BOSTON UNIVERSITY

18th Annual John McCahan Medical Campus Education Conference

May 23-24, 2023

Showcasing Educational Innovation and Scholarship on the Boston University Medical Campus

Theme: Education Research

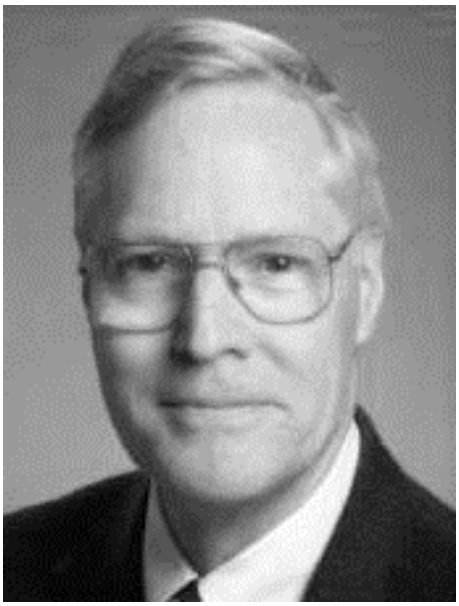
Chobanian & Avedisian School of Medicine

Goldman School of Dental Medicine

School of Public Health

Graduate Medical Sciences

John F. McCahan, M.D.



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

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

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

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

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

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Karen Antman, M.D.
Provost, Medical Campus
Dean, School of Medicine
Professor of Medicine

Dear Colleagues,

Welcome to the 17th annual John McCahan Medical Campus Education Day. Dr. McCahan served as distinguished Associate Dean for Academic Affairs at Boston University School of Medicine for 30 years, and then as Dean from 2003 to 2005. We are pleased to celebrate Boston University medical campus educators with a day of stimulating speakers, workshops, and innovative ideas to inform and inspire.

Our keynote speaker this year, Dr. Liza Talusan, PhD, is an educator, speaker, leader, writer, and life/leadership coach. She has Masters of Arts in Higher Education Administration from New York University and PhD in Higher Education from University of Massachusetts, Boston. She speaks regularly strategic planning, supporting changes in management and empowering faculty and staff.

Dr. Talusan's research interests include the experiences of underrepresented populations, interracial relationships, recognizing and reducing unconscious bias and the impact of federal financial aid policies.

She is a recipient of numerous awards including "Best 40 Under 40", Asian Women for Health's Peer Leader Award and Network for Equity, Excellence in Education Award. The title of her address will be, *Building the habits and skills for more inclusive practices*.

Workshops and poster presentations on John McCahan day will cover a variety of topics to engage our educators in reevaluating how we teach, test and assess students, educational models and methods.

Come, connect and enjoy the dialogue with your colleagues.

Sincerely,

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

ACKNOWLEDGMENTS

John McCahan Medical Campus Education Day conference was first held in 2006 to honor Dr. McCahan's decades of educational contribution to both medical and graduate education at Boston University Medical Campus with support from Medical Campus Provost and Dean Karen H. Antman, M.D. Each year, dedicated BUMC educators volunteer their time to organize the conference under the oversight of the Department of Medical Sciences & Education. The conference organizers would like to acknowledge with appreciation the contributions of the planning committee

The John McCahan Medical Campus Education Day Planning Committee:

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The Planning Committee acknowledges with appreciation the support from the following offices that have made this meeting possible:

Division of Continuing Education, Boston University Goldman School of Dental Medicine
Graduate Medical Sciences, Boston University School of Medicine
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Office of the Dean, Boston University School of Public Health
BUMC IT, Educational Media
Alumni Medical Library

The Planning Committee acknowledges with appreciation the support and participation of the following educational vendors:

Bone Clones
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Osmosis- Elsevier
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Sonia

Schedule of Events

Theme: Advancing Intercultural & Inclusive Practices in the Classroom

Tuesday, May 24th Virtual Vendor Spotlight Sessions

1:00pm-1:30pm	**Osmosis from Elsevier**
2:00pm-2:30pm	**QSR International: Speed Up the Publishing Process with Citavi and NVivo**
3:30pm-4:00pm	**Kaltura: Enhancing Inclusivity in a Hybrid World**

Wednesday, May 25th

8:30am-8:55am	**Coffee, Networking & Vendor Visits**
9:00am-10:45am	**Welcome ,** Karen Antman, M.D. Provost, BU Medical Campus **Keynote Speaker** , Liza A. Talusen, PhD *Building Habits and Skills for More Inclusive Practices* **Q&A**
10:45am-10:50am	**Vendor Introductions**
11:00am-12:30pm	**Workshops** **Workshop A: Pointing Out Your Power: Practical tips for PowerPoint slide and presentation design** (Salik et al. GMS and BUSM) Classroom: L-201 **Workshop B: Opening the Pandora's Box of "Confidence" in Feedback** (Ananthakrishnan & Noronha, BUSM) Classroom: L-206 **Workshop C: Decision Making for Change** (Talusen, Keynote speaker) Classroom: L-211 **Workshop D: Effective Educational Videos with Embedded Problem -Solving and Targeted Feedback: Hands on**

	walkthrough of how to produce and deploy question -embedded videos (Pulukuri et al., BUSM, CAS and Wheelock) Classroom: L-1110 **Workshop E: From Passive to Active: Methods for engaging learners** (Garg et al., BUSM) Classroom: L-203
12:30pm-1:30pm	**Lunch , Networking & Vendor Visits**
1:30pm-2:15pm	**Panel Discussion**
2:15pm-2:45pm	**Educator Awards**
2:45pm-3:00pm	**Break , Networking & Vendor Visits**
3:00pm-3:30pm	**Abstract Winner Oral Presentations**
3:30pm-4:30pm	**Posters, Networking & Vendor Visits**

Workshops:

Workshop A

Pointing Out Your Power: Practical Tips for PowerPoint Slide and Presentation Design

Jonathan R Salik MD[1], Hayley Bartkus BS[1], Rodolfo Villarreal-Calderon, MD[2]; Katelyn Bird MD[3], Kyle Schoppel MD[4], Howard Lanney, MD, MSt[4], and Jeffrey Markuns, MD, EdM[4]

Graduate Medical Sciences[1], Department of [2]Medicine, [3]Neurology, [4]Pediatrics and [5]Family Medicine, Boston University School of Medicine

Have you ever left a medical lecture feeling frustrated by a confusing or dense PowerPoint presentation? Have you ever struggled to stay engaged, especially when attending lectures over Zoom?

PowerPoint presentations have become integral to medical education. Yet all too often, these presentations are plagued by poorly constructed slides that lack interactivity and dynamism. Learning to create an impactful and visually appealing PowerPoint presentation is thus a fundamental skill for all healthcare professionals and medical educators.

Founded on the principles of cognitive load theory, this workshop will provide participants with a selection of evidence-based strategies for delivering an engaging and effective PowerPoint presentation with a particular focus on how to tailor PowerPoint presentations to the virtual learning environment. In addition, participants will have the opportunity to hone these skills through an interactive group activity in which they will work together to improve slides from their own PowerPoint presentations using the techniques acquired in this session. In this manner, participants will leave the workshop equipped with a practical skill set that will be readily implementable in their current practice setting.

Learning Objectives:

a) Design an effective introduction to serve as a “hook” for the audience
b) Recognize the utility of the “progressive reveal” technique in leading the audience through a slide’s content
c) Design an effective scaffolding for a PowerPoint presentation through the use of learning objectives and outline slides
d) Apply basics of cognitive load theory to the visual appearance of a PowerPoint slide
e) Edit slides in order to reduce text burden and engage the audience
f) Diagnose the learner based on individual requirements to better accommodate his/her learning needs
g) Design evidence-based “brain breaks” to engage the audience
h) Incorporate audience response technology for in-person and virtual presentations to add interactivity to PowerPoint presentations

Workshop B

Opening the Pandora's box of "Confidence" in Feedback

Sonia Ananthakrishnan MD & Craig Noronha MD

[1]*Department of Medicine, Boston University School of Medicine*

Feedback is a valuable tool used to describe an individual's performance in a specific activity, with the intention of guiding future performance. A common characteristic that is frequently discussed in feedback exchanges is a supervisor's perception of a trainee's confidence. Concerns have been raised both at the local and national level regarding the potential negative effects of the word confidence in medical education. The word confidence can have multiple meanings to both the giver and receiver in feedback. Complexity around perceived meanings of the word "confidence" may be derived from cultural, gendered, and racial biases. In addition, other factors that can complicate the interpretation of confidence in feedback include academic hierarchy, perceptions around team and leadership skills, clinical setting, or an individual's personality traits.

At Boston University Medical Campus, we obtained pilot data from a survey administered to DOM Internal Medicine residents (n=31) that indicated 66.67% of residents have received feedback about their level of confidence demonstrated in the clinical setting. But over 70% of residents surveyed felt that the feedback they were receiving was actionable less than half the time. A theme emerging from the pilot data indicates frustration and ambiguity, as represented by a sample quote from a respondent on how they interpreted the feedback about confidence "Offensive – told to be more confident, but if I am too confident it is interpreted as arrogance." The purpose of this seminar is to improve the knowledge, skills and attitudes of faculty who are student, resident and fellow supervisors around use and impact of the word "confidence" in feedback exchanges. The presenters will lead a case-based interactive discussion for attendees to gain a better understanding of why the word "confidence" is used in feedback and how it may be interpreted by trainees. Strategies on how to move past use of the word "confidence" to provide more specific, behavioral based feedback will be reviewed.

The seminar will review recent literature that highlights potential biases in medical education and how the word "confidence" may be misused in this context. Discussions will also illustrate the potential impact that word "confidence" has on our trainees.

There has been a larger focus within medical education for learning tolerance for ambiguity within medical decision making and this seminar will highlight that the successful learner can balance medical uncertainty with communicating effectively and providing a high level of care.

Learning Objectives:

a) Appreciate the varied meanings and potential negative impact of the word "confidence" in the context of feedback of trainees
b) Apply behavior-based language in feedback that allows for actionable changes and avoids ambiguity engendered by the term "confidence"

Workshop C

Decision Making for Change (Keynote Speaker Workshop)

Liza A. Talusan PhD
Institute for Professional Education in Coaching

Using a name it, own it, interrupt it framework for decision making workshop. This session helps you identify an issue or problem you would like to address in your work, identify the root causes, and create action plans for interruption.

Workshop D

Effective Educational Videos with Embedded Problem-Solving and Targeted Feedback

Surya V Pulukuri[1], Daniela Torres[2] & Binyomin Abrams[2,3]
[1]Department of Neurology, Boston University School of Medicine; [2]Department of Chemistry, CAS; [3]Department of Teaching and Learning, Wheelock

This session aims to familiarize faculty interested in exploring the use of Screencastify, a free and beginner-friendly computer-based video-creation software. Participants will learn about various pedagogical principles used in the creation of multimedia resources, as well as a step-by-step walk-through for easily creating your own educational video. Various features such as recording audio and video, drawing or highlighting in real-time, and exporting video files will also be discussed. Next, the added benefits of embedding problem-solving and targeted feedback into video lessons will be discussed. Then, another walkthrough will be used to demonstrate how faculty members can embed problem-solving and targeted feedback into their videos. Participants will be able to practice video creation during the session as well.

With multimedia resources and recorded lectures becoming more and more popular amongst undergraduate medical students, creating video content and optimizing learning from audiovisual tools are becoming important skills for medical educators. Those who wish to learn more about designing educational videos and incorporating embedded problem-solving and targeted feedback into their video lessons may be interested in attending.

Learning Objectives:

a) Describe the components of an effective educational video (e.g., balanced cognitive load)
b) Record, edit, and export educational videos made in Screencastify
c) Embed problem-solving and targeted feedback into educational videos via Kaltura or Edpuzzle
d) Evaluate video analytics data on student video use/performance

Workshop E

From Passive to Active: Methods for Engaging Learners

Priya Garg, MD[1], Harprit Bedi MD, Elizabeth Ferrenz MD[3], Eric Marks MD[4] , Cheryl McSweeney MD[3], Caitlin Neri MD[1], Molly Cohen-Osher MD[3], BUSM

Departments of [1]Pediatrics, [2]Radiology, [3]Family Medicine, Medicine, BUSM

Over the last decade, health professions schools across the country have adopted active learning strategies. Studies have shown that although students believe they learn more through traditional lectures, active learning techniques produce better outcomes. Active learning is defined as “activities that students do to construct knowledge and understanding.” A range of methods from simple to complex can be used. There are multiple strategies faculty can use to easily adapt teaching sessions to one’s in which students are actively participating in their learning and faculty are facilitating that process. In this workshop, we hope faculty will be able to redesign their current teaching and use new active learning techniques to engage with learners across the continuum of health professions education.

Learning Objectives:

a) Define active learning,
b) Explain the data that supports active versus passive learning,
c) Describe active learning techniques that can be used in large group interactive workshops including roleplay, games, think pair share, jigsaw, breakout groups, clicker questions, pause for reflection and how to integrate them into teaching,
d) Practice using active learning techniques,
e) Apply active learning techniques to redesigning a topic you teach.

Abstracts:

Best Student Abstract Award
Best Graduate Medical Science Student Abstract Award
Feelings of Gratitude in Dissection- and Prosection-Based Cadaveric Anatomy Courses

Emily R Lai[1], Nadia Rukavina[1], Jonathan Wisco PhD[1], Ann Zumwalt PhD[1]
[1]SOM; Department of Anatomy and Neurobiology

Introduction: Participation in a cadaveric anatomy course often elicits strong emotions in students, which may have lasting impacts on students' education and future careers. Gratitude is a prevailing cultural value in many cadaveric anatomy courses, as evidenced by referring to cadaveric specimens as "donors" and the gratitude ceremonies conducted at the end of many courses. Gratitude is also prevalent within medical school as a whole. For example, due to the difficulty of the application process, many students feel extremely grateful to be able to attend medical school at all. Prosection-based curricula have been proposed as a time-efficient alternative to traditional dissection-based courses. However, little is known about the differences in emotional impact that may arise from this change in course design.

Purpose: We compared the emotional impacts of a dissection-based course vs. a course in which cadavers were prosected (pre-dissected). Our objective was to investigate potential differences between the emotions elicited, such as gratitude, based on pedagogical method.

Methods: Students who took a dissection-based anatomy course in 2019 and those who took a prosection-based course in 2020 due to the COVID-19 pandemic were given a validated survey instrument to compare their emotional experiences. The survey included the free-response question, "Please describe your feelings in regards to the time spent with the donor or donors using three adjectives, and explain your adjective choices." The responses were analyzed using a grounded theory thematic analysis approach; readers were blind to which cohort wrote which data set. The researchers identified primary codes based on word frequency and pertinence to students' emotional experiences, and then each instance of each code was examined within the context of the response to generate secondary codes until thematic saturation was reached.

Results: The codes appreciate, grateful, and humbled appeared in both data sets. Appreciate had the widest use case, as appreciate was also used to acknowledge the complexity or beauty of human anatomy. Humbled had the narrowest use case: this code was primarily directed to the donors or their choice to donate, and also conveyed a greater emotional intensity than the other two codes. Grateful was used most commonly towards the donors and towards the learning experience. A majority of the students in the dissection-based course who used grateful expressed gratitude toward the donor for improving their learning experience; this connection between the donors and enhanced learning was not observed as frequently in the prosection group. The prosection group was also grateful for a wider variety of things.

Conclusions: Both groups in this study expressed gratitude as a major component of their emotional experience in the anatomy laboratory. The results suggest that, for the students in the dissection group, there was a stronger connection between the donors' presence or choice to donate and their learning. The prosection group expressed gratitude to the donors and to the learning experience, but more often expressed these feelings as separate ideas. These findings elucidate the types of gratitude experienced by anatomy students in different anatomy laboratory experiences.

Best Faculty/Staff Abstract Award

Embedded problem-solving and target feedback triggers active learning from educational videos

Suryva V Pulukuri BA/BS[1], Daniela Torres[2], Binvomin Abrams PhD[2,3]

[1]BU; Department of Neurology; [2]CAS; Department of Chemistry; [3]Wheelock; Department of Teaching and Learning

Introduction: Educational videos have emerged as powerful instructional tools in medical education, compared to more traditional text-based resources. Not only can video learning be more efficient and engaging, but it can also result in increased retention of information, especially for disciplines that require high visuospatial ability (e.g., anatomy). Research in educational psychology has demonstrated that video-learning can be even more effective if problem-solving and feedback are embedded at several locations during a video. These question-embedded videos (QEVs) take advantage of the testing effect to help students self-regulate their learning and retain information longer. While previous studies have compared student gains from textbooks vs. traditional videos, the comparative efficacy of QEVs remains unexplored.

Purpose: This study measures learning gains from question-embedded videos, when compared to traditional videos and textbook readings.

Methods: Learning gains from various content-equivalent resources were measured via assessments for two separate samples of undergraduate students in organic chemistry or physics. In Study A, students learned about Lewis and bond-line structures from textbook readings, traditional videos, or question-embedded videos. A negative control group was also included, where students completed the assessment without learning from any resource. In Study B, students learned about circuits and power from traditional videos or question-embedded videos. Assessment results were compared for both studies to determine the relative efficacy of these learning resources.

Results: Students learning from textbook readings or traditional videos performed no better than students who completed the assessment without instruction from any resource ($p > 0.05$). Additionally, no difference was found between students learning from textbook readings and those learning from traditional videos ($p > 0.05$); meanwhile, students learning from question-embedded videos substantially outperformed those learning from traditional videos ($p < 0.05$, $d_{chemistry} = 1.049$, $d_{physics} = 0.531$) and those learning from textbook readings ($p < 0.001$, $d_{chemistry} = 1.243$).

Conclusions: Since many undergraduate medical students are increasingly relying on recorded lecture videos and other audiovisual learning tools, these findings indicate that question-embedded videos may serve as particularly valuable instructional tools.

Best Resident/Fellow Abstract Award

Difficult Conversations: Evaluating the impact of a role play curriculum for students supporting patients through abortion care

Armide de Saulles Storey MD[1], Elisabeth Woodhams MD, MSc[1], Rachel Cannon MD, MSc[1]
[1]BMC; OBGYN

Introduction: Emerging data suggest patients value the presence of a continuous support person when seeking abortion care. To provide this resource for our patient population, we established The Student Partnership for Reproductive Choice (SPaRC) service learning group to engage pre-clinical medical students as abortion doulas. While students self-selected to provide this care, many expressed fear and lack or readiness to engage in conversations surrounding abortion with their patients.

Purpose: To address student concerns, we sought to develop a curriculum to for student learners to feel more comfortable with and prepared for difficult conversations surrounding abortion. Through a combination of didactics, deliberate practice of conversation through role-play, and small and large group debrief, the goal was for medical students to gain the confidence, skills, and language necessary to support patients seeking abortion prior to entering their roles as student abortion doulas.

Methods: Pre-clinical medical students in an urban academic hospital participated in a group-based conversation role play. After a brief introduction and orientation to the exercise, students were divided into groups of five to participate in four role play scenarios followed by small group and large group debriefs. One senior medical student played the role of a patient seeking an abortion, and the five pre-clinical students collectively played the role of one abortion doula. Participants completed surveys before and after their participation that evaluated self-rated comfort with and preparedness for difficult conversations with patients seeking abortions.

Results: Twenty-one student learners participated in the role-play training. Learners were primarily cis women (90%) and 1st year medical students (95%). Student self-assessments of preparedness to support a patient having an abortion and to handle difficult conversations with a patient who is having an abortion were significantly improved after the role-plays ($p < 0.0001$). Learners reported that they enjoyed the role plays and found them helpful.

Conclusions: This curriculum was well received, and initial data support its effectiveness in enhancing students' self-perceived preparedness for real-world patient encounters. Future directions for this work include expanding the described activity to practice difficult conversations students experience in other domains of family planning including miscarriage and reproductive coercion.
Investigation into students comfort and experience of preparedness after clinical work would also provide further evidence regarding the potential impact of this curriculum.

Best School of Medicine Student Abstract Award

Understanding Race and Genetic Ancestry to Promote Equity in Diagnostic Decision-making: Two Small Group Modules for the Third-Year Pediatrics Clerkship

Emma L Tunstall MBE[1], *Anna Cheng BS[1], *Aditi Mohaptra BS[1], Rachel Thompson MD[1], Lindsay Demers PhD[2], Shoumita Dasgupta PhD[2]

[1]SOM; Department of Pediatrics; [2]SOM; Department of Medicine

**co-second authors*

Purpose: The primary learning objectives include: 1) generate an age-appropriate differential diagnosis and management plan for pediatric patients with a first-time seizure, acute refusal to bear weight, or pruritic rash; 2) compare the definitions of race, ethnicity and genetic ancestry and describe how each impact health; 3) identify rashes and findings of neurocutaneous disorders on different skin tones.

Methods: Two modules (pediatric neurology and rheumatology) were distributed using Qualtrics. Students were randomized to receive versions of the cases that varied by patient skin tone or stated ancestral background. Answers to free response questions embedded in the cases as well as post-case satisfaction surveys were analyzed to assess educational efficacy and student satisfaction.

Results: Students' definitions of race and ethnicity were compared to the BUSM/BMC glossary to assess correctness. Twenty-seven percent of students correctly defined race, while 54.1% were partially correct and the remaining 18.9% did not provide a definition or were incorrect. For ethnicity, 54.1% were correct, 18.9% were partially correct, and 27.0% did not provide a definition or were incorrect. Understanding of genetic ancestry was assessed by how many elements of the correct definition students provided: 59.4% mentioned that it was related to genetics or biology, 25.7% mentioned ancestral geographic background, 4.1% noted that genetic variation is larger within groups than between them, and 2.7% said that allele frequency may vary between ancestral groups. Responses to satisfaction surveys for both cases were positive, with a median of 4 on a 5-point Likert scale for most questions, including achievement of learning objectives and utility in a clinical setting.

Conclusions: A large proportion of students did not accurately define race, ethnicity and/or genetic ancestry, underscoring the need to include these topics in clinical curricula. Responses to post-case satisfaction surveys indicated that students felt the cases enhanced their understanding of race and genetic ancestry, ability to identify skin lesions on different skin tones, and understanding of rheumatologic and neurologic disorders in children. Overall, the results suggest that our small group cases were a meaningful educational intervention that effectively covered basic pediatric content while integrating concepts critical to promoting inclusive, genomically literate clinical reasoning.

Best Goldman School of Dental Medicine Student Abstract Award

Factors affecting operator accuracy in Dental Implant Placement via Dynamic Navigation System- pilot study

Ana-Gabriela Benghiac DMDc, DMD, PhD, MScD, MA[1], Pinelopi Pani DDS, CAGS, MS[1], Neil Fleisher DMD, CAGS[1]

[1]GSDM; Department of General Dentistry

Introduction: Contemporary dental implantology has been continually evolving, and advances in the field particularly in recent years have been changing the way we plan and place dental implants. There has been a shift from free hand placement and static guided surgery towards dynamic navigation and haptic guided procedures. Dynamic navigation is an augmented "free hand approach" that has been shown to be 10 times more accurate than free hand implant placement and allows scanning, planning and implant on the same day. It allows real-time changes of the treatment plan during surgery and guidance regarding implant size, shape, length and 3D position while being able to be used in particular clinical situations in which conventional techniques (free hand and static guided) may not be used such as distal implants, reduced, tight spaces, patients with limited mouth opening. Dynamic navigation can avoid anatomic structures during the surgery by providing the operator with real-time auditory and visual guidance. Previous studies have shown that mastery of this techniques was achieved after 20 cases.

Purpose: Through this study we aim to evaluate factors that influences dental implant placement and assess the learning curve required for the dental students while they use the dynamic navigation system for implant placement. The purpose of the study is to evaluate if there is a steep or a shallow learning curve while pacing accurate dental implant using dynamic navigation system. We also wish to evaluate if gender, age, implant site, hand dominance, prior clinician training and clinical expertise has any influence on the implant placement accuracy while using dynamic navigation system. We hypothesize that dental participants who are novice and those who have prior implant placement experience will have similar accuracy in implant placement with using the navigation system and no learning curve is required.

Methods: The pilot study includes 30 dental students (DMD3, DMD4 and Advanced Standing, 2nd year) at Boston University Henry M. Goldman School of Medicine (BUGSDM)who were voluntarily recruited. Participants attended a 3-hour session which included a presentation of the study and methods of implant placement, a demonstration of the XGUIDE (XNAV) dynamic navigation system calibration and implant placement and were randomly assigned and placed 2 Nobel Replace Select 4.3x13mm implants in the anterior (#23, #24) or posterior (#30, #31) mandible. They also completed a post study survey. Prior to implant placement, CBCT images (0.3 voxel resolution) were taken of bony typodont samples and virtual implant placement was performed using the dynamic navigation system's software. Post implant CBCT was taken after implant placement by students to assess accuracy. The following deviations from the virtual plan were calculated: Angular deviation (degrees): Largest angle in 3D space between the center axes of the planned and placed implants. Global deviation (mm): Overall deviation of the planned and placed implant (takes angle, depth, and position into consideration). Depth deviation (mm): Difference in depth (z-axis) of the implant between the planned and placed implants. Lateral deviation (mm): Difference in mesiodistal (y-axis) and buccolingual (x- axis) placement of the implant between the planned and placed implants. After placing the implant in the typhodont model, the participants filled out a REDCap electronic questionnaire collecting data on perception towards use of dynamic navigation system.

Results: Results show that students performed similarly in terms of accuracy of implant placement using the XGUIDE (XNAV) dynamic navigation system, regardless of their previous clinical experience in general (DMD3 compared to DMD4 and AS2 students), or experience with implant placement in live patients. However, those with previous implant or surgical experience found it more challenging to learn to trust a computer and refrain from looking into the surgical field. The majority of students considered precision as the main feature that they appreciate about this method. All students who spent more time on the clinic floor, placed the two implants in typodont faster versus those with less clinical experience. There were no statistically significant differences in terms of implant placement among students who are left-handed compared to those who are right-handed or ambidextrous, but students who placed implants

in the posterior mandible (#30, #31) managed to insert the implants to appropriate depth compared to those placed in the anterior mandible (#23, #24). All students would recommend the system to other clinicians and would use it in the future.

Conclusions: Similar accuracy in implant placement using the navigation system was achieved among the study participants.

Best School of Public Health Student Abstract Award

Caring for People Who Use Drugs: Engaging EMS Providers in Massachusetts

Stephen P Murray BBA, NRP[1], Alex Walley MD, MSc[1]
[1]BMC; SPH

Introduction: People who are marginalized experience substandard care by first responders and health care providers. The authors have developed an education program with an intended audience of EMS workers to improve patient outcomes and quality of care for People Who Use Drugs (PWUD). The lead Author is a recently retired Lieutenant of a Massachusetts regional ambulance service who has significant lived experience as a person who used drugs. Throughout his extensive career and training, he never received training on working with PWUD, and witnessed substandard care by his co-workers. This training was developed as an MPH Practicum Project at Boston University School of Public Health with input and assistance from expert partners at BMC, BUSM, MDPH BSAS and the SHIELD Training Initiative at Northeastern.

Purpose:
After completing this training, the EMS provider will:

1. Identify current drug supply challenges and the role that harm reduction plays in the health of PWUD
2. Identify ways in which EMS providers can improve treatment outcomes for PWUD
3. Explain the role of language, hand-off reports, and documentation in treatment efficacy
4. Explain the role of EMS in combating fentanyl myths

Methods: An online training will be delivered asynchronously using the BUSPH Population Health Exchange training system. Successful completion of the training module, survey, and quiz will earn one hour of Massachusetts OEMS-approved continuing education credits.

The first section introduces the EMS provider to the role of Harm Reduction in mitigating the challenges PWUD face while navigating the banned drug supply. In the second section, EMS providers are taught best practices for overdose reversal, caring for an overdose survivor, and managing acute pain for PWUD. They will be taught to utilize a quantitative tool for scoring aggressive patient behavior to ensure that physical and chemical restraints are used appropriately. In the third section, the EMS provider will learn about the potential impacts to patient outcomes by the quality of their hand off report to receiving hospital providers. They will also learn how accurate patient care report documentation impacts public health programs.

Results: This program is currently “in-progress” and there are no available findings or results. A Post/Pre survey design will be utilized to measure changes in provider beliefs, knowledge and actions. With an initial established proof of concept, this training could become part of the required curriculum within Massachusetts for state-approved centers providing initial training for EMT, AEMT and Paramedic programs. It also could become the foundation for additional special population trainings for EMS for other marginalized patients such as people experiencing homelessness, sex workers, LGBTQIA+, and others commonly excluded from high quality healthcare.

Conclusions: EMS providers are not only on the frontlines of the overdose crisis, they also encounter PWUD in a myriad of other ways. Specialized training could be a way to improve these interactions for both the patient and the EMS provider.

Evaluation of the Efficacy of a Preclinical Medical Spanish Elective

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Introduction: Physician-patient language discordance correlates with greater risk of complications,1 longer hospitalizations,2 and lower patient satisfaction.3 Given the exacerbation of health disparities for Spanish-speaking patients in the U.S. during the COVID-19 pandemic,4,5 it is crucial that future providers better support the needs of Spanish-speaking patients. In particular, language education programs that increase physician-patient language concordance could improve health outcomes.

Purpose: (1) To measure the effectiveness of the ten-week BUSM Medical Spanish elective in improving students' self-identified ability to communicate in Spanish about medical topics.
(2) To measure student retention in the elective and identify areas for improvement.

Methods: Students participated in online or in-person weekly sessions, which consisted of a 20-minute introduction facilitated by a faculty member followed by a 40-minute small group session facilitated by a peer educator. During the first and last sessions, students completed an anonymized pre-survey and post-survey including self-identification of learner level (Beginner, Intermediate, or Advanced) and a short assessment of their knowledge of medical Spanish. This assessment was designed by the second-year medical student Medical Spanish leadership team. First, students were asked to complete 5-point Likert scale questions rating their comfort speaking about and listening to conversation about medical topics in Spanish. Students were then asked to listen to a one-minute patient narrative in Spanish and answer eight comprehension questions, four in English and four in Spanish. Students also completed a post-course reflection regarding course improvement.

Results: 64 students completed the pre-survey, while 16 completed the post-survey. The distribution of learner levels in the pre-survey was 48.4% beginner, 34.4% intermediate, and 17.2% advanced; the post-survey distribution was 37.5% beginner, 25% intermediate, and 37.5% advanced. While 11% of pre-survey respondents (7/64) reported that they "feel comfortable speaking in Spanish about medical topics," 68.75% of post-survey respondents (11/16) responded affirmatively to this statement. In the pre-survey, 26.4% of beginner and intermediate learners (14/53) agreed that they felt comfortable "listening to someone speak about medical topics in Spanish;" in contrast, 80% of beginner and intermediate learners (8/10) responded affirmatively in the post-survey. All beginner and intermediate students in the post-survey (10/16) responded negatively or neutrally regarding their confidence in asking patients about their mental health, while all advanced students in the post-survey (6/16) responded affirmatively. In contrast, when rating their confidence in soliciting a chief complaint, 87.5% (14/16) of all students responded affirmatively, with two beginner students responding neutrally. In the post-course reflection, two beginner students felt that additional example dialogues would be helpful.

Conclusions: In this first evaluation of the BUSM Medical Spanish preclinical elective, students who completed the course reported increased confidence in their ability to communicate in Spanish. We have identified a significant gap in the retention of beginner and intermediate learners, with only 20% of those who completed the pre-survey completing the post-survey. As identified by students, one potential strategy to ameliorate this is to create specific short dialogues that better suit beginner and intermediate learners' needs. Additionally, soliciting more detailed feedback from future cohorts could generate further strategies to increase retention.

Getting From Advocacy to Action: A Negotiation Curriculum for Medical Students

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Introduction: In recent years, conversations about healthcare have broadened from a focus on insurance and improved healthcare access to include socioeconomic factors known to substantially impact health (e.g., housing, transportation, gun violence, etc). At the same time, the expectation of physicians to advocate for these issues on behalf of their patients and society at large has also grown. However, while the majority of medical students and physicians acknowledge that advocacy is an inherent part of their duties, only a small percentage regularly engage in advocacy efforts. Members of both groups commonly cite insufficient training as a barrier to engagement, which we believe is most readily modifiable by a curriculum specifically focused on addressing skills in negotiation.

Purpose: Negotiation as a facilitative communication tool has been recognized as a tenet of healthcare and a potential driver for impactful advocacy, but few medical students or physicians receive training in this specific domain to our knowledge. We aim to develop and evaluate a longitudinal negotiation curriculum at BUSM to enhance problem solving, communication, and leadership abilities of medical students, and thereby increase engagement in and impact of their advocacy efforts at the patient, institution and community levels.

Methods: Meetings with faculty and students across BU schools, including Medicine, Business, Public Health, and Law, were held to better understand current negotiation curriculum available. Through these discussions, we identified the most fundamental and salient aspects of negotiation as they apply to medicine and larger advocacy efforts.

Results: We anticipate that this curriculum will utilize a mixed format of lectures, case studies, book reading and discussion, and interactive team-based learning workshops throughout all four years of medical school. The curriculum during the pre-clinical portion of medical school will primarily focus on learning and practicing general negotiation skills in a variety of contexts. For example, students could be given a common, real-life scenario and asked to identify which negotiation skill(s) would be most useful in that encounter, how they would prepare their position, a role–play of the negotiation, and feedback from an expert facilitator. During the clinical years, the curriculum will focus primarily on application of negotiation fundamentals to clerkship-specific situations. For example, during each clerkship's orientation, a lecture could be given to students about common specialty-specific scenarios where negotiation skills are commonly employed (e.g., in ICU, end-of-life decision making with family members, etc).

Conclusions: The importance of negotiation skills has long been recognized in the worlds of business, law, public health, and other professional fields, and is routinely taught to students of those disciplines. We strongly believe that these skills are equally important in medicine and align with LCME and ACGME competencies. A negotiation curriculum would allow future physicians to approach advocacy and interprofessional settings with refined skills in communication, conflict resolution, and collaboration.

Improving Assessment and Learning Environment for Graduate Medical Trainees to Advance Language-Related Health Equity

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Introduction: Linguistically- and culturally-appropriate care is vital to providing safe and equitable healthcare for all individuals. Medical trainees are the frontline clinicians in many healthcare systems, and the training they receive will shape the future of medical care. In this abstract, we provide examples of gaps in trainee evaluation and training. We also suggest initial actions for medical education programs in assessment, curriculum development, and learning-environment improvements for providing linguistically and culturally appropriate care.

Purpose: We aim to describe the cultural and linguistic gaps in the current Accreditation Council for Graduate Medical Education (ACGME) framework for assessing graduate medical trainees. Through our proposed modified framework to address these gaps, we aim to provide initial steps to assess and educate graduate medical trainees appropriately in culturally and linguistically appropriate care.

Methods: A group of linguistic, medical, and educational experts drafted a new subcompetency with milestones and additional wording for the ACGME CLER Pathways to highlight the importance of equitable care for patients who prefer to speak languages other than English.

Results: Language discordance is common between medical trainees and the patient populations they serve. Trainees commonly underutilize language services, risking patient safety and potentially forming career-long habits that normalize linguistically inappropriate care. Currently, the ACGME's framework of competencies, subcompetencies, and milestones for assessing graduate medical trainees includes general communication principles, but lacks details related to providing equitable care to patients who speak languages other than English. Similarly, the ACGME Clinical Learning Environment Review (CLER) Pathways to Excellence includes cultural awareness in its expectations of trainee learning environments, but lacks guidance regarding faculty and trainee awareness and skills related to providing language support to patients and their families in the clinical environment. In light of these gaps in trainee education, we drafted updates to existing frameworks and additional wording for the CLER Pathways to highlight the importance of equitable care for patients who speak languages other than English.

Conclusions: These products will provide programs with guidance to take initial steps for assessment, curriculum development, and learning environment improvements for providing more linguistically and culturally appropriate care. Facilitating improved education and experience for trainees with regard to language equity has the potential to make broad and lasting impacts on care quality, patient safety, and health equity.

Inter-Professional Education in Geriatric Medicine

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Introduction: The rapidly growing older adult population have more teeth and multiple medical complexities. The need to collaborate and communicate with a wide spectrum of health care providers.1 This has led to an impetus to restructure professional health care programs to incorporate Inter-professional education. Geriatric medicine fellows at Boston University School of Medicine were presented with two seminars on the diagnosis and management of oral conditions (Xerostomia, Denture Stomatitis) as part of the journal club by the geriatric dental residents. The seminars were attended by faculty as well as medical students and residents. The two presentations were well received, constructive feedback was documented and will be incorporated into the IPE model.

Purpose: Design and implement an Inter-professional Dental Education program for Geriatric Medicine Fellows.

Results: Inter-professional education (IPE) is an effective team-based learning model to exchange knowledge information across disciplines resulting in improved health care treatment and outcomes. Strategically designed IPE programs will maximize impact and result in increasing knowledge, dispelling perceptions, increasing confidence and increasing clinical exposure of residents/fellows.4 The collaborative team-based learning model aids in developing solutions for complex health paradigms. This approach will also reduce disparities and increase to access to health care for the frail and impoverished.5,6 Older adults with multiple co-morbidities will significantly benefit from this cross-disciplinary learning approach by prioritizing and planning patient- specific treatment plans.3

Conclusions: Geriatrics is an ideal platform to integrate an IPE model for professional schools across the country. Collaborative IPE models need to be integrated into the curriculum to help promote knowledge, understanding and perceived level of awareness resulting in improved patient quality of life and outcomes. Careful integration of a strategically designed curriculum will result in better collaboration, and allow us to develop an effective health care delivery systems to meet demands of ever changing demographics.2

Virtual Versus In-Person Interviews: How has the Landscape Changed Due to COVID-19

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Introduction: Admissions processes to professional school have been forced to adapt to changing times due to limitations posed by public health guidelines from the COVID-19 pandemic. Committees have used a variety of approaches to meet with students, showcase their schools and make admissions selections using virtual accommodations. These include virtual admissions days, virtual presentation days, and other online communication tools to conduct interviews rather than traditional in-person assessment.

Purpose: BU's Henry M. Goldman School of Dental Medicine (GSDM) in collaboration with Boston University School of Medicine's Graduate Medical Sciences implemented a program in 2005 to increase the diversity of pre-dental students matriculating to GSDM. The Oral Health Sciences (OHS) master's program has been extremely successful with 92.6% of their graduates matriculating to dental school (n=432). Since the program's inception, the class size has grown from n=8 to n=43 (2021) and has built a national reputation for a rigorous program. This study compares differences in the number of interviews and acceptances OHS students have received in the past 5 years when dental school interviews were conducted in person verses remote.

Methods: Dental schools that students were invited to interview at, and correspondingly accepted to, were tabulated for OHS students matriculating in years 2017-2021. Interviews were conducted in person (standard) from 2017-2019 and remote in 2020- 2021. Matriculating year, whether a student took one or two years to gain admission to dental school as well as geographic location was assessed in correlation to interview and acceptance rates. Trends between in-person and remote interview outcomes were evaluated.

Results: A total of 231 students applied to dental school during the 5-year window from OHS and other GMS programs. OHS students applying during their first year (OHS 1) accounted for 84%, OHS students in year 2 (OHS 2) 11.7% and GMS students (GMS) 6.1%. The number of interviews standardized per student that was offered remote increased over those offered in-person (2.39 vs 1.88) while the number of acceptances did not significantly change (1.41 vs 1.38 with 91.1% success). Additionally, the interviews offered were more geographically diverse with increases primarily coming from the Northeast, West and Midwest regions.

Conclusions: The adaptation to remote interviewing because of the COVID-19 pandemic has increased the opportunities for students to interview at dental schools across the country, suggesting that remote interview days allow dental schools the flexibility to interview more students. However, the total number of acceptances has not changed indicating that although schools have expanded their interview process, the total number of acceptances remains constant.

An Innovative Vascular Medicine Fellowship Training Model Featuring On-Site Clinical Education and Inter-Institutional Cohort Learning

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Introduction: Vascular medicine is a small but expanding field, encompassing diverse pathologies. Vascular medicine fellowship programs in the US are currently non-ACGME accredited and exhibit regional and institutional variability. The size and complexity of the field gives rise to needs for a standardized training curriculum and professional networking. One medical organization, the Anticoagulation Forum (AC Forum) has innovated vascular medicine training through the creation of a 1- year multi-institutional consortium of vascular medicine fellowship programs, called the Anticoagulation Forum|Ansell Fellowship Program. This study will assess the effectiveness of this new vascular medicine training model.

Purpose:

1. Describe the structure of the Anticoagulation Forum|Ansell Fellowship Program and fellow profiles.
2. Analyze the results of fellow mid-year and end-of-year evaluation surveys.
3. Discuss future directions for vascular medicine fellowship training programs.

Methods: The AC Forum awarded select US institutions an educational grant to fund the 1-year Anticoagulation Forum|Ansell Fellowship Program between 2020 and 2023. The 2020-2021 and 2021-2022 cohorts included 6 fellows from 6 institutions. The 2022-2023 cohort will include 12 fellows from 12 institutions. The educational model for the program includes on-site clinical learning, inter-institutional cohort learning, professional development/networking, and an original research project. On-site clinical learning conformed to the tenets outlined in an intersocietal Advanced Training Statement for vascular medicine fellowship programs. Inter-institutional cohort learning occurred through biweekly virtual seminars featuring faculty lecturers and interactive case-based discussions. Seminar topics covered core competencies, including networking and clinical/research career development. In an effort to reinforce a sense of community, many seminars for the 2021-2022 cohort included session “pre-work” for rotating fellow pairs. Fellow feedback was collected through mid-year and end-of-year surveys.

Results: Overall, the Anticoagulation Forum|Ansell Fellowship Program achieved its target goals. Fellows from the 2020-2021 and 2021-2022 classes reported that the program provided opportunities for professional networking, improved vascular medicine knowledge, and helped to define career goals. The 2020-2021 cohort were largely neutral about the ability to connect with co-fellows, while the 2021-2022 cohort reported feeling more connected. The vast majority of fellows reported all seminar topics were of interest. Fellows in both cohorts unanimously reported finding the faculty lectures and case discussions most beneficial, with additional benefit derived from career development topics (2020-2021) and reading materials (2021-2022). Fellow comments from both cohorts were positive overall and offered constructive feedback. End-of-year feedback from the 2020- 2021 cohort was incorporated into the seminar design for the 2021-2022.

Conclusions: The Anticoagulation Forum|Ansell Fellowship Program was successful in providing opportunities for professional networking, improving vascular medicine knowledge, and helping to define career goals through a combination of on- site training and virtual seminars. It has also cultivated inter-institutional connections despite the ongoing COVID-19 pandemic. Changes to the seminar sessions based upon feedback, including the addition of “pre-work” and return of in-person national meetings, may explain why the 2021-2022 cohort reported feeling more connected to co-fellows than the 2020-2021 cohort. End- of-year feedback from the 2021-2022 cohort is pending. The scalability of this educational model will require study of the larger 2022-2023 cohort.

The scholarly impact of student authorship in ophthalmology

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Introduction: The H-index (Hi), an author level metric of scholarly impact, is predictive of future scientific achievement.

Purpose: We sought to analyze the scholarly impact of student authorship on the Hi of corresponding authors within a major academic journal in the specialty of Ophthalmology.

Methods: We compared the Hi of all unique corresponding authors (CA) for manuscripts published in Ophthalmology (Journal of the American Academy of Ophthalmology). Data abstraction was completed twice: in October 2018 and March 2021. We further grouped published articles into those with student authors (StA) and those without (nStA). The median and mean Hi, standard deviation, and 95% Confidence Interval (CI) were compared. We plan to complete a linear regression analysis with change in Hi from October 2018 to March 2021 as the outcome, whether the article was published with StA as the predictor, adjusting for covariates including number of baseline articles published by the corresponding author in October 2018 and the baseline Hi of the CA in October 2018.

Results: From 2008 to 2016, the number of StA increased from 180 to 203. In October 2018, mean Hi was higher for CAs that published with StA versus without StA (2008: 43.7±29.5 vs. 32.9±22.6, p=0.001; 2012: 33.5±23.7 vs. 26.8±20.3, p= 0.02; 2016:
29.7±19.9 vs. 26.6± 20.6, p=0.21). Median Hi for CAs was greater with StA than without StA (2008: 41 vs 28, 2012: 30 vs 23, 2016: 27 vs 22.5). In March 2021, mean Hi was higher for CAs with StA versus without StA (2008: 50.4±35.0 vs. 37.1±23.8, p=0.0004; 2012: 40.0±25.7 vs. 31.2±22.7, p=0.005; 2016: 35.3±21.2 vs. 31.2±23.2, p=0.125). Median Hi for CAs with StA was
greater than without StA, (2008: 45.5 vs 32; 2012: 39 vs 27; 2016: 34 vs 27). Over time, the mean Hi from data recorded in October 2018 to March 2021 increased over time in both StA and nStA groups.

Conclusions: Corresponding authors publishing with students in the field of ophthalmology have a higher scholarly impact than those publishing without students. The future linear regression analysis will determine whether this relationship is sustained after removing confounding factors. It may be possible that students are seeking research mentors with a higher Hi or ongoing research which may have overestimated Hi in the StA group, however, there is no literature to support this as a confounding variable. Development of programs to integrate students into ophthalmology research early on may encourage their pursuit of a career in ophthalmology, while advancing the careers of their mentors.

Implementation of a Medical Haitian Creole Curriculum for Boston University School of Medicine: Progress Report and Needs Assessment

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Introduction: Boston Medical Center (BMC) serves a linguistically diverse patient population which includes a significant number of English-limited Haitian immigrants. While basic proficiency in Haitian Creole has the potential to strengthen therapeutic alliances, curricula for introducing the foundations of this language to medical professionals have historically been lacking. Previously, we introduced an 8-week medical Haitian Creole course for Boston University (BU) medical students designed to impart essential skills in speaking, reading, and writing. While the onset of the coronavirus pandemic curtailed this opportunity in 2020, we herein show interval progress in strengthening language education materials and community partnerships with Haitian advocacy groups, culminating in a virtual course held in winter of 2022.

Purpose: To design and implement a course in medical Haitian Creole for BU medical students supported by community partners in the Haitian community.

Methods: A student organization (the Haitian Health Alliance/HHA) was founded BU's Office of Student Affairs and sponsored a 10-week curriculum of 1.5 hour sessions introducing essentials of Haitian Creole pronunciation, grammar, and medical vocabulary. Brief at-home assessments were provided for students to complete on a voluntary basis to consolidate material covered in class. Sessions were taught by an experienced professor of Haitian Creole, who volunteered on behalf of a newly-formed partnership between HHA and UDH Health Coach, Inc., a 501 (c) (3) Haitian advocacy program based in Somerville, MA. A baseline survey was also administered to students in to quantify pre-course comfort in working with Haitian patients across three separate domains: (1) linguistic knowledge, (2) cultural knowledge, and (3) bedside skills.

Results: 16 students representing all class years of BU School of Medicine enrolled at the start of the course in January 2022. Class sessions were generally well-attended, with students participating in a virtual "round table" format that included practice with basics of Haitian creole phraseology, verb conjugation, and medical interviewing. Our baseline knowledge survey was graded on a 5-point Likert scale (1 = Not Comfortable at All, 5 = Very Comfortable). Across survey questions, we found average scores of 1.15 in linguistic knowledge, 1.59 in cultural knowledge, and 1.70 in professional skills.

Conclusions: We have the demonstrated the feasibility of a multiweek course in medical Haitian Creole for BU medical students, supported by a formal student organization and a newly-consolidated community partner. Yearly repetition of this course has the potential to address significant discomfort among medical trainees in understanding Haitian language and culture and to augment professional confidence in treating English-limited Haitian patients.

Pilot: PCCAI (Primary Care Clinic Acting Internship)

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Introduction: A Boston University School of Medicine (BUSM) fourth year medical student enrolled into this 4 week-long elective led by GIM faculty at Boston Medical Center (BMC). One student was partnered with 2 experienced primary care (PC) preceptors and was scheduled for 19 half-days of clinic (approximately 5 clinic sessions per week) during the preceptors' regularly scheduled sessions in the hospital-based clinic. Each week included one day of didactics on primary care topics.

Purpose: Student responsibilities included pre-charting, conducting the patient interview, presenting a plan to the preceptor, and calling patients to discuss results and arrange follow-up. Weekly scholarly presentations were given by the student to her peers and one faculty evaluator (a GIM Medical Education Fellow) on topics drawn from clinic patients. Also, the student was assigned 5 key online primary care modules. The low preceptor to student ratio promoted personalized instruction and feedback. Preceptors helped the student identify the day before clinic which patients to see (approximately 3 per half-session) and the student saw those patients while the preceptor saw other scheduled patients. Student and preceptors communicated (SMS, phone calls) to discuss results and plans between clinic sessions. The GIM Medical Education Fellow conducted weekly direct observation of the student to provide real-time feedback. Career mentorship was also a key aim of this rotation. The student selected for the pilot was strongly considering a primary care career. One-on-one career mentoring sessions were scheduled with the BMC Primary Care Training Program (PCTP) Director and a recent graduate of the PCTP.

Methods/ Results: Course evaluations were submitted by the student regarding the rotation and preceptors. Qualitative information will be gathered from the student via a semi-structured interview. IRB approval is ongoing for these. Based on initial review of feedback sessions with the faculty preceptors and GIM Medical Education Fellow, the rotation was very well received by the student. Preceptors also indicated satisfaction with the experience. Future directions for evaluation include pre-/post- surveys on student attitudes towards a PC career and long-term tracking of career choices of those who complete the rotation.

Conclusions: Creative efforts are underway in academic settings to address trainees' low interest in PC IM careers. PCCAI is a collaboration of UME and GME educators to increase visibility and exposure to IM PC through a robust immersive experience with close mentorship. It aims to increase skills and readiness for internship as well as to stir potential lifelong interest in primary care. To the authors' knowledge, this would be the first published model of a PC AI. Although other 4th year primary care rotations exist, PCCAI is unique in its greater patient continuity and ownership. Sharing this PCCAI model with educator colleagues will garner feedback to improve the rotation and encourage others to create their own ambulatory AI curricula.

A qualitative study: Understanding the experiences of trainees from underrepresented groups in addiction medicine training programs

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Introduction: Diverse groups are more productive and innovative and more likely to engage in higher levels of critical analysis and develop new approaches to teaching, research, and mentoring. The Inclusion, Diversity, and Equity in Addiction medicine, Addiction research, and Addiction health professions (IDEAAA) initiative, supported by the Boston Medical Center (BMC) Clinical Addiction Research and Education (CARE) Unit, seeks to reduce disparities within the field of addiction by enhancing addiction education, providing mentorship, and catalyzing advancement of people who are historically underrepresented in biomedical research.

Purpose: IDEAAA aims to 1) quantify racial/ethnic representation in addiction medicine; 2) describe experiences in BMC's addiction medicine (AM) training programs of individuals from underrepresented groups (URGs) over the last 5 years.

Methods: We compiled data on participants in BMC's AM training programs over the past decade (2010-2019) and compared race and sex distributions in these programs to distributions among U.S. medical trainees and the U.S. general population. Medical trainee data came from the 2019-2020 Accreditation Council for Graduate Medical Education (ACGME) and U.S. population data came from the 2019 U.S. Census. We developed a plan to identify and interview participants from 4 BMC AM training programs in the past 5 years. The programs were: Addiction Medicine Fellowship, Chief Resident Immersion Training, Fellowship Immersion Training, and Research in Addiction Medicine Scholars.

Results: We approached all 4 programs and achieved buy-in to the project. Comparisons of 2010-2019 BMC AM training program participant demographics revealed underrepresentation of Black and Hispanic/LatinX trainees when compared to the 2019-2020 ACGME and 2019 U.S. Census statistics. BMC AM training programs had 3.6% Black or African American trainees compared to 5.1% of Internal Medicine residents, 7.6% of Addiction Medicine and Psychiatry residents, and 13.4% of the general U.S. population. Hispanic or LatinX trainees accounted for 9.9% of BMC AM training programs' trainees compared to 6.4% of Internal Medicine residents, 11.5% of Addiction Medicine and Psychiatry residents, and 18.3% of the general U.S. population. We completed the design of the interview component. The main inclusion criterion is self-described membership in an URG as defined by the National Institutes of Health (NIH), including self-described membership in the Lesbian, Gay, Bisexual, Transgender, Queer people plus (LGBTQ+) community. We developed a 60-90-minute, semi-structured, one-on-one interview guide covering 5 domains: 1) identity, personal, and professional backgrounds, 2) reason for participation in the BMC AM training program, 3) experience in the program, 4) impact of the program on their career, and 5) suggestions for improvement to the program. Data and thematic analyses will be shared in aggregated and deidentified form with the AM training programs.

Conclusions: We identified a disparity in the ethnic and racial diversity of participants in BMC affiliated AM training programs and aim to improve our understanding of barriers and facilitators to participation in AM programs through a qualitative study planned for the summer 2022. Future work will design interventions based on these data, test interventions, and contribute to the science of increasing workforce diversity so that other programs can adopt and adapt these interventions.

Flipbook review sessions of forearm and leg muscles

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Introduction: At Boston University School of Medicine, first-year medical students take Medical Anatomy, which includes a lecture component and a cadaveric laboratory component. In the Back and Limbs block of this course, students are expected to visually identify muscles on cadavers for the lab exam. For the written exam, students self-study information about each muscle, as presented in online table-style muscle charts. While the self-study muscle charts allow for more lecture time on challenging anatomy concepts, some students struggle with memorizing the muscle chart information and/or connecting this information to their laboratory experience.

Purpose: The purpose of this project was to develop a review session lesson plan to assist first-year medical students with learning muscles of the forearm and leg. Learning objectives included the attachment points, innervation, and muscle actions that students are required to memorize for the written exam, as well as visual identification of muscles on 3D model-derived images. Another aim of this project was to develop tactile lesson materials that would help connect the conceptual information in the muscle charts to the visual presentation of the muscles on cadavers.

Methods: Flipbook-style handouts were designed for muscles of the forearm and muscles of the leg, such that each flipbook page depicted a different layer of muscles. This allowed students to take notes on a handout that simulated the 3D nature of these muscles in situ. An hour-long forearm review session and an hour-long leg review session were designed and presented to students. During each review session, the instructor presented and annotated forearm/leg images on Powerpoint slides while students followed along with their physical flipbook copies. All handout and Powerpoint images were created using VH Dissector, and all students were provided with copies of the flipbook prior to the review session.

Results: Students who attended the forearm review session had an average pre-session quiz score of 1.25/5 (25% correct) and a post-session quiz average of 3.57/5 (71% correct). Students who attended the leg review session had a pre- session quiz average of 2.4/5 (48% correct) and a post-session quiz average of 4.3/5 (86% correct). In the post-session survey, multiple students reported that reviewing muscles in layers was the most helpful part of the review session. All survey respondents rated the usefulness of both the review session and the flipbook handout at 4 or 5 out of 5.

Conclusions: Students found the flipbook review sessions helpful for learning about the muscles of the forearm and leg, as indicated by both formative assessment and post-session survey responses. The use of a tactile, semi-3D flipbook can help students with learning muscle anatomy in conjunction with lecture materials and laboratory experience.

Improving medical student ambulatory experience using an innovative structure in urgent care clinic

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Introduction: Ambulatory rotations are a key part of medical student education at academic medical institutions. However, many of these rotations revolve around the preceptor's regular clinic schedule without adjustment for medical student learning. This study implemented a new model for an urgent care clinic, designed to improve student experience and satisfaction in outpatient clinics by providing students with the opportunity to function more autonomously during clinic and provide more time for patient encounters, teaching and discussion.

Purpose: Our clinic model was established with the goal of improving medical student experience in outpatient General Internal Medicine clinic by providing the medical students with increased autonomy when seeing patients, and more dedicated time for teaching and learning from their patient encounters. We hoped that this urgent care clinic would provide a model to better prepare them for residency and to help expose more medical students to positive experiences in primary care clinic to improve recruitment of medical students into this field.

Methods: Participants were fourth year medical students who were doing a four week ambulatory rotation at our institution. Students were randomly assigned to participate in the study's urgent care clinic. The urgent care clinic consisted of two preceptors paired with two medical students each, and allowed a separate conference room for teaching and precepting. Each session consisted of dedicated time for teaching and reviewing prior patients seen, as well as a dedicated schedule for each medical student being precepted. All students in the study, including those assigned to the urgent care clinic also participated in the usual ambulatory clinics assigned during the rotation. A total of 40 medical students participated in the study by completing a survey at the end of their ambulatory rotation.

Results: When compared to standard clinic practice, students who participated in the study clinic reported significantly more time to see patients, functioned more autonomously, learned and taught more in clinic, received more feedback, were happier overall in clinic, and felt more prepared for their intern year of residency.

Conclusions: This study showed that implementing a new model for an urgent care clinic that focused on providing medical students with more autonomy, as well as more time for patient encounters, teaching and discussion significantly improved their satisfaction with their ambulatory clinic experience and perception of their learning in the outpatient setting. These findings could have broader implications about ways to modify ambulatory clinics to improve medical student's experience and increase the number of medical students interested in primary care.

Facilitators and barriers to communication recovery in classroom settings: a pilot program in the BU School of Public Health

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Introduction: Every day, classroom content and discussions around topics of identity can induce emotional distress, anger, and withdrawal among students and faculty, particularly among those from diverse backgrounds. These experiences interfere with learning, classroom engagement and academic performance. Universities across the US have recently begun implementing programs to address in-classroom trauma holistically. However, little is known about the barriers and facilitators to successful implementation of such programs.

Purpose: To implement and evaluate an evidence-based method for identifying and addressing moments of bias, microaggressions, and current or remembered trauma, called Ouch Oops Whoa (OOW), in several graduate classrooms at Boston University School of Public Health (BU SPH). OOW is a communication recovery framework that provides tools for naming moments of harm from different viewpoints: an “Ouch” for harm to oneself, an “Oops” for recognition of harm to others, and a “Whoa” for harm that occurred to oneself or others.

Methods: A team of SPH faculty, staff, and students gathered in January 2021 to develop materials for a faculty workshop and classroom implementation of OOW. The team conducted literature reviews, sought guidance from experienced facilitators, including in BU’s Office of Diversity and Inclusion, and collected in-classroom experiences from current SPH students to define program goals and develop training materials. In Summer 2021, four faculty members completed OOW workshops on: “Addressing Bias and Isms”, “Communication Recovery”, and “Facilitating Difficult Conversations in the Classroom”. Faculty piloted the OOW program in their Fall 2021 courses. At the end of the semester, the research team conducted anonymous student surveys and a faculty focus group to assess process outcomes, and facilitators and barriers that enabled or inhibited the implementation of OOW.

Results: Students (n=132) and faculty (n=4) from four classrooms participated in this program. Among student surveys, 68.9% of students completed questionnaires. Of these responses, 47.3% of students reported that OOW improved classroom dynamics related to microaggressions and bias. Faculty and students mostly utilized OOW to discuss topics of race/ethnicity or gender/gender identity/gender expression. Faculty were the primary initiators of OOW discussions. Students shared powerful constructive critiques regarding barriers to participation in OOW moments, including discomfort with disclosing feedback publicly (versus privately) and resistance to participation based on existing classroom power dynamics. Among faculty responses, barriers to participation included anxiety around discussion of sensitive topics and the ability to discuss topics and cover class material in the allotted time. Perceived benefits of the program included utilizing new classroom working agreements with students and specific cases of community engagement around re-dressing in-class moments of bias.

Conclusions: Navigating moments of bias and oppression in real-time was extremely challenging for students and faculty. Feedback from this pilot program also highlighted opportunities for increased use and uptake, among both students and faculty. Overall, OOW provided an evidence-based framework for having critical classroom discussions, and, if implemented sustainably and iteratively, programs like OOW may aid in efforts to improve inclusivity and reduce moments of bias and oppression in classroom settings.

Stop the Bleed: Manual Uterine Aspiration Simulation for Emergency Medicine Residents

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Introduction: Early pregnancy loss (EPL) is a common pregnancy complication and often results in vaginal bleeding, prompting patients to present to the ED. Unfortunately, there is a paucity of evidence informing the ED management of hemodynamically unstable patients with EPL. Emergency medicine (EM) residency training for this high-acuity situation typically focuses on medical management. However, for unstable patients hemorrhaging as a result of EPL, the American College of Gynecology recommends prompt surgical evacuation of the uterus as definitive management. This procedure is called manual uterine aspiration (MUA).

EM physicians do not routinely receive formal training in MUA despite its potential utility in the ED. In particular, for EM trainees who will practice in lower-resourced settings without in-house gynecology consultants, MUA is a potentially life-saving procedure to have within their skillset.

Rooted in the mastery learning model, this curriculum sought to use simulation to teach EM learners the indications, contraindications, and steps for performing MUA as an ED treatment for hemorrhagic EPL complications. We then evaluated the effectiveness of the MUA curriculum using a post-workshop survey

Purpose: To improve EM residents' ability to definitively manage patients with vaginal bleeding complications related to EPL by performing MUA.

By the end of the MUA educational session, EM learners should be able to:

1. Recognize life-threatening hemorrhage resulting from early pregnancy loss as an indication for ED MUA.
2. Explain at least 2 special considerations where an MUA would be considered higher risk.
3. Identify the correct landmarks for a paracervical block.
4. Demonstrate the steps necessary to perform cervical dilation.
5. Demonstrate the steps necessary to perform MUA.
6. Perform a successful simulated MUA.
7. Express improved confidence in their ability to perform the steps of an MUA.

Methods: A two-part simulation session was designed for a group of 30 EM learners. Part one consisted of a lecture and video demonstration showing a competent instructor performing MUA. Part two consisted of hands-on deliberate practice with procedural simulation models at three different stations. Learners were supervised at each station by a trained gynecologist, who used checklists to ensure that all steps of the procedure were performed.

Following completion of the stations, learners completed a survey assessing differences between learners' pre-simulation and post-simulation confidence and comfort with different topics relating to the indications, contraindications, and steps for performing MUA in the emergency department.

Results: All participants completed the post-workshop survey. 100% reported increased confidence in their ability to identify indications to perform MUA in the ED and their ability to identify cases that would be deemed higher risk for ED MUA. All reported increased comfort in performing steps necessary for ED MUA.

Conclusions: To our knowledge, this was the first time MUA was taught to EM learners using simulation. This curriculum improved EM learner confidence in identifying indications for ED MUA and increased comfort in performing the steps necessary for MUA. This curriculum could be used to train EM residents in a potentially life-saving procedure that is rarely a part of the EM physician's current scope of practice.

Designing Faculty Training on Gender and Sex Teachings

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Introduction: Appropriate care for patients requires respect for individual identity with awareness of health risks and conditions relevant to that individual. This necessitates awareness and respect for anatomy, hormone levels, gender performance, and lived experiences, which is particularly important for sexual and gender minorities. At BUSM, student evaluations and other feedback report frequent cisgender-biased framings and difficulty detaching teachings from presumptions exclusive to LGBTQIA+ patients. For example, while the phrase “pregnant person” has been adopted by many to refer to all people with reproductive capacity, lecturers commonly discuss gendered data such as “risks among women” without explaining whether this grouping refers to a person’s gender, hormone levels, anatomy, or reported identity. A recent poll among BUSM medical students reports inappropriate and vague terminology throughout the curriculum, and these findings are substantiated by a desire expressed among faculty for increased education on how to navigate gender and sex terminology. In response, we have developed trainings to guide faculty approach to gender and sex in their teachings.

Purpose:
The faculty training is centered around 5 objectives:

1. Demonstrate the pervasiveness of the cisgender lens in medical education.
2. Explain how these biases can translate into inaccurate patient assumptions, potentially compromising their health care.
3. Elucidate why attributing risk factors and health conditions to populations described as “men/women” warrants clarification and context.
4. Encourage general transparency in support of ongoing learning together as a community.
5. Provide continued support and resources as faculty update lecture content.

Medicine and clinical research are rife with health proxies that presume patient anatomy, identity, and lifestyle. Discernment of these assumptions is critical, particularly at a time as medicine reckons with its inherent racism and sexism. The overarching goal of the training is to illustrate and suggest alternatives for common proxies that have perpetuated health care inequities for LGBTQIA+ patients.

Methods: The faculty training has been developed by a group of students, faculty, and consultants, so as to facilitate communication with the faculty audience while maintaining awareness of the student educational experience and ensuring quality of the presented material. The training illustrates and facilitates practice of an approach to consider nuances regarding data that references gender/sex, and balancing clinical deductions with respect for patient identity. It includes an introduction to gender and sex in medical education, dialogue on the presence of cisgender and binary biases that often underly these teachings, demonstration of case presentations, and moderated small group discussions. Pre- and post-testing will be conducted to gauge impact, and individual consultations will be organized afterwards to support lecture content revisions. In addition to post-survey results, metrics of change established from the training will be monitored through documentation of lecture modifications.

Results: Data from the May 17 training will be presented. Results will focus on the pre- and post-training surveys and other faculty feedback.

Conclusions: Impact of the training and plans for long-term monitoring will be discussed. Lessons learned and future directions will be proposed.

BUSPH Activist Lab Creates Activist Clinics Program to Supplement Curriculum and Support Student Passion for Public Health Advocacy and Activism

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Introduction: Students entering the Boston University School of Public Health, especially in the MPH program, are increasingly requesting opportunities to develop and practice skills in public health advocacy and activism. Students may elect to take classes in advocacy and activism as part of their formal curriculum; however, these course offerings are limited and do not fit into all students' schedules or preferred concentration. To meet student demand for increased training opportunities, the Activist Lab developed a new program called Activist Clinics.

Purpose: Activist Clinics aim to bridge the gap between the current curriculum and student interest by providing high-quality, skills-based training opportunities on specific areas of public health activism in a hands-on workshop experience. Each 50-minute session helps attendees become well-rounded, skilled professionals who can develop issues from the ground up, explore strategies, and become competent, ethical public health practitioners with expertise in the field of public health advocacy and activism.

Methods: The Activist Clinics are 50-minute sessions specific to skill development in a key and discrete area of public health activism. Topics arise from existing curricula within the school, as well as participant input. Guest Instructors are brought in based on the subject matter being taught.

Results: This is an ongoing project that is being evaluated through attendance and through qualitative and quantitative post-event surveys. The clinics will also be built out into online versions accessible to the larger public health community. These too will be subject to evaluation primarily through post-completion surveys.

Implementation of an Educational Curriculum on Care of Older Adults with Opioid Use Disorder in Long-Term Care

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Introduction: Research shows an increase of older adults with opioid use disorder (OUD) and in first-time treatment for substance use disorder.1 Due to complex medical needs/functional impairments, they often require continued post-hospital care in a skilled nursing facility (SNF).

Purpose: A prior needs assessment identified the topic of older adults with OUD as a knowledge gap for staff in SNFs, and a barrier to providing care to this population. An educational in-service program was developed to address this critical need.

Methods: This evidence-based curriculum was developed and piloted by a geriatrician. The in-service lasted 45 minutes long. Learning objectives included: 1) defining addiction as a medical disease; 2) describing specific medications for OUD; 3) incorporating non- stigmatizing language; and 4) recognizing overdose signs/symptoms. Case-based learning was used with the example of an older adult with OUD newly admitted to the facility. All available staff were invited to attend, and the in-service was held multiple times so staff from different shifts could attend. A five question pre- and posttest design was used to assess knowledge. Paired student's t-test was used to evaluate change in mean difference in scores.

Results: The in-service was offered 12 times at 3 SNFs. A total of 159 interprofessional staff attended including participants from nursing, administration, activities, housekeeping, maintenance, kitchen, therapy, and social work. 82 paired pre- and post-tests were completed (51.57% completion rate). Each correct answer was 1 point. Participants were asked about their confidence level for each learning objective on a 1 to 5 scale (1 = least confident, 5 = most confident). Total mean (M) test scores significantly increased (pretest M = 3.2; SD = 1.09; posttest M = 4.18; SD = 1.11; $t(81) = 9.246$; $P<.001$). There were also notable changes in individual learning objectives (Defining addiction [pretest M = 3.18, median = 3, SD = 1.25; posttest M = 4.17, median = 4.5, SD = 1.06]; medication for OUD [pretest M = 2.74, median = 2.5, SD = 1.22; posttest M = 4.11, median = 4, SD = 1.07]; appropriate language [pretest M = 3.39, median = 3, SD = 1.25; posttest M = 4.28, median = 5, SD = 1.06]; and recognizing overdoses [pretest M = 3.18, median = 3, SD = 1.28; posttest M = 4.28, median = 5, SD = 1.08]).

Conclusions: This pilot in-service addressed the knowledge gap of SNF staff caring for older adults with OUD. Interprofessional staff participated in this curriculum. Despite the diversity in their roles and responsibilities, medical knowledge, and background, participants demonstrated gains in knowledge and confidence levels. Future implementations of this curriculum will include evaluations of participant attitudes toward care of older adults with OUD and analysis of test scores between each profession.

A Review of Melodic Intonation Therapy (MIT) and Pilot of Dynamic Adaptive Speech Reconstruction (DASR) Imaging

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Introduction: Making mistakes is at the heart of learning. This principle is central to "re-learning" how to speak and, when applied with music, can elicit a robust brain activation. As simple as a search for the right note provokes a plastic process in normal language development since it activates the right hemisphere homolog of Broca's area, which "takes over" language functions. This review and pilot experiment examines language neuroplasticity by observing how Melodic Intonation Therapy (MIT), a treatment modality that combines elements of speech, rhythm, and melody, plays a role in language re-learning and how its limitations can be overcome with a new tool our lab is developing - Dynamic Adaptive Speech Reconstruction (DASR). MIT's design in combining task modalities of speaking, singing, and tapping to activate Broca's area is limited by its well-intentioned, yet subjective interpretation by speech-language pathologists. DASR, when fully developed, overcomes subjectivity by using an AI algorithm that incorporates MIT data in real-time in combination with functional Near-Infrared Spectroscopy (fNIRS) to observe areas of the brain that are actively recruited when a patient attempts to form phrases. The DASR algorithm objectively analyzes patients' responses, deconstructs the response, associates it with the fNIRS brain activation, measured as the Blood Oxygenation Level Dependent (BOLD) response, and suggests the next request the therapist should ask of the patient. We tested two aspects of DASR in recruiting the right hemisphere homologue of Broca's area.

Methods: Using fNIRS in two age-matched, middle-aged subjects, we measured activation of Broca's area in response to a set of randomized repeated phrases. Participants were fitted with an electrode skull cap that measures the BOLD response to the cerebral cortex. Each participant performed a series of 21 tasks (20 seconds each) per trial (420 seconds). Each of the 21 tasks consisted of a recited prompt, which the subject was to repeat as precisely as possible. Subjects were asked to speak, sing, intone with an augmented 4th note (added per DASR protocol), and tap a specific rhythm to "happy birthday to you" and to subsequently more difficult analogs of the phrase: "Hippo birdseed two ewes," then "Ep say feef now jam bob," and finally "happy birthday to you." The set of 21 tasks were repeated in a pseudo-random order for each subject five times. Block design statistical parametric mapping was used to visualize activation.

Results: Broca's area showed the greatest activation when task modalities were combined, in particular when singing augmented 4th phrases. It is notable that when tapping is added to singing the augmented 4th, Broca's area activation appears to decrease, but activation of the right lateral frontal lobe increases with each successive trial. Subjects repeating the phrase, "happy birthday to you", after going through a series of increasingly complex phrases showed recruitment of the right inferior frontal lobe after the subject completes just one series of trials.

Practicing Dentistry in the Age of COVID-19: Perception Changes Due to the Coronavirus Pandemi and New PPE Standards

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Introduction: Dental professionals have been greatly affected by COVID-19 and the extra personal protective equipment (PPE) required. Educators are under pressure to change teaching methods, find solutions to mitigate skill deficit and ensure safe clinical practice. The pandemic has forced dental professionals to reassess safety standards and confront high risk of exposure to the virus, even prompting some to retire early or sell their practice. Furthermore, the dental community is concerned about the environmental impact of extra PPE.

Purpose: The objectives of this study were to assess the changes in the perception of the future of dentistry due to COVID-19 and new PPE standards; identify if the use of extra PPE has physically or mentally affected dental students, faculty, and practicing dentists; assess the perception of the effects extra PPE has on patients; and assess the perception of the effects extra PPE has in the environment.

Methods: A survey was sent to the GSDM faculty via email. Students were invited to complete the same survey during pre-clinic rounds and accessed the survey by scanning a QR code with their cell phones. Data was analyzed using descriptive statistics after 3 months.

Results: Practicing faculty were the most pessimistic group about the future of dentistry with 45% agreeing that their view of the future had worsened, compared to only 21% of non-practicing faculty and 16% of students. Students were the most hopeful group with only 17% reporting a change in enthusiasm due to COVID-19 (compared to 27% of non-practicing faculty and 46% of practicing faculty) and 29% reporting a concern with treating COVID-19 patients (compared to 58% and 52%, respectively). When asked about the impact of extra PPE on their experience, all three groups felt similarly: at least 82% of each group felt the extra PPE was protective enough, at least 58% of each group felt the extra PPE presented a physical challenge and no more than 36% of each group considered it a psychological challenge. Additionally, the environmental impact of the extra PPE was a concern for at least 67% of each group. The students differed from the faculty groups, however, in two significant ways. The students were significantly more concerned that the extra PPE was causing patient stress compared to the faculty (33% and 18%, respectively) and only 74% of students believed vaccination should be a requirement for all clinic dentists and staff compared to 91% of both faculty groups.

Conclusions: In general, students were most optimistic about the dental profession and there were fewer perceptions of patient stress due to the extra PPE than expected. While faculty members were approximately 43% of the invited participants, they only made up 25% of the respondents. Also, 55% of the invited student body agreed to participate, which we attribute to the convenience of the QR code at the time of invitation compared to an email invitation with no personal interaction. This method illustrates an important tool to increase future survey participation compliance.

Defining and Characterizing GWI Pathobiology using Longitudinal Brain Imaging Biomarkers

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Introduction: Veterans of the 1991 Gulf War (GW) continue to experience chronic symptoms of Gulf War Illness (GWI) which includes fatigue, memory and concentration problems, muscle and joint pain and headaches. Brain white matter (WM) alterations have been shown to be present in veterans with GWI in several different studies suggesting a pathological link to the disorder. It has now been 30 years since the war and as veterans age, questions have arisen whether these brain changes are worsening or remaining static over time.

Purpose: The objective of this study is to assess if longitudinal brain volumetric changes are present in veterans with GWI. We hypothesized that veterans with GWI would have longitudinal patterns of decreased brain volumetrics and white matter structural integrity.

Methods: Study participants included 25 Gulf War veterans who met criteria for GWI based on the Kansas GWI definition. Each participant had MRI brain imaging performed at two time points on average five years apart on a Philips 3T scanner. The mean current age for participants was 56.5 years and included 28% women. For this study, longitudinal Time 1 and Time 2 MPRAGE MRI scans were compared. Cortical reconstruction and volumetric segmentation were performed with Freesurfer 6.0, which is documented and freely available for download. Paired t-tests were performed to evaluate changes in brain volumetrics over time within the same individuals.

Results: Veterans with GWI showed decreased hippocampal volume in the left ($p=0.001$) and right hemispheres ($p=0.001$) from Time 1 to Time 2. White matter pathways were also changed over time. In particular, the corpus callosum decreased across all segmented regions including the anterior region ($p=0.013$), mid-anterior region ($p=0.017$), central region ($p= 0.010$), mid-posterior region ($p= 0.002$), and the posterior region ($p=0.009$) from Time 1 to Time 2.

Conclusions: As hypothesized, individuals with GWI showed decreased volumetrics in key structures and white matter pathways over time. These white matter changes appear to be progressing as veterans' age. We have also noted cognitive changes in memory, attention and processing speed that may correlate with these brain volumetric changes. More research is needed in a larger study sample to confirm these preliminary longitudinal brain imaging results and to compare with cognitive outcomes.

Finding Equity in Home Care

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Introduction: As part of a required geriatrics clerkship, Boston University School of Medicine fourth year medical students rotate through our home care program which serves over 500 patients (60% from minority populations, 25% low English proficiency). In a recent qualitative study of student experience on home visits, participants identified teaching around the social determinants of health (SDOH) as a central component of their learning. Furthermore, the recent AGS sponsored Minimum Competencies in Geriatrics for Medical Students include a new competency in health equity. As a result we created an educational exercise using the Geriatrics 5Ms framework to formalize the teaching of SDOH in the clerkship and to assess how SDOH impacts patient's care during home care encounters.

Purpose:

- To utilize an educational exercise that uses the 5Ms framework to systematically assess how SDOH impacts an individual patient's care during home visits.
- To identify the most common themes and social risk factors reported by medical students during their home care encounters.

Methods: All students were asked to complete a structured observation of a patient's home environment using a standardized worksheet. Students were prompted to describe their impression of how an individual patient was affected by the World Health Organization- defined categories of SDOH. They were then asked to crosswalk the identified SDOH with the 5Ms to provide a visual demonstration of the intersection between the two. 57 of the 163 current fourth year students completed the assignment at time of analysis. The worksheets were reviewed by two independent reviewers to determine common themes.

Results: The following themes, organized by the 5Ms, were identified as most commonly reported by students:

- Mind: inability to understand medical issues; cognitive/sensory impairments impacting ADL/IADLs
- Mobility: mobility within and to patient's home; inability to access care outside home based primary care; functional impairment leading to difficulty with ADL/IADLs
- Medication: difficulty accessing and managing medications
- Multicomplexity: financial insecurity; inadequate insurance coverage; reliance on caregiver support
- Matters Most: desire for family support; goal to remain independent

Conclusions: This exercise serves as an introduction to the importance and relevance of incorporating SDOH into the care of older adults using an easily adaptable framework, which can be expanded to other trainees and interprofessional team members. It also serves as a first step toward attaining proficiency in the new health equity competency for medical students. We plan to further study the impact of this educational intervention through the creation of a post-exercise survey tool this academic year.

Behavioral Health Curriculum for Family Medicine Residency

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Introduction: Many patients start their mental health care with the help of their primary care physicians, especially recently as the demand for psychiatric care has exceeded the supply. Unfortunately, there is very little mental health training in most family medicine and internal medicine residencies. In order to both address this educational need and to help connect the departments of family medicine and psychiatry at Boston Medical Center (BMC), the family medicine/psychiatry combined residents, with input from the family medicine department, developed a behavioral health curriculum with the goal of eventually expanding the curriculum to other specialties.

Methods: The graduating family medicine residents at BMC were surveyed regarding their confidence in various domains of mental health including management and diagnosis of major depressive disorder (MDD), generalized anxiety disorder (GAD), post-traumatic stress disorder (PTSD), and serious mental illness (SMI). The graduating residents felt very comfortable with the initial management and diagnosis of MDD and GAD but felt they needed more training on SMI (including bipolar and psychotic disorders) and treatment of special populations- particularly pediatrics and obstetric patients. In addition to the survey, family medicine residents participated in two focus groups to help narrow the topics. The residents emphasized that they felt comfortable with the first steps of most diseases and were looking for advice in more nuanced situations and/or populations and next steps in the cases where the first line treatment didn't work. In addition, they wanted a space to discuss difficult cases and to learn from each other.

Results: Based on the feedback gotten from the family medicine residents, 16 topics were chosen to address the deficiencies the residents mentioned. Given the family medicine didactic curriculum, the 16 topics are to be taught in one hour blocks over two years. Each lesson is taught by one of the combined family medicine/psychiatry residents with the help of Dr. Robert Joseph and was planned with a case in mind and specific reach goals for the family medicine residents. In addition, the last fifteen minutes of each lesson is scheduled as open discussion, so that residents can bring cases and learn from each other.

Conclusions: Now that the syllabus has been developed, one of the next steps is to gather data on the individual lessons. The family medicine department gathers feedback after every didactic lecture; this information will be used to improve the lectures and update the topics. In addition, because some of the lectures can be useful for residents in other specialties we will work with some of the other residencies to provide them with relevant lessons. By targeting residents' education, we hope to build confidence and knowledge in the treatment and diagnosis of mental illness to better serve our community.

Implementation of a Novel Point-Of-Care-Ultrasound Curriculum for Pediatric Emergency Medicine Fellows

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Introduction: Point-Of-Care-Ultrasound (POCUS) is a growing field in medical education. It first began to be utilized in the 1980's and is now taught in all Emergency Medicine (EM) residency programs and Pediatric Emergency Medicine (PEM) fellowship programs. Expert consensus guidelines have been previously published with suggested core content for PEM POCUS training. In 2015, a joint policy statement was published by the American Academy of Pediatrics (AAP), American College of Emergency Physicians (ACEP), Society for Academic Emergency Medicine (SAEM), and World Interactive Network Focused on Critical Ultrasound (WINFOCUS) outlining recommended training and exposure for all PEM physicians. However, despite these recent guidelines, PEM fellowship programs have not adopted a universal curriculum for all fellows in the US. Prior to 2020, the Boston Medical Center (BMC) PEM fellowship program did not utilize a longitudinal PEM POCUS curriculum for fellows. Therefore, we developed and implemented a novel PEM POCUS curriculum for the BMC PEM fellowship program.

Methods: Prior to July 2020, to meet the Accreditation Council for Graduate Medical Education (ACGME) requirements for graduation, PEM fellows at BMC participated in a 1-month rotation with the BMC EM Ultrasound program. Prior to July 2020, this was the only dedicated POCUS education for BMC PEM fellows. Therefore, we developed and implemented (starting July 2020) a novel, longitudinal curriculum for BMC PEM fellows that included: monthly pediatric emergency department (PED) hands-on scan sessions, monthly image review with EM US faculty, 13 core topic modules incorporating online textbook material and POCUS FOAM resources, required ImageSim online curricula, biannual PEM POCUS journal clubs and quarterly teaching requirements. Our curriculum modules focused on the following POCUS topics: Knobology, eFAST, ECHO, Pelvis/OBGYN, Pediatric Abdomen, Lung, IVC, Ocular, Biliary, Renal, Nerve Blocks, Vascular access, and Soft Tissue. We also implemented requirements for the number of specific scans documented, to allow for appropriate POCUS credentialing following graduation. The curriculum evaluation tool was a post implementation survey to current fellows.

Results: To assess efficacy of our curriculum we used a post implementation survey to current PEM fellows (n = 3). Fellows reported no prior POCUS training before coming to BMC. Fellows were unanimous in reporting that the "teaching format" was "very effective". They also all responded "Yes" to the question: "Do you find the overall curriculum useful?" When asked about comfort level (1. very uncomfortable, 2. uncomfortable, 3. somewhat comfortable, 4. very comfortable), the fellows unanimously reported that prior to initiation of the curriculum they felt "very uncomfortable" with soft tissue, ECHO and eFAST POCUS scans. To date, post-implementation, fellows now report they feel "somewhat comfortable" with soft tissue, ECHO and eFAST POCUS scans. They are all on-track to meet scan requirements for graduation and eventual credentialling.

Conclusions: Our longitudinal PEM POCUS curriculum has been successful at improving PEM fellow comfort with multiple PEM POCUS skills. The curriculum has been well received, has increased POCUS exposure for PEM fellows and will lead to improved training for PEM POCUS credentialing.

A Urology Fair Increases Medical Student Interest in Urology

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Introduction: The 2021 Urology Match compared to 2014 had increased number of urology residency positions, but a disproportionate increase in number of additional applicants. In 2020, urologists >65 years old continued to be the largest percentage of the workforce (30%). This fact and the aging US population has led to estimations that workforce shortage will be as high as 46% by 2035. Therefore, increasing medical student interest in urology is one of the critical steps necessary to address the growing gap between available residency positions and applicants. Presence of a urology interest group (UIG) has been shown to significantly increase number of urology applicants, specifically by creating and supporting interest and removing barriers for students.

Purpose: We examined the impact of a novel urology fair on medical student interest in urology.

Methods: The 2021 Urology Fair was organized by the UIG of an inner-city medical school, and medical students, residents, and faculty were involved in its preparation and execution. There were seven 20-minute stations including one-on-one with a resident, laparoscopy/suturing, flexible cystoscopy, ultrasound access/ureteroscopy, digital rectal exam/foley catheterization model, Da Vinci™ robotic simulator, and Da Vinci™ robotic animal model suturing. Student participants were asked to complete an online survey after the event.

Results: Twenty-two medical students attended the event and submitted an online survey. Nineteen (86%) students had never participated in a similar specialty fair and 16 (72%) were undecided what field they wanted to pursue. Students who were “moderately likely” or “extremely likely” to consider matching into a surgical subspecialty increased from 5 (23%) before to 12 (55%) after the event. All stations at the event were rated as “very good” or “excellent” by the majority of students, ranging from 68% to 100%. The robotic simulator and animal model suturing stations were rated “excellent” in 20 (95%) and 19 (91%) responses, respectively. Twenty-one (95%) students indicated they wanted the event to be continued yearly, and 1 (5%) student was undecided.

Conclusions: A short, hands-on urology event increased medical student interest in urology. The Da Vinci™ robotic stations were the most well-received. An event based on our design that includes other surgical subspecialties may assist with increasing student interest earlier in medical school.

Pediatric Cardiac Arrest: A Novel Simulation Case for Team Leader Training

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Introduction: The majority of children seek emergency care at general emergency departments (GED) and, despite national initiatives, the quality of GED pediatric emergency care varies widely. Thousands of children receive cardiopulmonary resuscitation (CPR) in the United States each year, yet the quality of CPR varies across providers and healthcare settings. As part of a pilot study to benchmark simulated performance data of emergency medicine (EM) resident physicians, we augmented a previously published simulation scenario to assess performance of pediatric resuscitation team leaders. This educational tool may be used to train resuscitation team leaders for both pediatric and adult patients.

Methods: The simulation protocol for this study was designed using a previously published simulation assessment tool. Study participants acted as team leader during four simulated pediatric resuscitation scenarios (respiratory failure, sepsis, status epilepticus, and cardiac arrest). In order to assess team leader knowledge during scenarios, we augmented the previously published case scenarios using a nursing confederate script and structured pre-brief session prior to each simulation session. Confederates were instructed to act only on directions given by the team leader, as directed by the pre-brief script. In doing this, we devised a novel simulation scenario and case protocol designed to focus resuscitation team leaders to explicitly direct and manage high-quality pediatric cardiopulmonary resuscitation (CPR).

Results: During this cardiac arrest case, nine (50%) of EM residents identified the correct CPR rate vs. 27 (63%) teams from a prior GED cohort and 14 (93%) teams from a prior Pediatric Emergency Department (PED) cohort. Only 2 (11%) EM residents asked for a backboard to be used during CPR vs. 10 (24%) GED teams and nine (60%) PED teams. Conversely, 15 (83%) of the EM residents minimized CPR interruptions vs. 12 (29%) of the GED teams and two (13%) of the PED teams. And only four (22%) residents performed a pulse check within two minutes of patient arrival vs. 24 (33%) of GED teams and 11 (73%) of PED teams.

Conclusions: This simulation curriculum may be an effective tool in case-based learning for the management of pediatric patients presenting in cardiac arrest. We hope that curricula such as this can be spread through pediatric and emergency medicine training programs nationally to improve clinical knowledge, communication, and team leader skills that will ultimately improve outcomes for critically ill pediatric patients.

Accuracy of Resident Self-Assessment in Objective Structured Skills Encounters

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Introduction: Surgery residents depend upon accurate self-assessments of their clinical skills to guide professional development. Faculty consider resident confidence, among other factors, when determining the need for supervision during the performance of specific clinical tasks. However, evidence from psychology and medical education investigations suggests that subjects with the lowest performance at a given task tend to overestimate their own abilities. In this study, we sought to determine the ability of surgery residents to accurately assess their clinical skill levels by comparing self-assessments to faculty assessments in Objective Structured Clinical Skills Encounters (OSCEs).

Methods: Junior and senior residents were asked to complete pre- and post-OSCE surveys that are designed to assess proficiency (i.e., need for supervision) at specific clinical skills. Resident self-assessments were compared to faculty grades for each clinical skill assessment with a Cohen's K statistic. Residents were ranked by tertile based upon OSCE scores.

Results: Surveys were completed by 10 junior and 11 senior residents who each completed seven clinical skills encounters (n=145). Cohen's K for overall agreement about proficiency and need for supervision between residents and faculty was 0.25 before the OSCE and 0.41 afterwards, indicating fair and moderate agreement, respectively (Figure 1). Residents in the lowest performing tertile overestimated their proficiency (predicted pass rate 56.7% vs actual 18.9%, p=0.086), while those in the highest performing tertiles underestimated their proficiency (predicted pass rate 76.9% vs actual 92.5%, p<0.001). Across tertiles, residents significantly underestimated their OSCE scores. However, in professionalism, the lowest performing tertile overestimated their OSCE scores (58.8% predicted vs. 39.7%) while those in the highest tertile slightly underestimated their scores (73.3% predicted vs. 76.3%).

Conclusions: Surgery residents have fair agreement with faculty about their clinical skill abilities prior to OSCE exercises, but this improves to moderate after the OSCE. Residents have the best self-assessment skills with manual skills, particularly central lines, laparoscopy, and chest tube insertion. Residents and faculty should be aware that self-assessments of their abilities may not be accurate. In particular, lower performing residents tend to underestimate their need for supervision. For professionalism, a non- technical skill, the lowest performing residents overestimate their abilities, while the highest performing residents underestimate their abilities.

Hogwarts or Hogwash: The Gamification of an Ob/Gyn Residency to Improve the Educational Culture

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Introduction: Adult learning theory is complex and highlights the vast differences to engage adult learners, centering upon knowledge acquisition in three broad categories: baseline knowledge, skills, and attitude. Consistently, theories highlight two aspects of adult- learning theory that is often overlooked in medical education: (1) the environment or community of education and (2) the self- motivation of learners. This is particularly relevant for residency education. The expectation is that trainees are self-motivated and the hospital milieu naturally imparts a communication of learning however they have a host of competing demands: complete patient care, electronic medical record and documentation tasks, teach junior trainees all while sustaining their own enthusiasm and environment for learning. One question is whose responsibility is it to ensure the trainee/learner will capture their energy, enthusiasm, and interest sufficiently to direct further learning? Here, we introduce a novel framework to "gamify" residency and provide an overarching structure for the residency program to address and implement both (1) an education-focused environment and (2) external motivation to learn basics of obstetrics and gynecology.

Purpose: Introduce a novel framework through the gamification of residency learning in order to provide the structure for community-based education and motivation for learners in our Obstetrics and Gynecology residency program. Secondary objectives will be to assess rates of burnout and enjoyment of residency.

Methods: Beginning in the academic year July 2022, the four-year residency will be divided into four houses modeled upon the fictional "houses" of the Hogwarts universe, with each "house" having equal numbers of PGY1, PGY2, PGY3, and PGY4 residents. Each "house" or team will be given BINGO-boards in order to facilitate and drive self-motivated learning as well as encourage education and teaching of peers and junior trainees. Points will be awarded for the completion of education tasks with small incentives and prizes each academic quarter. Residency engagement and assessment will be tracked using pre-intervention de-identified aggregated data from ACGME annual surveys from the prior five years and CREOG scores. Post-intervention data will be tracked using the same ACGME annual survey questions administered mid-year and at the end of the year as well as CREOG scores to track objective educational content.

Results: Results are pending the implementation of this novel framework.

Conclusions / Discussion: Medical education and residency education relies on the antiquated notion of apprenticeship model learning. It relies on self-motivation and trainees to create their own environment. We introduce here a novel and an innovative new way to approach learning as a trainee to increase motivation and improve the educational environment and possibly address soaring rates of burnout.

Full Arch 3D Print Model for Preclinical Training

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Abstract: This innovation shows how to fabricate a full arch 3D print model for dental preclinical training. The technique to design and manufacture the model is easy to access and cost-efficient. The model could be fully customized depends on the need for the teaching purpose. This presentation will show a new model design method, a new digital design workflow, and a new dental model product to educate dentists. The presenter has implemented this technique to two years two different courses in two years and successfully training more than 20 residents.