

# Oral Presentations

Session Moderators: Julia Shalen, MD, MAEd, Christopher Golden, MD, Ashley Paul, MD

## Oral Presentation I: Integrating Teamwork Education within the Clinical Learning Environment: Formative Evaluation of a Team FIRST Pilot Effort

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**Needs and Objectives:** Fostering mastery of teamwork skills is crucial in healthcare education, yet challenges persist in achieving this goal in clinical learning environments (Nelson, 2017). Team FIRST (TF) addresses this concern, offering a curriculum for healthcare students to develop teamwork skills (Greilich, 2023). Module 4 (of 5) focuses on clinical clerkships, empowering students with three primary objectives:

1. Facilitate team mental model understanding through activities and discussions
2. Promote psychological safety
3. Develop confidence in applying teamwork skills

**Settings and Participants:** Medical and health profession students in surgery and emergency medicine clerkships participated in the pilot of Module 4 (M4) at UT Southwestern Medical Center.

**Description:** Students actively observed and documented team dynamics through worksheets, noting opportunities, actions, and results. They shared views on effectiveness, suggested improvements, and highlighted positive aspects, guiding subsequent faculty-led group reflection discussions. Optional opportunities, like handoffs, allowed practice and feedback on teamwork. Formative evaluation measured reactions (e.g., acceptability, appropriateness, and feasibility) using a variety of instruments: a 9-item Likert scale, 3-item free response, interviews, and FGDs. Pre- and post-activity (8-item; 0-100 scale) surveys were used to assess student selfconfidence.

**Evaluation:** From 1/3/2023 to 10/1/2023, 211 students completed 231 surveys (153 pre- and 78 post), 15 interviews, and FGDs. Results revealed improved confidence in teamwork skills: psychological safety (+8.16,  $p=0.0011$ ) and team mental models (+9.17,  $p=0.0008$ ). Positive attitudes toward teamwork (83%) and M4 insights (83%) were consistent, with 80% reporting enhanced understanding of teamwork competencies. Among 83 free responses, benefits were noted (21 responses), while scheduling challenges in clinical settings were a concern (13 responses). Students highlighted building team mental models via handoffs (14 responses) and valued reflective discussions for teamwork appreciation (16 responses).

**Lessons Learned:** This formative evaluation indicates M4 enhances student confidence in clinical teamwork competencies, requiring refinement for broader implementation. Two lessons learned include recognizing the presence or absence of a teamwork competency and the novel opportunity for students to assess their clinical environments, providing awareness of the current culture. The pilot outlines core clerkship implementation, pinpointing dissonance between simulated and clinical environments to refine teamwork skills through reflection and skill development.

**References:** 1. Greilich PE, Kilcullen M, Paquette S, Lazzara EH, Scielzo S, Hernandez J, Preble R, Michael M, Sadighi M, Tannenbaum S, Phelps E, Krumwiede KH, Sendelbach D, Rege R, Salas E. Team FIRST framework: Identifying core teamwork competencies critical to interprofessional healthcare curricula. *J Clin Transl Sci.* 2023 Mar 8;7(1):e106. doi: 10.1017/cts.2023.27. PMID: 37250989; PMCID: PMC10225264. 2. Nelson, Terry Morrow, "Interprofessional Education and Practice" (2017). Department of Health Sciences Faculty Articles. 282. [https://nsuworks.nova.edu/hpd\\_hs\\_facarticles/282](https://nsuworks.nova.edu/hpd_hs_facarticles/282)

## Oral Presentation 2: Implementation and Evaluation of a GME-Quality Improvement Curriculum to Integrate Resident QI Education and Operational Health System Improvement

**Authors:** Samantha Pitts, MD, MPH; Julia Kim MD, MPH; Laura Hanyok, MD

**Needs and Objectives:** Medical education in Patient Safety and Quality Improvement (PSQI) is critical to ensure that physicians can address gaps in care and improve patient and population health outcomes. Prior ACGME Clinical Learning Environment Review site visits identified variation in teaching with significant gaps in trainee understanding of safety principles and QI methods. We assembled a multi-disciplinary team, developed, piloted, and evaluated a core curriculum, focusing on QI, in response to program needs. The overall goal was to enhance residents' understanding and skills in implementing QI methods, by applying tools to department priorities for QI.

**Setting and Participants:** The curriculum was piloted in-person with 3 Hopkins residency programs: Osler Medicine (n=7 interns during ambulatory block, Oct-Nov 2022), Ophthalmology (n=14 residents PGY 1-4, Jan-April 2023), and Urology (n=14 residents PGY 1-6, April 2023 – Jan 2024), selected based on interest and variation in infrastructure and size.

**Description:** The 6-step curriculum development process was used to develop a 6-hour QI curriculum, in partnership with stakeholders committed to integrating resident training and quality and safety work across our health system. With residency program leadership and QI team leads, a program-specific QI problem was defined to tailor the curriculum. Medicine and ophthalmology held two 3-hour sessions, while urology has six 1-hour sessions (in-progress).

**Evaluation:** Comparing pre (n=19) and post (n=14) surveys, ophthalmology and medicine residents reported feeling more prepared to engage in QI efforts in the future (33% vs 100%,  $p<0.001$ ), interested in leading QI efforts in their career (60% vs 100%,  $p=0.01$ ), comfortable with QI skills ( $p<0.05$ ) including understanding about equity-focused QI, and recognized the importance of using interprofessional collaborative practice to improve healthcare quality (93% vs 100%,  $p=0.3$ ).

**Lessons Learned:** Tailoring a curriculum to specialties and aligning with institutional and department priorities can engage residents in QI and address health system quality goals. Challenges include time needed to tailor and teach the curriculum, building faculty QI expertise, and current QI infrastructure does not formally integrate trainee input. Next steps include piloting the curriculum with other programs to further train and align QI efforts.

## Oral Presentation 3: Uncertainty in Neurology

**Authors:** Aleksandra Safonova, MD, Ashley Paul, MD; Doris Leung, MD, PhD; Rachel Salas, MD, MEd

**Needs and Objectives:** Medical uncertainty is a significant component of the clinical environment, yet it remains an under-acknowledged part of medical education training. Currently, there are no studies evaluating this in the context of neurology which is a field with inherent diagnostic uncertainty. The objective of this project is to incorporate interactive cases into the neurology clerkship and evaluate the impact on students' perception of uncertainty.

**Setting and Participants:** All medical students rotating through the neurology core clerkship from academic year 2023 – 2024 were included in an introductory session called "Uncertainty in Neurology." This is an in-person or synchronous session during the first week of the clerkship.

**Description:** This session includes a one-hour interactive simulation case where there is no clear course of action or conclusion. There are three different cases which are rotated throughout the course. Expert educators in uncertainty and the neurology clerkship leadership were consulted to aid in the creation of these cases. Each session involved 10-14 medical students and involves open-ended questions where students work through gathering a history, creating a differential, ordering relevant work-up (including labs or imaging), and learning how to communicate this information to the patient. Neurology residents and fellows with an interest in medical education volunteer to lead sessions.

**Evaluation:** Students completed a pre- and post-course survey evaluating their perception of the topic of uncertainty. These surveys used validated scales including the Intolerance of Uncertainty and General Self-Efficacy scales. As an example of one of the metrics measured, this statement was evaluated: “I feel prepared to address uncertain situations during clinical clerkships,” for which 35% of students replied strongly agree on the pre-course survey and 59.4% of students replied strongly agree on the post-course survey. Additional survey results and descriptive statistics will be analyzed and reported.

**Lessons Learned:** This course is an innovative approach to education, which focuses on 1) introducing the concept of uncertainty in the field of neurology, 2) improving clinical reasoning through an interactive case-based approach and 3) developing patient communication skills in situations of uncertainty.

#### **Oral Presentation 4: Creating an Online Training Module to Teach Hospitalists How to Manage Patients with Behavioral Dyscontrol**

**Authors:** Idris Leppla, MD; Durga Roy, MD; Ileana Lucia Ponor, JHUSOM

**Background:** There are very few curricula aimed at teaching hospitalists how to manage patients with behavioral dyscontrol.

**Hypothesis/Aim:** Hospitalists may benefit from an online learning module tailored towards teaching them the basics of agitation management in patients with acquired brain injury, dementia and intellectual disabilities.

**Methods:** We offered the online course to all hospitalists (NP, PA, MD/DO) at Bayview.2 Hospitalists were sent a recruitment email and had to complete a needs assessment survey, the modules themselves and then a post assessment survey to earn \$50 in an Amazon gift card.

**Results:** 34 hospitalists completed the needs assessment survey. 28 completed the online modules. The post module survey was completed anywhere from 1-2 years after the modules. 74% of participants were physicians and the remainder were NPs/PAs. 71% of participants had less than 10 years of practice since completion of training. 65% of participants had 75-100% FTE of clinical work. In the needs assessment, 85% of hospitalists were either moderately or very motivated to learn about managing agitation. Hospitalists estimated seeing agitation several times per week or weekly 68% of the time pre-intervention and 78% of the time post intervention. Confidence levels in the management of these patients improved. Pre-intervention, only 24%, 50%, and 18% of hospitalists were moderately or very confident in managing ABI, dementia and IDD, respectively. Post intervention, 73%, 86%, and 66% of hospitalists were moderately or very confident in managing ABI, dementia and IDD, respectively.

**Conclusion:** An online training module is a feasible educational tool; it can be helpful in improving the confidence of managing agitation among hospitalists.

**References:** 1) Leppla I et al. *Scoping Review on Educational Programs for Medical Professionals on the Management of Acute Agitation*. JACLP, volume 64, issue 5. Sept – Oct 2023; 2) Link to online curriculum via MyLearning at Hopkins:

<https://lms14.learnshare.com/l.aspx?Z=yq0Mies%2bK5YDHDdQvsde6QsmdbvHvCDoDASbE617A6s%3d&CID=89>

#### **Oral Presentation 5: The Impact of Gender-Based Microaggressions on Woman-Identifying Students in Preclinical Medical Education Settings**

**Authors:** Abigail Coco, BA; Elizabeth Vojvoda, BS; Rachel Levine, MD, MPH

**Background:** In 2021, 61% of US medical students reported experiencing one microaggression weekly, with gender being the most common type. Women medical students are more likely to encounter microaggressions than men. Few studies have characterized the nature of gender-based microaggressions and their impact on learning in preclinical settings.

**Aim:** To understand the nature, prevalence, and impact of gender-based microaggressions on woman-identifying students in the preclinical curriculum.

**Methods:** A mixed methods study was conducted using a survey and focus groups. Inclusion criteria consisted of woman gender identity and current MS1s and MS2s at JHUSOM. The survey was distributed through email listservs in winter 2023. Two sixty-minute focus groups (6

students) were conducted on Zoom. Analyses included descriptive statistics, Chi-squared tests and thematic analysis.

**Results:** Fifty-two students responded to the survey. Mean respondent age was 24 years (range 21-27), 42% were MSIs, and 14% identified as URM. Three-quarters of respondents had observed gender-based microaggressions in the preclinical curriculum, with 31% observing a microaggression at least once a week. 65% of respondents personally experienced microaggressions, with 42% experiencing a microaggression at least once a month. MSIs and MS2s observed and experienced microaggressions at similar frequency ( $p=0.06$ ,  $p=0.21$ ). Most microaggressions were committed by medical students (76%), faculty (72%), and patients (48%). The majority occurred in small group teaching sessions (92%), introductory clinical spaces (58%) including doctoring courses and shadowing, and lectures/didactic material (42%). For students who observed/experienced microaggressions, negative impacts on learning environment (71%) and sense of belonging (67%) were reported. Only four respondents reported formal efforts by JHUSOM to raise awareness about gender-based microaggressions and 46% were not comfortable discussing microaggressions with medical school leadership.

Focus group data identified themes related to negative impacts on learning such as not feeling comfortable answering or asking questions, being assigned housekeeping tasks in small group, and increased pressure to be overprepared.

**Conclusions:** Gender-based microaggressions are widespread, beginning early in the preclinical curriculum. The negative educational impacts for women medical students, particularly in small group sessions with peers, warrants further investigation given the popularity of the flipped classroom model emphasizing small group learning for preclinical medical education.

### **Oral Presentation 6: Does a Contemporary, Interactive, Clinically Relevant Web-based Program and Physiologic Experiments Effectively Teach Principles of Gas Exchange to Medical Students?**

**Authors:** Brian Broderick, MD; Henry Fessler, MD; Charles Wiener, MD; Dave Shade, JD; Sarah Kulkarni, BS; Jeffrey Day, MD

**Background:** Foundational principles of pulmonary gas exchange can be complicated and difficult for trainees to master. Lectures, a passive learning strategy, are the predominant instructional method to deliver such content to students. Computer or web-based gas exchange programs provide opportunities for interactive instruction, but previous literature has not demonstrated the impact of such programs on learning.

**Hypotheses/Aim:** Does a contemporary, interactive, clinically relevant web-based program coupled with physiologic experiments to teach principles of gas exchange to medical students improve knowledge acquisition as assessed by performance on a multiple-choice examination?

**Methods:** This was a pre-post study design surrounding implementation of a newly developed gas exchange program in one course at the Johns Hopkins University School of Medicine. The program was used during a small group session with students working through a manual of prepared experiments. Student examination scores before program implementation were compared with student examination scores after program implementation. Questions were dichotomized based on their relevance to the principles reinforced by the program. Student perceptions of the program were assessed by a post-course survey.

**Results:** There were 106 students in the control group and 114 students in the intervention group. The difference in scores on the gas exchange versus non-gas exchange questions between the control and intervention groups was not statistically significant ( $p = 0.09$ ), but the increase in gas exchange scores was almost double the increase in non-gas exchange scores (6.8% versus 3.5%, respectively,  $RR = 1.94$ ). Most students were satisfied with the program and rated it more useful than a traditional didactic lecture for learning pulmonary gas exchange.

**Conclusion:** At a time when the instructional landscape at medical schools is dominated by lectures, coupled with a simultaneous decline in laboratory-based exercises, we offer this interactive, web-based program as an effective and enjoyable strategy to impart and reinforce principles of gas exchange. While this study focused on undergraduate medical education learners, we envision broad applicability of this

dynamic program by tailoring accompanying cases and exercises, allowing this valuable resource to be implemented in diverse learning environments.

### **Oral Presentation 7: An Eye on Education: Creating a More Diverse Ophthalmology Workforce**

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**Background:** There is a significant lack of demographic diversity among ophthalmology trainees and attending physicians. Historically underrepresented racial and ethnic groups, such as African Americans and Latinos, only compose approximately 6% of all current resident ophthalmologists. <sup>1</sup> Consequently, the ophthalmology workforce across academic medical institutions is deemed as one of the least diverse specialties. <sup>2</sup> Thus, it is imperative we implement novel approaches within early medical training to correct this longstanding systemic issue.

**Hypothesis/Aim:** We aimed to evaluate the effectiveness of an ophthalmic surgical workshop in engaging students from a diverse undergraduate and medical student population in priming their interest in ophthalmology.

**Methods:** Students from preprofessional societies and honors programs for underrepresented in medicine (URiM) participated in a microsurgical wet lab led by a physician team from the University of Maryland School of Medicine Department of Ophthalmology from February 2023 to November 2023. The stations lasted 15 minutes each and consisted of 1) The Eye Exam, 2) Conjunctival Closure, 3) Scleral Pass, and 4) Cataract Surgery. Pre-surveys and post-surveys were administered to assess participants' stress, interest, understanding, and confidence level in skill on a scale from 1 (none) to 10 (extremely).

**Results:** The study included 77 students, of which 70% were female, 36% reported African American race, 26% reported Hispanic/Latino ethnicity, and 5.2% reported LGBTQ sexual orientation. Survey analysis demonstrated URiMs to have a significant increase in interest in ophthalmology ( $p < 0.001$ ) compared to non-minorities ( $p = 0.20$ ). URiMs also experienced a more significant decrease in stress levels ( $p = 0.002$ ) after completion of the wet lab than non-minorities ( $p = 0.02$ ). URiMs and non-minorities had significant increases in confidence in surgical skill across all four stations ( $p < 0.001$ ).

**Conclusion:** Early introduction to surgical workshops by a diverse team of ophthalmology faculty and residents effectively introduces underrepresented students to the field. URiMs demonstrate positive outcomes to hands-on exposure and better responses than their non-minority peers. Considering the limited exposure of ophthalmology in medical school curriculums, such recurring targeted wet labs are crucial to not only encouraging students to consider pursuing the field, but also increasing visibility, fostering mentorship, and showcasing representation.

**References:** 1). Association of University Professors of Ophthalmology & SF Match Residency and Fellowship Matching Services. *Ophthalmology Residency February 2023; Gender & Ethnicity Data.* (2023); 2) Fairless, E. A., Nwanya, K. H., Forster, S. H. & Teng, C. C. Ophthalmology Departments Remain Among the Least Diverse Clinical Departments at United States Medical Schools. in *Ophthalmology* vol. 128 (2021).

### **Oral Presentation 8: PedsFAST! Pediatric First Act Simulation Training for Interprofessional Teams at Bayview**

**Authors:** Rachel Cane, MD, PhD; James Beal, MD; Kelly Baca, APRN-CNS; Amber Watters, PA-C; Christine Mitchell, RN; Camille Anderson, MD;

**Background:** The majority of pediatric patients present for care at general hospitals rather than pediatric centers. However many general hospitals have limited pediatric resources and staff. Clinical teams in low-pediatric resource settings are often inadequately prepared to respond to pediatric

emergencies. Pediatric staff in general hospitals may lack experience with emergencies, but code responders from other clinical areas are unfamiliar with pediatric patients and resources. The PedsFAST program was therefore developed as a simulation curriculum to train interprofessional providers in low pediatric resource settings to respond effectively to pediatric emergencies.

**Hypothesis/Aim:** After completion of PedsFAST, pediatric clinicians will (1) demonstrate improvement in key psychomotor resuscitation skills, (2) become more adept at interprofessional code communication, and (3) correctly identify and apply Pediatric Advanced Life Support (PALS) algorithms in emergent events. Additionally, after increased exposure to interprofessional simulation, team members will report improved interprofessional practice in the Pediatric Center.

**Methods:** Five sessions were held with 3 emergency scenarios and 4 skills stations. Using rapid cycle deliberate practice, facilitators gave frequent feedback and learners practiced skills repeatedly to achieve mastery. Standardized mock codes were recorded at the beginning and end of each session. Pre-session, post-session, and 6-month follow-up surveys were administered. Surveys assessed participant ability to perform resuscitation tasks and perception of interprofessional collaboration in the Pediatric Center.

**Results:** Pre-session (n=41) and post-session (n=39) surveys were completed by physicians, nurses, patient care technicians, physician assistants, respiratory therapists, and pharmacists. Participants reported significant improvement ( $p < 0.01$ ) in ability to perform chest compressions, bag-valve mask ventilation, operate the defibrillator, administer rapid fluid resuscitation, prepare resuscitation medications, identify and verbalize code team roles, and identify cardiac arrest rhythms. Preliminary review of mock codes demonstrates team-level improvement in tasks related to airway/breathing, circulation, and teamwork. 6-month follow-up surveys are currently being collected to assess retention of skills and change in interprofessional collaboration in the Pediatric Center.

**Conclusion:** Interprofessional simulation training in limited pediatric resource settings can improve the capability of clinical teams to respond effectively to pediatric emergencies.