entrustable. **Results** Seven of twelve PGY1s and six of twenty-nine PGY2-4s completed the survey. Four (57. 1%) PGY1s self-evaluated as non-entrustable" for patient handovers, obtaining informed consent, and identifying and correcting systems failures, and five (71. 4%) felt "non-entrustable" in writing orders and prescriptions and in general procedures of physicians. All of the PGY2-4s felt "entrustable" in all areas except for two who felt "non-entrustable" in identifying and correcting systems failures. **Conclusions** The areas noted above may warrant more concerted educational focus at the beginning of an intern's year, but identifying and correcting systems failures appears to be an area that deserves continued education during residency. **IRB Review** Has the IRB reviewed your project? No If you answered No or NA above, please explain why. There were no patients in this study. A survey was sent out to residents in our program.

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	Interprofessional Education: Across the Continuum
68	***Redesigning Regularly Scheduled Series (RSSs) as Authentic Learning Spaces for Effective Interprofessional CPD in Academic Medical Centers*** M. Kostic **Objective or purpose of innovation** To employ effective learning and teaching IPE strategies by collaborating with faculty and clinical departments using established learning and improvement frameworks available in AMCs. **Background and/or theoretical framework and importance of the field** IPE is recognized as important for educating HCPs to support collaborative and team-based practice. While WHO, IPEC and Joint Accreditation provide guidance about relevant competencies, employing effective learning and teaching IPE strategies in AMCs and hospitals continues to represent a challenge for meaningful delivery of IPCE. **Design** IPE at Penn Medicine has been strengthened by achieving Joint Accreditation for IPCE and the application of processes and structures put in place as part of this effort. One of the areas identified for development were RSS such as departmental Grand Rounds, Tumor Boards, MM and Clinical Case Conferences representing 5,000 annual sessions organized in 120 series. Over 2 years, we provided intensive training and resource support for developing education planned for the team and by the team. **Outcomes** Our RSS program was transformed from 100% physician-planned and delivered to 64% (76 series) IPCE. The IPCE approach favored case-based formats over lecture-based ones 58% vs 42% and more frequent session schedule such as weekly vs monthly (56% vs 44%). Evaluation outcomes were assessed globally with single instrument assessing knowledge, skill and attitude changes and satisfaction. It provided opportunity for reflection about relevance to practice changes, improvements of the team care and patient outcomes. We collected and analyzed 1,500 responses representing 26% of the learners. **Innovation's strengths and limitations** While institutional structures of RSS are ideally positioned for continuous IPE opportunities, we need true IPCE pedagogical strategies such as practice situated, team-based learning (TBL) that is continuously linked to the departmental and institutional measures of quality and safety and patient and provider experience of care. **Feasibility and generalizability** The changes in practice as referenced through reflective statements were thematically analyzed and provided meaningful results and baseline for future development. **References** Thompson, B. M., Levine, R. E., Kennedy, F., Naik, A. D., Foldes, C. A., Coverdale, J. H., ... & Haidet, P. (2009). Evaluating the quality of learning-team processes in medical education: development and validation

	of a new measure. Academic Medicine, 84(10), S124-S127. Interprofessional Education Collaborative. (2016). Core competencies for interprofessional collaborative practice: 2016 update. Washington, DC: Interprofessional Education Collaborative.
69	***A novel approach to inter-disciplinary education: A medicine-radiology correlation conference for residents*** D. Manson, S. Haider, Y. Nobel, K. Christianer, E. Desperito, S. Chandra Columbia University Vagelos College of Physicians and Surgeons **Objective or purpose of innovation** To promote interdisciplinary, bi-directional learning for medicine and radiology residents, we developed a joint medicine-radiology case-based series. The objectives were to learn to identify clinical indications for common radiologic tests, choose appropriate imaging studies, and correlate image interpretation with clinical context. **Background and/or theoretical framework and importance of the field** Case-based learning has demonstrated benefits in health professional education. Cross-specialty education involving diagnostic radiology has proven beneficial in varied contexts. We designed, implemented, and evaluated a novel, case-based, medicine-radiology resident-run conference. **Design** Using informal focus groups of radiology and medicine residents and faculty, we chose topics of high-impact for bi-directional learning: those with potential to cover common indications for radiologic studies, the American College of Radiology Appropriateness Criteria, and interpretation of imaging. Each session was co-led by a medicine and radiology resident, directing an interactive, case-based presentation for co-mingled medicine and radiology residents. **Outcomes** To assess knowledge acquisition, audience members completed de-identified, paired pre- and post-tests. We assessed self-reported likelihood of changing clinical practice, as well as perceptions of the interdisciplinary format. Paired t-tests were performed comparing pre- and post-test responses. Of the six conferences evaluated, five had statistically significant increases in scores, with $p<0.05$. The cumulative average score (and standard deviation) on a 5-point Likert scale for likelihood of changing clinical practice was 4.73 (+/-0.61), and for perceptions of the format was 4.55 (+/-0.88). We intend to assess further outcomes including a validated inter-professional education scale, conference attendance compared to traditional noon conference, and knowledge retention via delayed testing. **Innovation's strengths and limitations** Through this innovation, we were able to successfully promote learning while bridging two training programs in a well-received format. Limitations include a small sample size and assessment of short-term but not long-term retention. **Feasibility and generalizability** Designing and implementing this innovation was straightforward with minimal resources required. We believe our innovation to be highly generalizable to any institution with medicine and radiology training programs. **References** 1. Klobuka AJ, Lee J, Buranosky R, Heller M: When the Reading Room Meets the Team Room: Resident Perspectives From Radiology and Internal Medicine on the Effect of Personal Communication After

Implementing a Resident-Led Radiology Rounds. Curr Probl Diagn Radiol 2018.
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Effective Multidisciplinary Team Leadership of the Capstone Scholarship and Discovery Course

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Objective or purpose of innovation

The Capstone Scholarship and Discovery (CSD) course requires medical students to generate, implement, and present a scholarly project over the 4-years of medical school. The need for consistent support and instructive messaging revealed a need for team-supported course management strategies.

Background and/or theoretical framework and importance of the field

Originally designed with minimal formal classroom teaching, the CSD course incorporated student-identified advisors to serve as professional project guides across four years. Early student feedback confirmed the need to move to the current six-member multidisciplinary team drawn from basic sciences, medicine, and project management. Team diversity offers the opportunity to provide a broad range of types of project support; its size allows consistent support of the large numbers of students (~650).

Design

Strategies for course management include: weekly course team meetings, one-on-one student meetings, centralized email communication, course website, active student liaisons, and social media.
Strategies to expand course support include: team member assignments to specific student cohorts and curriculum committees, member-specific resourcing such as faculty development, teaching, and communications.
Strategies to strengthen the team itself include: member equality, collaborative policy-making; specialty-specific responsibilities assignments.

Outcomes

Students within and across the groups report more consistent messaging and availability. Student representative participation nets both real-time feedback for the team, and peer support for the students. Encouraging team members to take on specialty-specific responsibilities infused the course with variety of services available to the students and advisors.

Innovation's strengths and limitations

Strengths: multidisciplinary course development; modelling collegiate collaboration; ability to offer increased diverse support.
Limitations: The interactive team model allows for more opportunity to stray from the time-sensitive course demands; requires buy in of all members to sustain; long training period for new team members.

Feasibility and generalizability

The team model is a great fit for the course that contains a high volume of formative like-support activities combined with opportunities to offer enhanced services.

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Interprofessional case-based clinical skills application in early medical and dental school

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Objective or purpose of innovation
Our module aimed to promote medical and dental student collaboration and to develop early clinical reasoning skills.

Background and/or theoretical framework and importance of the field
Clinical skills courses provide the foundation for learning interviewing skills, physical exam techniques, and clinical reasoning. There is debate about optimal timing to introduce these skills [1]. Case-based education in educational settings has been shown to increase students understanding of complex situations [2]. We aimed to study if an interprofessional module during week 5 of first year could effectively teach clinical reasoning skills.

Design
154 students during their fifth week of first year completed an online case-based module of a patient with shortness of breath when reclining in a dental chair. The module detailed three etiologies of shortness of breath: congestive heart failure (CHF), chronic obstructive pulmonary disease (COPD), and panic attack. Pairs of students performed a history and physical on a standardized patient. Immediately following, students individually selected the primary diagnosis and supporting evidence from a list. Students then completed a satisfaction survey.

Outcomes
The correct diagnosis of CHF was selected by 98.1% of students (N=154). Students properly identified CHF symptoms in this case: orthopnea (97.4%), history of CHF (96.1%), shortness of breath (95.5%), swelling in the legs (94.8%), and diuretic non-adherence (72.7%). Students properly recognized CHF signs: edema (96.1%), elevated jugular venous pressure (89.6%), S3 (87%), and bibasilar crackles (86.4%). 151 of 154 students found this educational, helpful, and at the appropriate level.

Innovation's strengths and limitations
This module is an engaging way to teach early learners clinical reasoning and promotes interprofessionanlism which is an LCME requirement. One weakness was the lack of ventriloscopes available to all students. Additionally, we provided a list of supporting evidence rather than asking students to list it themselves.

Feasibility and generalizability
To use this module, schools would need access to both medical and dental students and a clinical skills

	center with proper equipment. **References** 1. Acharya, Y., Richards, S., Reza, T., Shah, S., Rao, R., Arja, S. (2017). Early Introduction of Clinical Skills on Medical School Performance. Journal of Medical Education and Informatics. 3:02-09. 2. Cheek, C., Hays, R., Smith, J., Allen, P. (2018). Improving case study research in medical education: a systematised review. Medical Education. 52:480-487. doi: 10.1111/medu.13469.
	Professional Development: Continuing Professional Development
72	***Infusing Arts and Humanities into Professional Development: Description and Evaluation of BERST Rounds*** A. Sweeney, R. Blanchard University of Massachusetts Medical School - Baystate **Objective or purpose of innovation** To describe a novel professional development (PD) curriculum covering principles of teaching and leadership using tools and concepts grounded in the arts and humanities. **Background and/or theoretical framework and importance of the field** Much is written about the integration of arts and humanities concepts in UME (1,2). However, little exists around the opportunities for including humanities in continuing education. In fact, many skills in education and leadership can be addressed with tools grounded in the humanities, such as improv (3), poetry (2), and visual art strategies.(1) **Design** Led by our BERST teaching academy, BERST Rounds are quarterly, half-day workshops that apply creative teaching strategies to directly applicable content for interprofessional faculty and staff. Led by a masters-trained educator with a background in creative writing and theater, BERST Rounds are planned in collaboration with an expert in the content area so that both the content and the teaching strategies are relevant to learners. To date, BERST Rounds have included: Yoga Rounds: in collaboration with a yoga instructor to teach mindfulness and reflection Museum Rounds: in collaboration with a pharmacist, physician, nurse, and museum educator to teach problem-solving strategies and communication strategies Improv Rounds: in collaboration with an improv artist to teach how to reframe failure and reflect on the balance of credibility and vulnerability **Outcomes** To date, 3 half-day workshops were completed at Baystate Health. Attendance ranged from 20-45 participants representing multiple departments and professions. Data summarize participants reflections on these sessions. **Innovation's strengths and limitations** These sessions 1) introduced creativity and innovation to participants' roles as teachers and leaders, and 2) added value as IPE activities. However, long-term outcomes are not yet available. **Feasibility and generalizability** Integration of humanities into PD provides opportunities for participants to learn through and with creative, applicable tools about failure, expertise, performance, and more. Reflecting on the process through which

	Rounds were created can support their adaptation and implementation at other institutions. **References** 1. Kumagai AK. Beyond Dr. Feel-Good: A role for the humanities in medical education. Acad Med. 2017;92(2):1659-1660. 2. Shapiro J, Rucker L. Can poetry make better doctors? Teaching the humanities and arts to medical students and residents at the University of California, Irvine, College of Medicine. 3. Molloy E, Bearman M. Embracing the tension between vulnerability and credibility: intellectual candor in health professions education. Med Educ. 2018.
73	***Applying Self-Determination Theory (SDT) to Faculty Engagement for Curriculum Development*** J. Nonaillada, S. Shelov, G. Ayala, B. Miyawaki, S. Carsons NYU Long Island School of Medicine **Objective or purpose of innovation** This session describes how Self-Determination Theory (SDT) was implemented at NYU Winthrop Hospital for faculty engagement with a new, 3 year undergraduate medical school curriculum. **Background and/or theoretical framework and importance of the field** In 2017, faculty of New York University (NYU) Winthrop Hospital were tasked with creating a new 3 year medical school. Faculty only had experience as clinical campus course leaders and clerkship directors, and basic science curriculum was predominantly new. **Design** We formed the Phase 1 Curriculum Committee with 40 faculty creating the first 45 weeks of the curriculum. SDT was implemented by academic leaders to 3 components of growth: competence, connection, and autonomy. A web-based survey was distributed to all committee participants to measure effectiveness of SDT to faculty engagement. **Outcomes** Responses (n=16) indicate all faculty improved knowledge of curriculum development and expanded their professional network. Mostly all faculty improved ability to write learning objectives and more connected to colleagues. Majority of faculty were motivated to contribute more to academic affairs. Although majority of faculty improved knowledge of instructional methods and fostered independent thinking, creativity and innovation, these two areas were least impacted. **Innovation's strengths and limitations** There is a dearth of literature on SDT in medical education, and this pilot project contributes to the knowledge base in with this underlying theoretical framework. We acknowledge the limitations of our results where our survey had a response rate of 44%. However, the behaviors demonstrated and deliverables produced by the Phase 1 Curriculum Committee support the rationale for further examination in using SDT for faculty engagement in medical education. **Feasibility and generalizability** This pilot project was feasible to implement in our institution, and so we plan to apply it to other areas of faculty development within medical education, particularly our Phase 2-3 Curriculum Committee. Further project implementation is needed in order to make sound generalizations of our results to other institutions. **References** Anderson, L., Krathwohl, D., & Bloom, B. (2001). A taxonomy for learning, teaching, and assessing: A Revision of Bloom's Taxonomy of Educational Objectives. New York: Longhman.

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Simulation: Across the Continuum

74 ***Residents Perceptions of Artificial Intelligence in Medical Practice: A Qualitative Study***

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Research Statement/Research Question
How do resident physicians perceive the future of medicine and their future careers in an era of emerging artificial intelligence?

Background and relevance of the study
Artificial intelligence (AI) is poised to change medicine considerably, and the use of AI is growing in fields such as pathology and radiology (1,2,3). Some anticipate that AI might transform the roles of physicians (4,5). However, little is known about trainees perceptions of AI. This qualitative study describes pathology and radiology residents perceptions of AI in relation to the future of medicine and their future careers.

Design and Methods
We employed a constructivist grounded theory framework. Pathology and radiology resident physicians at the CUIMC were invited to participate in semi-structured focus group interviews. Interviews were audio-recorded, transcribed, and coded. Codes were grouped into categories and themes. Member checks were performed.

Results
Thirty-three residents participated in 3 focus groups. Five themes emerged: 1) AIs promise; 2) Possible harms; 3) AIs impact on future careers; 4) Irreplaceable human roles; and 5) Agency in AI development. Benefits identified included triaging urgent cases and managing voluminous low-complexity cases, while harms included concerns of increased physician workload and service utilization. Many argued that physicians are irreplaceable in providing context, interpreting complex cases, and interpersonal communication. Residents did not communicate concern about their futures, citing the ever-changing nature of medicine and their capacity to adapt. Residents noted that business interests would influence AI development and questioned the role of physicians in this process.

Conclusions
Most pathology and radiology residents indicated that AI would bring positive changes to medicine, including efficiency, accuracy, and better patient outcomes. They were optimistic about their own careers and communicated readiness to adapt to a changing field. Concerns that AI development may not include

	input from physicians may be a call for developers to involve the views of practicing physicians. **IRB Review** Has the IRB reviewed your project? Yes If you answered No or NA above, please explain why. NA **References** 1. Pesapane et al. Artificial intelligence in medical imaging: threat or opportunity? Radiologists again at the forefront of innovation in medicine. European Radiology Experimental (2018) 2:35 2. Jha S, Topol EJ. Adapting to Artificial Intelligence: Radiologists and Pathologists as Information Specialists. JAMA. 2016;316(22):23532354. 3. SaltoTellez, M. , Maxwell, P. and Hamilton, P. (2018), Artificial Intelligence The Third Revolution in Pathology. Histopathology. Accepted Author Manuscript. 4. Krittanawong, C. The rise of artificial intelligence and the uncertain future for physicians. European Journal of Internal Medicine, Volume 48, e13 e14. 5. Obermeyer, Ziad, Lee, Thomas H. Lost in Thought The Limits of the Human Mind and the Future of Medicine. N Engl J Med 2017; 377:1209-1211.
75	***See one, do one, teach one: Gold Standard Video Modeling to Augment Simulation Education*** N. Cormier, A. Hickey, P. Sell, S. Valentine, K. Wynne University of Massachusetts Medical School **Objective or purpose of innovation** We aim to provide residents with a gold standard video modeling management of a pediatric resuscitation prior to them implementing these skills in simulation, and to compare this innovation to didactic lecture. **Background and/or theoretical framework and importance of the field** See one, do one, teach one is a common adage in medicine, yet for rare medical scenarios like pediatric resuscitations, it is challenging to provide residents with enough exposure to meet this objective. High-fidelity simulation offers a teaching modality that recreates rare clinical scenarios(1). Our innovation augments simulation education by adding a gold standard video component that models optimal resuscitation management: a see one. Little literature exists that rigorously evaluates the use of gold standard videos, especially among pediatrics residents, using validated clinical tools(2). **Design** We wrote a video script based on the pediatrics advanced life support (PALS) algorithm for pulseless electrical activity (PEA) and edited it based on input from expert staff. A multidisciplinary team filmed the scenario in our simulation center. Residents will be recorded performing simulated management of a PEA arrest before and after undergoing randomized education (either gold standard video modeling or traditional didactic lecture). **Outcomes** Resident performance will be scored in three ways: appropriateness and quality of clinical management using the Clinical Assessment Tool(3), leadership skills using the Resuscitation Team Leader Evaluation(4), and objective measurements of time taken to initiate key steps in management. Residents will provide survey feedback on preferred learning modality. **Innovation's strengths and limitations**

	This approach optimizes simulation education by first demonstrating the implementation of skills before residents must employ them. However, generating a gold standard video is resource intensive. **Feasibility and generalizability** Gold standard videos are most feasible if they focus on demonstrating algorithm-based management of high-yield clinical scenarios. Once this innovations efficacy is established in a PEA resuscitation setting among pediatrics residents, gold standard videos can be generalized to other areas of time-sensitive management and learner groups. **References** 1. Vozenilek, J., Huff, J. S., Reznek, M., & Gordon, J. A. (2004). See one, do one, teach one: advanced technology in medical education. Academic Emergency Medicine, 11(11), 1149-1154. 2. Yang, C. W., Wang, H. C., Chiang, W. C., Chang, W. T., Yen, Z. S., Chen, S. Y., ... & Lin, F. Y. (2008). Impact of adding video communication to dispatch instructions on the quality of rescue breathing in simulated cardiac arrestsa randomized controlled study. Resuscitation, 78(3), 327-332. 3. Levy, A., Donoghue, A., Bailey, B., Thompson, N., Jamoulle, O., Gagnon, R., & Gravel, J. (2014). External validation of scoring instruments for evaluating pediatric resuscitation. Simulation in Healthcare, 9(6), 360-369. 4. Grant, E. C., Grant, V. J., Bhanji, F., Duff, J. P., Cheng, A., & Lockyer, J. M. (2012). The development and assessment of an evaluation tool for pediatric resident competence in leading simulated pediatric resuscitations. Resuscitation, 83(7), 887-893.
76	***The Use of High Fidelity Simulation to Facilitate Learning of Pharmacology*** J. Horwitz, K. Ryan Drexel University College of Medicine **Objective or purpose of innovation** To create model scenarios of high fidelity simulation to facilitate the study of pharmacology for second year medical students. **Background and/or theoretical framework and importance of the field** High fidelity simulation is being widely used to train all types of medical professionals. Our institution has been successful in incorporating simulation into the basic sciences taught in the first two years of medical school. These simulations place the students in a realistic situation where they need to recall and utilize their knowledge independently. **Design** SimMan 3G (Laerdal, Inc.) advanced patient simulators are located in rooms equipped with hospital beds and patient monitors. Activities in the rooms are monitored from a central control room. Students are divided into groups of 6-8 and each student is assigned a role as part of a multidisciplinary team, e.g. doctor, nurse, anesthesiologist, etc. A printed patient chart with relevant history and lab values, and appropriate drugs necessary to treat the patient, as well as distractor drugs is provided. A faculty facilitator is present in the room to monitor group progress. The simulated patient presents with physical findings and vital signs representing a typical clinical scenario. Each scenario lasts approximately 15 minutes and then students engage in a 20-minute faculty-led debriefing session. **Outcomes** We have successfully created simulation scenarios for second year medical students dealing with drug overdoses and other clinical situations. A typical scenario with all possible choices will be presented. **Innovation's strengths and limitations**

	We have devised methods to run simulations for large class sizes, 260 students. We have developed case scenarios that correlate and reinforce the basic sciences. **Feasibility and generalizability** Many schools, already possess simulation technology. We believe that any school can incorporate simulations into their basic science curriculum. **References** Fodale, V., Penna, O., Amato, A. et al. Role of simulation in undergraduate and post graduate medical education. Int. Arch. Med. 8(16), doi: 10.3823/1695 (2015)
77	***Graduated Simulation Curriculum in Otorhinolaryngology Training for Teaching and Skills Assessment*** T. Chao, E. Gomez, J. Kearney Perelman School of Medicine at the University of Pennsylvania **Objective or purpose of innovation** Simulation is used in both undergraduate and graduate medical education (1,2). Our innovation is the longitudinal application of simulation as a tool for medical student recruitment, candidate screening, resident onboarding, and advanced skill development. The purpose of this innovation is to enhance skill retention, identify areas for improvement, and attract the best students to our field. **Background and/or theoretical framework and importance of the field** Simulation has been incorporated into medical training to impart skills safely and efficiently, narrowing the gap between didactic knowledge and clinical practice (3). **Design** Trainees at all levels have participated in our simulation curriculum. Students were exposed to Otolaryngology task trainers. Residency applicants were assessed for skill acquisition on simulated myringotomy and nasal endoscopy. Residents participated in sessions simulating emergency scenarios and common surgical procedures. As learners advanced through training, simulations incorporated higher-stakes decision-making, interdisciplinary collaboration, and more advanced surgical skills. **Outcomes** Residency applicants demonstrated improvement in technical skill when given feedback and opportunities for repetition. Surveys demonstrated that simulation participation equipped residents with improved confidence when encountering a wide variety of scenarios, such as complex airway management and oropharyngeal hemorrhage, despite limited pre-simulation clinical experience. **Innovation's strengths and limitations** Our simulation curriculum creates an immersive learning experience for trainees that can allow for increased skill retention compared to traditional teaching methods, especially in low-frequency high-acuity situations (4). Subjects demonstrated increased self-reported confidence following participation; however, skills simulations have not yet been validated as a tool for predicting performance as a trainee. **Feasibility and generalizability** A longitudinal simulation curriculum may be helpful to specialties that require technical skill and rapid decision-making in clinical practice. By tailoring simulation scenarios to each level of training, participants can practice skills and hone clinical judgment, while maximizing patient safety.

References

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