**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.
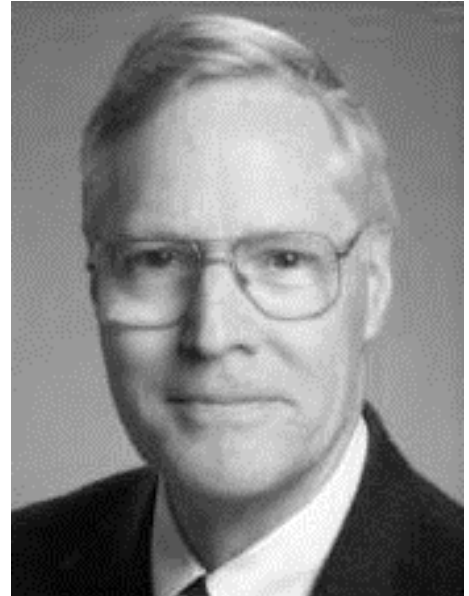
Following his recruitment to Boston University in 1975 as Associate Professor of Medicine, Dr. McCahan continued clinical practice with underserved populations through the Home Medical Service (now the Geriatrics Home Service). He was a regular preceptor of fourth-year students on home visits to frail 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.

Boston University Medical Campus
Office of the Dean and Provost

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Karen Antman, M.D.
Provost, Boston University Medical Campus
Dean, Aram V Chobanian & Edward Avedisian School of Medicine
Professor of Medicine
72 East Concord Street, L103
Boston, Massachusetts, 02118-2526

Dear Colleagues,

Welcome to the 18th annual John McCahan Medical Campus Education Conference. Dr. McCahan served as the school's Associate Dean for Academic Affairs 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.

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

Our keynote speaker is **Linda E. Hyman, PhD**, the Burroughs Wellcome Director of Education at the Marine Biological Laboratory (MLB) at Woods Hole, MA. She oversees the MBL's academic programs at all levels for high school, undergraduate, graduate, and post-graduate trainees, including the world-renowned Advanced Research Discovery courses.

Dr. Hyman previously served as Associate Provost for the BU Medical Campus, and associate dean for Graduate Medical Sciences, supervising graduate education for more than 1,000 students and post-doctoral trainees. In addition, she led several professional development and diversity initiatives.

At the national level, she chaired the AAMC GREAT (Graduate Research Education and Training) group and served as Division Director in the BIO directorate of the National Science Foundation.

She was previously Assistant Dean for Regional Affairs at the University of Washington School of Medicine, Director of their multi-state medical WWAMI Medical Education Program, and Vice Provost for Health Science at Montana State University in Bozeman.

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 a 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:

| | |
|---|---|
| **Department of Medical Sciences & Education** | Hee-Young Park (Professor and Chair) |
| | Kathleen Berentsen Swenson |
| | Paige Curran |
| | Theresa Davies |
| | David Flynn |
| | Stacey Hess-Pino |
| | Maura Kelley |
| | Elaine Lee (Planning Committee Leader) |
| **BUMC IT, Educational Media** | Jana Mulkern |
| | Jack Wolfe |
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| | David King |
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| | Lisa Sullivan |
| **Alumni Medical Library** | Kate Flewelling |
| | David Flynn |
| | Young Joo Moon |
| **Dean's Office** | Daniella Adrien |

**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 Chobanian & Avedisian School of Medicine

Graduate Medical Education, Boston Medical Center

Dean's Office, Boston University Goldman School of Dental Medicine

Dean's Office, Boston University Chobanian & Avedisian School of Medicine

Medical Education Office, Boston University Chobanian & Avedisian School of Medicine

Office of Student Affairs, Boston University Chobanian & Avedisian School of Medicine

Dean's Office, 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:**

| | |
|---|---|
| Alumni Medical Library | McGraw Hill |
| Blackboard Learn by Anthology | Osmosis from Elsevier |
| Bone Clones, Inc. | VisualDx |
| Echo360 | |

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## Schedule of Events

Theme: Education Research

# Tuesday, May 23, 2023 Virtual Vendor Spotlight Sessions

| | |
|---|---|
| 12:30 pm-1:00 pm | **Blackboard Learn by Anthology** |
| 1:30 pm-2:00 pm | **Alumni Medical Library**<br>*Leganto Introduction and Artificial Intelligence (AI) LibGuide*<br>Kristen Sheridan and Carly Schanock, Education & Information Services Librarians |
| 2:30 pm-3:00 pm | **Osmosis from Elsevier**<br>*Teaching and Learning with Osmosis!*<br>Catherine Johnson, Director of Educational Strategy and Academic Engagement |

# Wednesday, May 24, 2023

| | |
|---|---|
| 8:30 am-9:00 am | **Coffee, Networking & Vendor Visits** |
| 9:00 am-10:45 am | **Welcome,** Karen Antman, MD, Provost, BU Medical Campus<br><br>**Keynote:** *Go Beyond the Bench: A Journey in Building Biomedical Sciences Education Programs*<br>Linda E. Hyman, PhD, Burroughs Wellcome Director of Education at the Marine Biological Laboratory<br><br>**Q&A** |
| 10:45 am-11:00 am | **Vendor Introductions** |
| 11:00 am-11:15 am | **Travel to Workshops** |

| | |
|---|---|
| 11:15 am-12:45 pm | **Workshops** *(see pages 13-17 for descriptions)* |

**Workshop A: Speaking the Same Language: A Workshop for Effective Communication Between Research Scientists and Evaluators** (Hyman and Harris, Keynote Workshop)
Classroom:  L-201

**Workshop B: Developing Five Microskills to Guide Learners in a Variety of Clinical Settings: Is It One-Size-Fits-All?** (Duong et al., GMS)
Classroom: L-203

**Workshop C: Demystifying ChatGPT: Using ChatGPT to Supplement Library Resources in Biomedical Research** (Schanock, Alumni Medical Library)
Classroom: L-211

**Workshop D: Medical Educators Count, Too: Developing Educator-Specific Faculty Development for Your Department** (McDougal et al., CAMED)
Classroom: L-209

**Workshop E: Alimentation (the Act of Receiving Feedback): Demolish Your Defensiveness** (Villarreal-Calderon and Bhatia, CAMED and BMC)
Classroom: L-214

| | |
|---|---|
| 12:45 pm-2:00 pm | **Lunch, Networking & Vendor Visits** |

| | |
|---|---|
| 2:00 pm-2:30 pm | **Educator Awards** |

*GMS Faculty Recognition Award*
*Boston University Henry M. Goldman Faculty Appreciation Award –*
    *Predoctoral Category*
*Boston University Henry M. Goldman Faculty Appreciation Award –*
    *Postdoctoral Category*
*Crest Oral-B P&G Professional Oral Health Excellence in Teaching in*
    *the Basic Sciences Award*
*BUSPH Educational Innovation Award*
*CAMED Affiliate Teaching Award*
*CAMED Kaiser Permanente Silicon Valley Affiliate Teaching Award*
*CAMED Doctoring Volunteer Faculty Teaching Award*

| 2:30 pm-3:00 pm | **Abstract Winners and Award Presentations** |
|---|---|

**Best Faculty & Staff Abstract** *(see page 20-21)*

*Utilizing Gamification to Improve Learner Engagement among Massachusetts School Nurses*

*Lesly P Zapata, BA, *Katherine Davis, MPH, Beverly Heinze-Lacey, MPH, BSN, RN, Erin Sivak, MSN, BSN, RN, Susan Franchi DNP, FNP-C, RN, Christian Mazimpaka MD, DrPH(c)

**Best Resident & Fellow Abstract** *(see pages 32-33)*

*The Potential of PhD Progression for Boston University Medical Campus (BUMC) PhD Students*

*Benedicte Gnangnon, PhD, *Kuang Li, PhD, Dena F. Rezaei, PhD, Mishonne M. Marks, Chrysanthos Dellarocas, PhD, Sarah C. Hokanson, PhD, Sasha B. Goldman, PhD

**Best Student Abstract** *(see page 40)*

*An Innovative and Flexible PhD-to-Clinic Transition Course to Improve MD-PhD Trainee Clerkship Performance*

*Songjun William Li, PhD, *Marc A. Vittoria, PhD, *Ying Jie Lock, PhD, Steven C. Borkan, MD

*co-first authors

| 3:00 pm-4:30 pm | **Posters, Networking & Vendor Visits** |
|---|---|

**INSTITUTIONAL DESIGNATIONS:**

| | |
|---|---|
| BMC | Boston Medical Center |
| BUMC | Boston University Medical Campus |
| CAMED | Chobanian & Avedisian School of Medicine |
| GSDM | Henry M. Goldman School of Dental Medicine |
| SPH | School of Public Health |
| GMS | Graduate Medical Sciences |

11

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# Workshop A

## *Keynote Workshop*

## Speaking the Same Language: A Workshop for Effective Communication Between Research Scientists and Evaluators

Linda E. Hyman, PhD[1] and Mary Harris, MSM[2]

*[1]Marine Biological Laboratory; [2]Grant and Evaluation Consultant*

L-201

Ever wonder what the difference is between Theory of Change and Change Theory? Or how research and evaluation differ—aren't they really the same? Outputs and outcomes—what's up about that? Join Linda Hyman and Mary Harris as they walk though these concepts and how they work together to navigate the language of evaluation and assessment.  Participants will review a case study to address some of these basic concepts.

# Workshop B

# Developing Five Microskills to Guide Learners in a Variety of Clinical Settings: Is It One-Size-Fits-All?

Khoa Duong, MD, MPH, Zulfa Ishan, MD, Bryanne Macdonald, MD, Danielle O'Rourke-Suchoff, MD, MPH, Michael Taglienti, and Jeffrey Markuns, MD, EdM

*GMS, Masters of Health Professions Education*

L-203

The five microskills is popular as a method for more structured clinical teaching of learners, originally developed for use in the outpatient setting. The core steps of this teaching model are:

1. Get a commitment,
2. Probe for supporting evidence,
3. Teach general rules,
4. Reinforce what was done right, and
5. Correct mistakes.

While this teaching method most naturally fits into outpatient general medicine clinics, it has great utility and benefit for teachers and learners in other settings as well. However, there is a sparsity of guidance for educators on how to apply these teaching principles to other settings, such as the operating room, specialty clinics, and emergent care. In this workshop, we will first review the steps of the five microskills model, and then, using discussion and active hands-on application, apply these teaching strategies to a variety of clinical settings to help guide future practice.

Target Audience: Clinical educators in a variety of clinical settings such as the operating room, emergent settings, and specialty clinics seeking more structured methods for teaching.

Learning Objectives: Upon completion of this workshop, learners will be able to:
- Explain the microskills method.
- Demonstrate the five microskills in the traditional outpatient setting.
- Apply the microskills method in a variety of clinical settings by participating in role play activities.

Session Outline:
- Introduction and paired practice session (25 minutes)
  - Demonstrate the five microskills (presenters model)
  - Introduce the steps of the five microskills and the rationale behind their use
  - Practice application in pairs with intro case in outpatient setting (presenters will act as additional standardized learners)
- Breakout sessions (25 minutes each): Small group discussion of current teaching challenges, microskills application and practice for specific clinical settings. Participants can choose between the two stations offered during each breakout session.
  - Breakout Session #1:
    - Station 1A: Operating Room OR
    - Station 1B: Clinical procedures
  - Breakout session #2:
    - Station 2A: Inpatient wards OR
    - Station 2B: Acute care setting
- Full group wrap up (15 minutes): Final review of microskills, perceived challenges with applications and potential solutions

# Workshop C

## Demystifying ChatGPT: Using ChatGPT to Supplement Library Resources in Biomedical Research

Carly Schanock, MLIS

*Alumni Medical Library*

L-206

ChatGPT is a recently introduced AI tool that has raised questions about how it can appropriately be used in research. Despite ethical concerns, AI cannot be kept out of the classroom or medical research. This session aims to deconstruct misconceptions held by faculty, staff, and students about ChatGPT and demonstrate how it can be used as a supplement to existing library resources. Participants will learn the ways ChatGPT can help perform medical research, along with the limitations it has as a natural language processing tool.

Target Audience: Faculty, staff, and students that perform research

Learning Objectives:
- Define ChatGPT
- Describe how ChatGPT works
- Identify when ChatGPT can supplement library resources
- Identify the limitations of ChatGPT

Session Outline:
- Poll Everywhere to survey starting knowledge of ChatGPT (5 minutes)
- Preactivity (5 minutes): How can you foresee ChatGPT assisting with your research? Write a prompt based on this.
- ChatGPT (25 minutes):
  - Define GPT and explain how ChatGPT works.
  - Explain and demonstrate the strengths of Chat GPT.
    - Define terms
    - Provide synonyms
    - Translate a research question into a PICO format
  - Explain and demonstrate the limitations of ChatGPT
    - Cannot access resources behind paywalls
    - Cannot access controlled vocabulary thesauruses
    - Creates hallucinations—AI Libguide
    - Journal policies that ban it as a co-author
- Supplement to library resources (25 minutes):
  - Use Chat GPT to create a PICO question based off a pre-selected research question
  - Writing a search string, use ChatGPT to generate synonyms/keywords
  - Language translation
  - Simplify or summarize dense, technical language
  - Format citations
- Hands-on work (10 minutes):
  - Rewrite your prompt
  - Demonstrate one way you would use ChatGPT to supplement your research
- Group discussion/Questions (20 minutes)

# Workshop D

# Medical Educators Count, Too: Developing Educator-Specific Faculty Development for Your Department

Juhee McDougal, MD, Craig Noronha, MD, and Sonia Ananthakrishnan, MD

*CAMED, Department of Medicine*

L-209

Faculty development focuses on improving skills, knowledge, and attitudes in a variety of domains including leadership, teaching, scholarship, and educational development. Faculty development is an integral tool in skills development but can also provide avenue for networking and community building. Faculty goals for educational activities may also vary depending on their specific clinical, administrative, and educational roles. To help support competency based medical education, the AAMC co-introduced educator milestones in order to aid in assessment of teaching effectiveness and ongoing faculty development of educators. This interactive workshop will focus on the design of educator-specific faculty development on the medical campus. Workshop attendees will create an educational needs assessment for their group and be led in exercises to identify barriers to successful faculty development. A portion of the workshop will focus on surmounting challenges related to engagement of faculty members in the setting of burnout, increased productivity pressures, and accreditation issues. Participants will also engage in discussions of how to utilize the skills of educators across the institution to help fill in gaps. The workshop will incorporate a small amount of didactics with both large and small group discussions.

Target Audience: Educators, including module, course, clerkship, and program directors/administrators who are interested in further advancing educator development.

Learning Objectives:
- Introduce AAMC Educator Milestones as a framework for assessment of educational skills for educators in all settings
- Create needs assessment of gaps in educational skills for attendee's relevant teaching domain
- Identify barriers to disseminating successful educator-specific faculty development

Session Outline:
- Introductions (5 min)
- Our Experience with Faculty Development (5 min)
- Small Group Breakout (10 min)
  - Discuss your current involvement with faculty development.
  - Discuss your specific challenges and opportunities for medical education focused faculty development.
- Introduction to AAMC Educator milestones (5 min)
- Small Group Breakout (15 min)
  - Pick 1-2 items from the AAMC Educator Milestone that are important and relevant for your educators.
  - Design a needs assessment for your relevant teaching domain based on a provided template.
  - How would you define success of educator faculty development in your program?
- Large Group Debrief (5 min)
- Small Group Breakout (15 min)
  - Discuss how we can share resources across the institution or when needed how do we develop faculty educational experts that can deliver faculty development across the medical campus
  - Review system-level strategies to support educators in terms of protected time, compensation, wellness, etc.
- Longitudinal planning for ongoing faculty development and evaluation and wrap-up (10 min)

# Workshop E

# Alimentation (the Act of Receiving Feedback): Demolish Your Defensiveness

Rodolfo Villarreal-Calderon, MD[1] and Shreya Bhatia, MD[2]

[1]CAMED, Department of General Internal Medicine; [2]BMC, Department of Internal Medicine

L-214

A half-built wheel will not roll well. Delivering feedback is a skill upon which many workshops are centered, however, they often only address half of the feedback relationship. What about receiving feedback well? To address this limitation, we propose a model for students, trainees, and staff alike to better receive feedback and have a scaffold for this vital ability for more effective feedback. Implementation can be beneficial in both professional and interpersonal realms. This workshop introduces two terms—alimentate (the act of receiving feedback) and ement (the act of delivering or providing feedback).

Target Audience: Faculty, staff, residents, medical students and anyone who would like to alimentate better and teach others to do the same. This model can also be used in more universal, non-healthcare related settings.

Learning Objectives:
- Implement the Alimentation Model so as to maintain an openness and productivity to feedback (even in the setting of nonideal delivery)
- Practice navigating and dissipating defensive thinking when receiving feedback
- Recognize ways to retrieve and extract feedback in various settings
- Identify how you best alimentate

Session Outline:
- Overview (5 min): Brief introduction, review learning objectives and definitions, outline of the workshop.
- Group activity (20 min): Practice receiving feedback in a prompted scenario. Debrief activity and share reflections on person's alimentation.
- Didactics (25 min): Review the Alimentation Model.
- Pair Share (25 min): Reflect on personal experience and practice investigating defenses to feedback received.
- Wrap up (10 min): Lessons learned, sharing final thoughts, questions and answers. Handouts of Alimentation Model.

# ABSTRACTS

* Abstracts are ordered alphabetically by the last name of the primary author.

## Education Technology

These submissions are meant to demonstrate creative use of interactive technology to augment learning. Appropriate types of submissions include course or clerkship websites, electronic clinical case simulations, online didactics, computer – based faculty development resources and electronic evaluation instruments. Submitted projects should be non-commercial although industry funding is permitted if the content and control of the project resides solely with the faculty authors.

**Abstracts 1–2**

## Education Innovation and Research

These submissions showcase scholarship or ongoing research in education at BUMC. Projects can be presented prior to the completion of full evaluation. Examples of educational innovations include: development, implementation, or evaluation of educational tools, course curricula, simulations or innovative educational collaborations. For research, both quantitative and qualitative research may be submitted as well as research in progress.

**Abstracts 3–30**

**1**

# Class Participation Correlates with Academic Performance in a Biochemistry and Metabolism Course for First-Year Veterinary School Students

Christopher M. Schonhoff, PhD[1], Carie Cardamone[2]

[1]CAMED, Department of Pharmacology, Physiology & Biophysics; [2]Tufts University

The objective of the current study was to investigate whether class participation correlates with academic performance in a Biochemistry and Metabolism Course for first-year veterinary school students. Veterinary Biochemistry and Metabolism is a required course for first-year veterinary students at the Cummings School of Veterinary Medicine at Tufts University. The course is a large lecture course with approximately 100 students enrolled each year. Topics covered in the course include the metabolism of carbohydrates, nucleic acids, lipids, proteins, vitamins, and microminerals. In the fall of 2021, students had three options for lecture attendance. Students could attend in person, could listen to lectures streamed live, or could watch lectures at a later time since class sessions were all recorded. To increase engagement in the course, students receive Poll Everywhere questions during most of the lectures in this course. These questions were mainly in multiple-choice format and delivered to students at various times (beginning, middle, and end) during the class. Students who earned A, B, or C grades were compared with how often those cohorts participated in the Poll Everywhere questions. The results indicate that students who earned an A in the course have statistically significant higher participation in Poll Everywhere questions when compared to students who earned a B or C. The results do not distinguish between students who attended the lecture in person and those who watched the live stream since all those students could answer the Poll Everywhere questions during class time. The results demonstrate an association between class participation and academic performance. Namely, higher involvement as measured by answering Poll Everywhere question participation increases the likelihood of getting an A. Many professional schools (medical, dental, and veterinary) routinely record most lectures and do not require attendance. While lecture recordings may provide a valuable study tool for students, these results suggest that students who do not actively engage with class material miss an opportunity to maximize learning.

# BEST FACULTY & STAFF ABSTRACT

## Utilizing Gamification to Improve Learner Engagement among Massachusetts School Nurses

*Lesly P. Zapata, BA[1], *Katherine Davis, MPH[2], Beverly Heinze-Lacey, MPH, BSN, RN[2], Erin Sivak, MSN, BSN, RN[2], Susan Franchi, DNP, FNP-C, RN[2], Christian Mazimpaka, MD, DrPH(c)[2]
[1]CAMED, Barry M. Manuel Center for Continuing Education; [2]SPH, Department of Community Health Sciences
*co-first authors*

**Introduction:** Medication Administration in a School Setting: School Nursing Practice in Massachusetts is an online self-paced course designed for Massachusetts school nurses who must know the laws, regulations, and best practices for administering medications in schools. Course completion is required for Massachusetts school nurse licensure and for Massachusetts Department of Public Health Medication Delegation Registration. This course is offered by the Boston University School of Public Health's workforce training center School Health Institute for Education and Leadership Development (SHIELD).

SHIELD has revised this course multiple times to improve user experience and to reflect updated medication practices. A former course version asked learners to read a lengthy eBook, a key reference for administering and delegating medication. However, it was not possible to track if learners completed this static activity meaning learners could easily skip this step, potentially limiting the effective utilization and application of the eBook. To address this issue, the activity was gamified, requiring learners' engagement with the eBook.

**Purpose:** The primary aim of this gamification was to encourage the effective use of the eBook, both within the course and in practice. Prior research indicates that gamification can increase overall learner engagement and promote engagement in remote learning environments (Krishnamurthy et al., 2022). Therefore, we sought to boost interactivity and learner engagement by gamifying this fundamental reference tool. This course update was completed in July 2022.

**Methods:** SHIELD hired a design consultant to gamify the eBook utilizing adult learning principles. While playing, learners are prompted to refer to the eBook to answer game questions. The game includes five levels, each related to a specific medication practice topic. Advancement in the game requires a success rate of at least 70% at each level. The game draws from a question pool so that the content can remain engaging for those required to retake the course. Knowledge gained and learner experience are evaluated.

**Results:** 524 learners took the course over six months, July – December 2022. Pre and post-test results indicated an 18% increase in test scores, consistent with early course versions. However, our main objective was to improve engagement with the eBook. We conducted a qualitative analysis of evaluation responses and found that the eBook game feedback fell into these themes: "engaging," "interactive," and "easy to use and understand." Furthermore, 92% of learners noted that the game aided their learning. One wrote, "The eBook game was a great way to make reading the book interactive." Another shared, "...the Ebookgame made learning and recalling the content a bit more entertaining and engaging than traditional reading and testing."

**Conclusions:**
SHIELD had two goals in gamifying this course eBook:
- Improve learner engagement.
- Ensure learners referenced a critical resource.

Previous course versions asked learners to read the eBook, which was not engaging, and did not ensure learners completed the task. Gamification provided a fun and interactive activity, improving the overall

learning experience. Evaluation data has demonstrated positive results. Learners reported playing the game was beneficial to their learning and the knowledge check requirements for game advancement prompted users to reference the eBook.

**References:**

Link to the course (audit version): https://cme.bu.edu/shield.bu.edu/content/fy23-audit-med-admin-school-setting-MA

Krishnamurthy, K., Selvaraj, N., Gupta, P., Cyriac, B., Dhurairaj, P., Abdullah, A., Krishnapillai, A., Lugova, H., Haque, M., Xie, S., & Ang, E.-T. (2022). Benefits of gamification in medical education. Clinical Anatomy, 35(6), 795–807.https://doi.org/10.1002/ca.23916

## Boot Camp Teaching Model for Pre-Clinical Dental Education: A Comparative Analysis

Karishma Alibhai, Kendrick Smaellie, MPH, Matthew Zweig, DMD, Afsheen Lakhani, DMD
*GSDM, Department of General Dentistry*

*previously presented at Science Day (3/2/2023)*

**Introduction:** Health profession education has been increasingly using "boot camps" as an effective teaching method to prepare students and learners for the transition to their next educational level such as entering residency or clinical rotations. In this study, we are comparing a traditional pre-clinical teaching model with a concentrated boot camp teaching model. The traditional teaching model for pre-clinical courses in dental education is one session per week for 3-4 months. The boot camp model is a concentrated, focused teaching model with multiple sessions per day for 1-2 weeks right before they transition to the clinic. This comparison will help us better determine and evaluate which model would be more effective for student skill retention prior to entering the clinic and for course scheduling purposes. As we evaluate and compare the potential educational benefits of a traditionally delivered pre-clinical model versus a boot camp style model, we also would like to assess which model might better prepare students for their initial experience in a clinical setting. This will help us evaluate what type of course would be better suited for students.

**Objectives:**
1. Evaluate and compare the educational benefits of a traditionally delivered preclinical model versus a bootcamp model for content retention and implementation.
2. Assess which model better prepares students for their transition into clinic.
3. Compare the effectiveness in terms of student engagement and preparedness.
4. Assess which model is preferred by faculty and teaching assistants (TAs) who participated in both models.

**Materials and Methods:** The study received IRB approval (H-42729) and is a prospective observational cohort study. The advancestanding'23 and DMD '24 students, group 1 and group 2 respectively, will be in this study design until the end of academic year2022-2023. The traditional pre-clinical model is where students would practice in simulation lab once a week for three months, whereas the boot camp model is an intensive one-week course administered just before the students begin their clinical experience.

One of the key measures for this study design is the survey. There are 2 sets of surveys given to Group 1 (AS'23) and Group 2(DMD '24). The first survey will be as a course evaluation given at the end of the preclinical course to each group, whereas the second survey will be given when each member of group 1 and 2 completes their first clinical case. Group 3 (Faculty) and Group 4(TAs) will be given one survey on REDCap after both courses are completed. Group 5 (Clinical supervising faculty) will be given one survey on REDCap.

**Results:** The following skill levels will be assessed and evaluated from the perspectives of the various participant groups: developing skillset on certain software used on clinic floor, preparedness in the transition from pre-clinic to clinic, Time management, and building confidence in the use of this technology and skill set needed for the same. Both cohorts were asked the same questions. 95% of the students participated in the survey. 99% of the faculty and TAs participated in the survey. 83.3% of the faculty preferred bootcamp over traditional preclinical models. 58.9% of the TAs preferred the boot camp over the traditional preclinical model. Based on the results, 52% of the cohort in the boot camp model strongly agreed that the CAD/CAM course adequately prepared the students to deliver CAD/CAM crowns.

Consequently, the cohort in the traditional group, 44% strongly agreed that the CAD/CAM course adequately prepared the students to deliver CAD/CAM crowns.

**Conclusions:** This study indicates that the boot camp model has the potential to be a more effective teaching methodology in preclinical dental education. However, further research needs to be conducted. More data will be collected actively as students are currently in the clinic and working on successful delivery of restorations.

# Piloting Effectiveness of a Peer Assessment Tool in a Preclinical Course

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**Introduction:** Peer assessment is a valuable but underutilized tool in health education. When properly implemented peer assessment can be a mechanism for developing critical thinking and reflective skills, improving communication and teamwork, and enhancing the overall learning experience of dental students.

**Purpose:** The purpose of this study is to assess students' perceptions on a peer assessment tool designed to provide anew opportunity for students to critique fellow students' formative exercises in a pre-clinical computer aided design and computer aided manufacturing (CAD/CAM) course.

**Methods:** A random number generator was used to invite groups of 20 Doctor of Dental Medicine 2024 (DMD24) and Advanced Standing 2023 (AS23) students to participate in a pilot session in the Simulation Learning Center (SLC). Goals for recruitment included 12 AS and 12 DMD students who successfully completed the CAD/CAM course the previous semester. The email invitation explained participation was on a 'first to confirm' basis. Recruitment continued following a similar protocol until goals were met. Participation was confirmed by a member of the research team and a reminder email, one day prior to the study, was sent to all study participants.

During the session, participants were randomly assigned to sit at numbered workstations and directed to retrieve their scan for preparation of tooth #19 from the 2022 CAD/CAM course. Using a rubric which included criteria in areas of preparation, scan, and design components, participants were asked to complete a self-evaluation of their previous work. Following which, participants were asked to randomly switch with another pilot participant and complete a peer-evaluation utilizing the same criteria, blind to self-assessment scores. Lastly, a faculty evaluator (blind to self and peer assessment) completed a faculty assessment, under the same criteria, for each participant. After assessments were complete, participants were able to review and compare self, peer, and faculty assessments.

Participants were asked to complete an 18-item REDCap survey reflecting on the use of the peer assessment tool. Kendall's tau tests were calculated to determine the correlation between the assessment criteria across the three different groups.

This study was determined to be exempt from BU IRB (#H-42945).

**Results**: Of the n=24 confirmed participants in the pilot study, n=23 (96%) individuals attended. The total average scores across self, peer, and faculty assessments were 25.7, 25.5, and 24.8 out of 30 respectively. The results of the tau test indicated several areas of high relative correlation as well as several areas of low relative correlation. The overall total scores yielded a self to peer tau of low correlation (LC) (tau=0.1106), moderate correlation (MC) between self to faculty (tau=0.4101), and the highest correlation between peer to faculty (tau=0.5589). For preparation, the tau values indicated LC between self and peer assessments (tau=0.1839), MC between peer and faculty assessments (tau=0.433), and low to moderate (LMC) correlation between self and faculty assessments (tau=0.3884). For scanning, the tau values indicated MC between self and peer assessments (tau=0.4572), LMC between peer and faculty assessments (tau=0.3593), and high correlation (HC) between self and faculty assessments (tau=0.6431). And for design, the tau values indicated MC between self and peer assessments (tau=0.4076), HC between peer and faculty assessments (tau=0.7446), and MC between self and faculty assessments (tau=0.522).

Multiple areas of LC were found in self to peer evaluation, specifically the lowest correlation of self to peer total scores(tau=0.1106) and in the preparation criteria (tau=0.1839). Furthermore, the peer to faculty

group in the total assessment score is the highest overall correlation (tau=0.5589), as well as the highest individual correlation in the design criteria (tau=0.7446). For preparation, peer to faculty was also the highest level of correlation of the three groups (tau=0.4330).

The post study survey was completed by 100% (n=23) attendees (12 DMD24, 11 AS23). Of participants, 100% (n=23) agreed that the rubric provided was easy to understand and implement, as well as aided in better analysis of their own work from both conducting and receiving a peer review. For survey questions inquiring if opportunities to complete peer assessments are beneficial to the student's learning as well as developing a deeper understanding of the assessment criteria by completing a peer assessment, 96% (n=22) students agreed.

**Conclusions:** The results of the study support the hypothesis that peer-assessment in a dental student preclinical course is an important aspect of the learning process. The difference between the self-assessment scores and the peer and faculty assessment scores suggests that external feedback is crucial for students to accurately evaluate their performance and identify areas for improvement.

The analysis of the average scores for each phase of the course further highlights the importance of peer assessment. Additionally, the peer to faculty tau values were generally higher than the self to faculty tau values, suggesting that peer assessment may be a more reliable indicator of performance than self-assessment.

Additionally, the feedback from students in the post study survey indicates that students not only felt they benefited from peer assessment, but also find it an important tool in their learning and critical thinking armamentarium.

Overall, the findings of this study suggest that course directors should consider incorporating peer assessment into their courses as a way to enhance the learning process and improve student performance. Results support a larger study examining the peer assessment tool in the spring of 2023 CAD/CAM course for all DMD25 and AS24 students (n=217).

# Should pediatricians consider offering the HPV vaccine to mothers accompanying their children to routine visits?

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*previously presented at SAHM (3/9/2023)*

**Background:** Human Papillomavirus (HPV) is the most common sexually transmitted infection in the Unites States. It affects millions of Americans each year. Although HPV infections are very common, HPV vaccination has proven benefits and protects against the majority of cervical, anal and oropharyngeal and other genital cancers.

The HPV vaccine was approved for use for males and females ages 9-26 years, in 2014. The Food and Drug Administration (FDA) expanded the approved age range for the 9vHPV vaccine from 9-26 years to 9-45 years in 2018. However, research has still pointed to low vaccination rates among adult women. This could likely be due to missed opportunities as they must have aged out and be ineligible for the vaccine prior to the expansion.

**Purpose:** To assess a better understanding of patient's (particularly mothers) preferences of receiving the HPV vaccine to provide quantitative estimates of potential vaccine uptake.

**Methods:** We conducted a descriptive questionnaire survey among women participating in an Open-Label Clinical Trial evaluating the Immunogenicity of the 9vHPV Vaccination Regimen over 6 months among women aged 16 to 45 years old. The survey was fielded to a sample of 245 women receiving care at Boston Medical Center, who had not yet received the HPV vaccine. We used a two-sided Fisher's exact test (because >20% of the expected cell count is less than 5) to compare the responses to two closed-ended questions: "If your daughter or son's doctor offered you the HPV vaccine during your child's visit, would you decide to get the vaccine?" and "Would you prefer to receive the HPV vaccine through your primary care physician instead of your child's care doctor?". The mean and standard deviation (SD) were reported for continuous variables whereas proportions were reported for dichotomous and categorical data. All analyses were performed using SAS (9.4).

**Results:** We had a diverse study population with a mean age of 32 years (SD=7.86), 25.75% were African American, 20.60% were Hispanics, 21.46 % were Asians, 18.88% were White and 13.31% were Others. We used cross tabulation to describe the relationship between the two variables of interest. Results indicate that 85.11% of women are willing to receive the vaccine from their child's doctor; however, are unwilling to receive it through their own primary care provider. Whereas 7.76% women preferred receiving the vaccine from their primary care physician and are unsure or unwilling to get it from their child's doctor. Also, 67.74% of women indicated their willingness to get the vaccine from their child's doctor; however, were unsure about getting it through their primary care physician. We did a two-sided Fisher's exact test of proportions of $p < 0.0001$ and concluded that there is a statistically significant difference between women who preferred receiving the HPV vaccine through their child's provider and women willing to receive it through their primary care provider (assuming a significance level of 0.05).

**Conclusions:** Our findings suggest that mothers would prefer getting the HPV vaccine for themselves at their child's doctor visit, if it was offered to them. Influenza and Covid vaccines are offered to parents/guardians in pediatric offices, and this should be implemented for HPV vaccine as well. This would increase the vaccination rates, given children tend to have an increased number of visits prior to the adolescent years and parents are likely to accompany their children to these visits.

# Evaluation of a Student Clinical Research Education Program in Addiction Medicine

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**Introduction:** Substance use disorders are an ongoing societal, economic, and public health challenge in the United States. Nonetheless, medical education and research training preparing physicians to address the substance use crisis have been insufficient to meet needs. An adequate, diverse number of well-trained clinician scientists and other researchers is crucial to improve the diagnostic, screening, and treatment approaches for individuals with substance use disorders. Implementation of clinical research training programs that involve medical students has demonstrated improved research productivity and interest in these learners' careers. However, little guidance exists on developing and implementing addiction medicine research programs for students. In response, we established a summer research program in 1995 supporting trainees to gain exposure to clinical addiction research careers.

**Purpose:** We aimed to evaluate our experiential student clinical addiction research program by analyzing its components, evaluation survey data, and scientific outputs.

**Methods:** Our curriculum employed a three-pronged approach that combined mentored research training, didactic education, and clinical observerships for medical students and other trainees to acquire experience with addiction medicine and research. We also provided an overview of clinical care perspectives through remote panels involving healthcare providers, recovery coaches, and patients in recovery from substance use disorders. Utilizing the Kirkpatrick model as program evaluation framework, we analyzed evaluation data from programmatic surveys (didactic seminar evaluations, overall program surveys) and conducted qualitative feedback exploration.

**Results:** Between 2007 and 2019, 56 trainees and 26 faculty mentors participated in the curriculum. To date, 31 students have published 45 papers with their faculty mentor. Analysis of the past 12 years of program evaluation data demonstrated that students highly valued individually-mentored research experiences. They indicated that seminars familiarized them with the foundations of different clinical care models and career trajectories in addiction medicine. Clinical observerships and patient and recovery coach panels provided students with patient contacts in various multidisciplinary addiction treatment settings. These experiences, perhaps most importantly hearing about patients' lived experiences, meaningfully informed various research and didactic activities.

**Conclusions:** Programs that integrate experiential addiction research learning, i.e., mentored research activities, didactic sessions, and clinical observerships, can provide trainees with a profound understanding of substance use disorder treatment and research. Our summer student research program successfully introduced students to addiction medicine and research, manifested by high peer-reviewed publication productivity. However, while our program involved committed mentors and inspired mentees to pursue professional paths in addiction research, it did not specifically incorporate attention to equity and diversity into program planning and implementation. Going forward, the program will improve equity by increasing the recruitment of trainees from disadvantaged groups and engaging underrepresented faculty.

# Enrichment in Pipeline Programs Fosters Success

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**Introduction:** The MS in Oral Health Sciences (OHS) at Boston University Chobanian & Avedisian School of Medicine, Graduate Medical Sciences, in collaboration with BU's Goldman School of Dental Medicine, is a rigorous, credential-enhancing, pipeline program that enhances the academic preparedness of all students for dental school. This includes students from disadvantaged backgrounds as well as those from groups underrepresented in dentistry who often lack opportunities needed for success. Over 90% of OHS graduates have matriculated to dental school.

**Objectives:** It is well-documented, that success in dental school, requires more than academics for students from underrepresented groups to thrive; therefore, we have recently improved support to OHS students by initiating an enrichment program to foster not just academic support but by creating an enrichment series to promote relational, social and professional skills for dental school.

**Methods:** Between 2017 and 2021, an enrichment program with a robust social, academic, and professional component was implemented and expanded yearly. Success of individual and cumulative activities were assessed through various surveys. Responses to survey questions were collected using a poor-excellent (1-5) Likert scale. Results were reported as the percentage of respondents selecting "very good" or "excellent" (4 or 5). Also indicated, for each year, were the percent of students in cohort with successful matriculation to dental school and percent of students in cohort from under-represented (URG), disadvantaged, or first-generation groups.

**Results**: Exit surveys prior to implementation of our enrichment program indicated that although OHS students were happy as graduate students (90.5%+/-3.6), they were less so with the social activities on the medical campus (58.79%+/-3.9). Social enrichment sessions (four in 2017 which increased to eight in 2021) and professional development sessions (three in 2017 which increased to five in 2021) were added incrementally. Students reported that social sessions (dinners, volunteer opportunities and wellness events (95.35%) and professional development events (young dentist panel, simulation learning center tour and clinical skills transition seminar (97.29%)) were viewed positively. Near peer tutoring and review sessions with D1-OHS alum as well as academic enhancement workshops have previously been shown to be very beneficial.

**Conclusions:** An enrichment program with social, academic, and professional development components to enhance OHS student support and programming helps students to build confidence, professional skills and feel supported, and facilitates transition to dental school.

# Recognizing Barriers to Care through a Social Determinants of Health Curriculum

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*previously presented at the American Geriatrics Society Annual National Conference (May 4, 2023)*

**Introduction:** Fourth year medical students at Boston University Chobanian & Avedisian School of Medicine complete a required 4-week geriatrics clerkship, during which they participate in home visits with a faculty preceptor. The home care program serves approximately 500 patients, 60% from minority populations and 25% with low English proficiency. To increase education around social determinants of health (SDOH) and meet the Health Equity AGS sponsored Minimum Competencies in Geriatrics for Medical Students, we created an exercise using the Geriatrics 5Ms framework to assess how SDOH impact patients' care. We distributed a survey to evaluate the educational impact of this exercise.

**Purpose:** Using the Geriatrics 5Ms framework, we created an exercise to systematically assess how SDOH impact patients' care. We then aimed to evaluate the educational impact of this exercise.

**Methods:** Students were required to complete a structured observation of a patients' home using a standardized worksheet. They were asked to identify ways in which a patient was affected by the World Health Organization-defined categories of SDOH, and then connect those SDOH with the 5Ms using a worksheet that provided a visual demonstration of this intersection. 81 students to date have completed a voluntary, anonymous survey at the end of their clerkship. The survey contained both quantitative and qualitative questions focused on how this experience affected their approach to patient care. The results were reviewed by two independent reviewers to determine common themes.

**Results**: The survey participants reported two overarching themes in their open-ended responses: 1) the exercise prompted them to become more observant in the home and identify barriers to care they otherwise would have missed, 2) they were encouraged to assess how SDOH impact overall health and access to healthcare. After completing the exercise, 62 out of 81 students (77%) felt very or completely confident in identifying and discussing a patient's social risk factors and how those factors contribute to their health. Additionally, students prioritized having a future interprofessional session with a social worker to further supplement the exercise.

**Conclusions:** This exercise serves as an important tool to increase student confidence in identifying and addressing SDOH. Students became more observant and were more readily able to connect how SDOH impact overall healthcare. In the future, we hope to incorporate an interprofessional session or an organized discussion to help students further explore the complexities of SDOH in older adults.

# Health Profession Educations for LGBTQIA+ Health in Developing Countries: A Scoping Review

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**Background:** Health disparities faced by lesbian, gay, bisexual, transgender, queer, intersex, and asexual (LGBTQIA+) individuals have been well documented. However, there is limited research on the state of undergraduate health profession education (HPE)related to LGBTQIA+ health in developing countries.

**Objective:** This scoping review aims to map the literature on undergraduate HPE related to LGBTQIA+ health in developing countries and to identify gaps in the research.

**Methods:** A scoping review was conducted using JBI guideline. We searched for articles published before April 18, 2023, in PubMed and EMBASE databases. Search terms included ("health students" OR "professional education") AND ("Sexual and Gender Minorities) MeSH terms, developing countries' names. Data were extracted and analyzed using a thematic analysis approach.

**Results**: A total of 81 articles were included for screening. Limited number of studies were conducted across different regions of the world, including Africa, Asia, and Latin America. The majority of the studies focused on undergraduate medical students, while others focused on nursing, midwifery, and pharmacist students. No interprofessional study was found. Besides a few commentaries and reviews, most studies focused on knowledge and attitude of health students about LGBTQIA+ people and their health. We have found no articles about curriculum or course design.

**Conclusion:** This scoping review highlights the limited research on undergraduate HPE related to LGBTQIA+ health in developing countries. There is a need for more scholarly work on HPE interventions and their effectiveness to improve HPE related to LGBTQIA+ health and improve the competencies of healthcare providers in serving LGBTQIA+ populations.

**Keywords:** Health profession education, LGBTQIA+ health, developing countries, scoping review.

# A Qualitative Study of the Experiences of Underrepresented Groups in Addiction Medicine Training Programs

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**Introduction:** Fostering the development of a diverse addiction medicine workforce can improve medical and public health responses to the disparate health risks created by unhealthy substance use and substance use disorders (SUDs). A workforce and training environment that embraces diversity, equity, inclusion, and belonging (DEIB) principles will foster the career development of talented and diverse team members and may encourage novel approaches to address the disparities in treatment and outcomes experienced by Black, Indigenous, and People of Color (BIPOC). Despite these potential benefits, little is known about the diversity in demographics and experiences of individuals who participate in addiction medicine training.

**Purpose:** We aimed to describe the identities and experiences of AM training program participants at Boston Medical Center, specifically those who self-identify as members of underrepresented groups (URGs), through a qualitative interview study.

**Methods:** We collected demographics of participants who had completed addiction medicine training in one of the following programs at Boston Medical Center during the last 5 years: Grayken Addiction Medicine Fellowship (AMF), Chief Resident Immersion Training (CRIT), Fellow Immersion Training (FIT), or Research in Addiction Medicine Scholars (RAMS) using an online survey. Using a semi-structured interview guide, we conducted video-based interviews with physicians who self-identified as members of underrepresented groups (URGs). Interviews were conducted from July to December 2022. We completed a rapid thematic analysis to identify over-arching themes.

**Results**: We recorded and transcribed 20 semi-structured interviews with 20 physicians who identified as URG. A rapid thematic analysis led to the identification of several over-arching themes around three topic areas 1) Participants described aspects of their identity that contributed significantly to their choice of career and career trajectory and the challenges and successes they had experienced in education and training settings; 2) The majority of participants identified neutral or positive experiences related to AM program inclusivity, but also described areas for improvement including expanded diversity (broadly defined) in program leadership, educators, participants, and educational content and expansion of opportunities for networking and relationship-building; 3) The majority of participants reflected positively on AM program impact on their short and long term career goals and perception of self as addiction medicine health professionals.

**Conclusions:** We identified several themes related to the identities and experiences of URG participants in BMC AM programs that are informative for program development and improvement. Concrete feedback reinforced program successes in creating welcoming and rigorous educational environments, while also prioritizing areas for improvement and enhancement. These insights can contribute to improvements for AM training programs both at and outside of BMC as they offer useful information not only regarding who comprises the future of the addiction medicine workforce, but also how to effectively improve diversity, equity, inclusion, and belonging (DEIB) efforts within the addiction medicine training programs.

## BEST RESIDENT & FELLOW ABSTRACT

# The Potential of PhD Progression for Boston University Medical Campus (BUMC) PhD Students

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*with updated content from previous presentation at Professional and Organizational Development (POD) Network, 47th Annual Conference (11/19/2022)*

**Introduction:** Doctoral education in the United States has been on a shifting trajectory for several decades, with the number of PhDs earned annually steadily increasing, and the percentage of tenured/tenure-track instructional faculty in post-secondary institutions shrinking. PhD degree recipients now pursue a variety of career paths outside of academia, and the private sector even became the first employer of PhDs in 2017. However, while PhDs need to be responsive to the job market by gaining skills and accessing resources to prepare for their next career step, the requirements of most PhD programs (e.g., completion of coursework, production of a thesis manuscript) typically do not enable PhD students to gain and provide evidence for the full range of skills required to enter the workforce.

**Purpose:** To better support PhD students in building and communicating about their professional skills, we designed a new type of program that would allow them to choose and complete self-paced and accessible modules whenever needed, and be rewarded for investing time in their professional development. Through collaborations with students, faculty members, and university staff at Boston University, we developed the PhD Core Capacity framework which encompasses seven Core Capacities— communication, discipline-specific knowledge, teaching, management and leadership, research, self-awareness, and career development. We then designed the first learning level of PhD Progression, an online professional development program tied to a digital badging system, for each of the seven Core Capacities mentioned above, since the use of digital badges for competency-based education to motivate and allow learners to communicate about their skills is supported by abundant literature.

**Methods:** To evaluate the first level of PhD Progression, we ran a pilot study with 65 PhD students at different stages of their PhD and from diverse disciplines, who had access to 67 different training modules spread between the 7 Core Capacities in Summer 2021. Over the course of the summer, the study participants completed 640 training modules. Data collected on the training platform, and through program evaluation surveys and focus groups, was used to evaluate the program's ability to support skill building, the participants' level of engagement and satisfaction, as well as their opinion on the use of digital badges to motivate and reward their participation.

**Results:** Both the quantitative and qualitative data collected during the pilot study showed a high level of satisfaction: 87%participants said they gained skills they can apply to their current PhD program and their future job, and 78% participants said gaining digital badges gave them a feeling of satisfaction and accomplishment. Focus group participants also highlighted the relevance of PhD Progression: (1) in the early stages of the PhD to learn more about campus resources and their field/discipline,(2) to prepare for teaching and research, (3) to improve self-care and increase their self-awareness, (4) to gain skills in management and communication, and (5) to efficiently plan and manage their dissertation writing phase and their career transition.

**Conclusions:** Our study validates, for the first time, the use of digital badges as a useful and motivating way to reward learning int he PhD student population. This type of professional development program tied

to a badging system could therefore be used by other graduate career and professional development offices to disseminate skill building content and training opportunities for PhD students.

The PhD Progression program is now available to the ~3000 PhD students of all the Boston University schools and colleges. Eighty-six BUMC PhD students have already registered for PhD Progression and have completed 17 modules, mainly in Career Development (Career Workshops, Explore Career Resources, Identifying Transferable Skills, and Writing a CV). Their interest in and completion of such modules suggest their needs for more career development support.

We are currently working on expanding the training offering of the program with more advanced modules to support students all along their PhD, and establishing collaborations with local companies to offer students the opportunity to take part in university/industry collaborative projects and internships. For example, we are in the process of creating modules regarding career awareness and exploration in biotechnology and pharmaceutical companies, which would greatly benefit BUMC PhD students interested in industry careers.

# Medical and Public Health student-run initiative to screen, intervene and refer to resources in the pediatric emergency department to improve equity in adolescent health care

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**Background/Purpose:** It is widely recognized and encouraged by educators to integrate social determinants of health (SDoH) into preclinical medical education. However, this education is often limited to coursework, and exploring ways to meaningfully apply this knowledge in preclinical years is an important avenue for exploration in medical education. PEERS (Partners in Equity and Empowerment through Resources and Support), based out of the Boston Medical Center Pediatric Emergency Department (BMC PED), is spearheaded by medical and public health students who a) conduct SDoH, mental health, and substance use screenings; b)conduct brief negotiated interviews (BNIs) to identify adolescents' intrinsic motivations for health-promoting behaviors; and c)connect patients with relevant and personalized institutional and community resources. We provide a formative description of our program, with the goal of promoting health equity among the BMC PED adolescent population, furthering interprofessional medical and public health collaboration, and improving medical and public health student education and self-efficacy in discussing sensitive SDoH and health-related topics.

**Design:** Training for this program includes a) an orientation involving an overview of SDoH in the BMC PED population; b) BNI training by skilled facilitators; c) monthly didactic sessions led by content experts in topics such as addiction medicine, sexual health and health equity, with case presentations by current PEERS members to prompt student discussion; and d) PED training shifts where new PEERS members shadow experienced members. Preclinical medical student volunteers complete a REDCap survey prior to participating in the PEERS program and after completing their first year. The survey evaluates the impact of the monthly didactics led by community experts, case presentations, discussions of health equity, and resource dissemination on preclinical medical students' comfort discussing sensitive SDoH and health-related topics with adolescent patients.

**Results**: A total of 27 medical and public health students participated in the pre-training survey this past year. Of the 27 student participants, 22% said they received no prior training or education on substance use, and although 37% said they felt "comfortable" taking a substance use history, 44% said they felt uncomfortable counseling patients on their substance use. Additionally, while 33% reported feeling "comfortable" taking a sexual health history, 33% felt "neutral" counseling patients on their sexual health behaviors. Results of the post-participation survey will be collected at the conclusion of this academic year.

**Conclusions:** Through the implementation of a student-led, interprofessional screening, brief intervention, and referral program addressing broader SDoH concerns, we identified an opportunity to expand students' prior training and comfort in addressing key areas of patients' social histories, bridging a gap in current preclinical medical education. PEERS provides meaningful and active SDoH training to enhance existing curricula while offering preclinical students hands-on experience in interprofessional patient care. At the end of this academic year, PEERS participants will be re-surveyed to understand this program's effectiveness in improving medical and public health students' education and self-efficacy in holding sensitive SDoH and health-related conversations with adolescent patients. Future efforts are underway to investigate students' longitudinal comfort and effectiveness in conducting BNIs and addressing sensitive topics, with the intent to eventually scale PEERS to additional patient populations.

**Authorship Correction (5/16/2023):** Bauer, Li, and Maypole were inadvertently omitted at time of submission. Their contributions are acknowledged by all authors, and authorship has been amended.

# Faculty and Student Perceptions of Clinical Preparedness Differ After the COVID-19 Pandemic

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*previously presented at the American Dental Education Association (ADEA) Annual Session & Exhibition (3/12/2023)*

**Introduction:** At Boston University Goldman School of Dental Medicine, limited classroom occupancy due to COVID-19 pandemic resulted in a shortened preclinical course curriculum. Reduction of preclinical curriculum to one third in school year of 2020 to 2021 provided an opportunity to assess the effectiveness of the shortened preclinical training and student's preparedness by evaluating students' clinical performance in three restorative courses of Fixed Prosthodontics, Removable Prosthodontics and Operative Dentistry.

**Purpose:** This study evaluated faculty perceptions of students' clinical performance before and after the shortened preclinical curriculum. It also compared preclinical student self-evaluations of their clinical readiness to their pre-pandemic cohorts. Finally, this study evaluated faculty perceptions of their own grading tendencies of students' clinical performance.

**Methods:** General supervising faculty (n=22) in the department of General Dentistry completed an electronic questionnaire regarding their perceptions of third-year dental and second-year advanced standing students' clinical performance. Student self-evaluations (n= 1,393) for the three preclinical courses from 2017-2021 were also evaluated. Responses were analyzed using descriptive statistics.

**Results:** Most faculty rated current students' clinical preparedness as worse than their pre-pandemic cohort across all three courses (63.6% for Fixed Prosthodontics, 71.4% for Removable Prosthodontics and 45.5% for Operative Dentistry). When rating various technical skills, between 42.9-76.2% (Fixed Prosthodontics) and 31.8-77.3% (Removable Prosthodontics) of faculty rated the current students as below expectations. In contrast, only 19.0-61.9% of faculty rated the students' skills as below expectations for Operative Dentistry. Faculty reported the current students' need for explanations in clinic as worse than previous students for the Fixed (47.6%) and Removable (50.0%) Prosthodontics courses, but not for the Operative Dentistry course (20.0%). Despite 90.9% of faculty believing that grades are currently inflated, only 18.2% perceive themselves to be grading more leniently due to the shortened preclinical curriculum.

**Conclusions:** In general, the faculty perceive current students to be less clinically prepared than the students believe themselves to be. Students' technical skills and preparedness are closer to faculty expectations for Operative Dentistry, compared to Fixed or Removable Prosthodontics. The pandemic is likely not contributing to grade inflation.

# Comprehensive Rubrics and Checklist Tools for Evaluating Undergraduate Medical Student Performance During Problem-Based Learning Group Discussions

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**Introduction:** Problem-Based Learning (PBL), as an active learning method provoked by a problem focusing on student-centered learning, has variability in the assessment offered to evaluate the PBL curriculum. Therefore, it is important to ensure that students can use PBL to fill their gaps in knowledge. A failure to utilize Likert scale rubric tools to grade student performance resulted in inflated scores and less objective assessment. In addition, the tools supporting the PBL discussions, including the facilitator guide as part of the assessment, are rarely reported—particularly the checklist-based tools in the group discussion. This project focused on developing assessments during PBL discussions for undergraduate medical school by establishing the design for the checklist-based tools for facilitators, combined with comprehensive assessment rubrics for the group discussion sessions of undergraduate medical students.

**Purpose:** To develop an existing assessment into a comprehensive rubric with performance checklists during Problem-Based Learning group discussions for undergraduate medical students at the Faculty of Medicine, University of Tanjungpura.

**Methods:** The existing Likert-scale rubric assessment for Problem-Based Learning (PBL) group discussion was modified by separating each score point, revising the indicators, and adding points for the performance checklist inspired by the modified PBL twelve-steps by Branda. The performance checklist also includes the facilitator guides and topics requirements template for each discussion session.

**Results**: The expected formulated assessment will be proposed to the undergraduate program at the Faculty of Medicine, University of Tanjungpura. Furthermore, the author will test the reliability and validity of the new rubric and checklist after at least one semester of application. Finally, the validated instrument will be integrated into the student evaluation website and presented to fellow faculty members.

**Conclusions:** The new comprehensive rubric is expected to measure a more objective performance for students during the discussion and help the facilitator to follow the discussion thoroughly. As an ongoing assessment development, the limitation of this project is that the reliability and validity test of the new rubric is estimated in the following new semester, starting in September 2023. The author also needs to settle in Indonesia to conduct further project plans.

# Understanding Policy Impact from the Translational Science Context

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**Introduction:** "Clearly an understanding of context is important to frame research impact assessments but generating data to inform such understanding may not be simple. The links between context and timing mean that context changes over time" (Morton, 2012). Narrative data has always been integral to evaluation (e.g., ethnography, qualitative methods to do case study). It serves to illuminate context, build connection between different stakeholders, develop program evaluation theory, foster meaning making, and more.

**Purpose:** To understand the context of translation at BU, evaluators are working with individual investigators, school deans, and faculty development committees to understand the goals, needs and culture of the academia setting at BU. Along with understanding, what counts as "translation" in each discipline across BU.

**Methods:** The CTSI licensed the Overton Policy Platform in July 2022 to enable CTSI evaluators to conduct policy analysis on publications citing the grant and catalyze discussions with the investigator community about the value and use of the analyses in helping them demonstrate translation to policy.

During 2022-23AY, evaluators are conducting individual investigators and school-wide analyses and interviewing them to understand perceptions about assessing policy impact. To conduct the analyses, evaluators searched the (1) Overton database with publication DOIs/PMIDs to examine policy citations and BU Profiles, fed from Dimensions, for any additional cited publications. With the identification of any additional publications in BU Profiles (the gap), evaluators searched Overton to determine if these publications were indexed in the database. Author name and ORCID were searched in Overton for policy mentions. Mapping policy impact using bibliometric triangulation is essential to enhance accuracy.

**Results:** Evaluators are currently compiling interview data and developing a survey to send to all investigators within the BU community to understand "translation" and "policy impact success". This interview and survey data will help to describe policy impact use, benefits, and opportunities for culture change within the CTSI context.

We will present analysis findings on a school-wide level to show the policy impact from investigators. Results presented include an analysis of investigators from the School of Public Health. The SPH publication portfolio from BU Profiles included 22,837 publications identified, of which 6,480 publications led to 13,805 policy documents. Policy sources citing these publications span 640 sources from 83 countries and 56 intergovernmental organizations from 640 policy sources.

**Conclusions:** To advance the science of translation, which is the process of turning observations into interventions to improve health, informing public policy is one critical way to improve the health of individuals and communities. By defining the value and use of the analyses in helping to demonstrate translation to policy will help individual investigators, school deans, and faculty development committees understand the goals, needs and culture of the academia setting at BU.

# Cultivating Empathy and Reflection Through Storytelling: Developing a Narrative Medicine Platform for Family Medicine Providers

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**Introduction:** Storytelling is a time-honored means through which community connections are forged. Narrative medicine has been established as a tool for addressing the relational and psychological dimensions that accompany physical illness while promoting reflective practice (Charon). The use of narratives has been shown to develop communication skills that align with the Accreditation Council for Graduate Medical Education (ACGME) competencies (Johna et al). The COVID-19pandemic has had a well-documented impact on the education and training opportunities afforded to medical students and residents. In a survey of residency training programs conducted by the ACGME, family medicine training programs were the most significantly impacted by the pandemic (Hogan et al). In an effort to support healthcare providers and trainees in developing empathy and professional identity and build community during the COVID-19 pandemic, a storytelling platform inspired by NPRRadio's Moth story hour and UMass Medical School's MedMoth was developed for the Department of Family Medicine at the Chobanian and Avedisian School of Medicine.

**Purpose:**
1. To build community and connection among colleagues through storytelling.
2. To deepen storytelling skills by writing experiences, using voice and body language in dynamic ways to express character and emotions.
3. Share various perspectives as a community of health care providers to foster empathy.

**Methods:** The Department of Family Medicine's MedMoth events have been held bi-annually since 2021, evolving from a fully virtual model to a hybrid virtual and in-person event. Participants are residents, medical students, and clinical faculty. Each 60-minute-long MedMoth event starts with an introduction to narratives and review of the narrative arc. There are 4-6 speakers at each event. Each speaker has 5 minutes of storytelling time followed by a group discussion. Past themes have included "Motivation," "COVID-19 Experience," "Advocacy," and "Global is Local." Participants have shared oral prose pieces, poetry, and personal photographs. The event in March 2023 included web-based data collection. Twelve (12) participants completed a one-time cross-sectional survey.

**Results:** Participants have described MedMoth events as a space to connect over shared experience. Of the 12 survey respondents in March 2023, more than half (8) believed that MedMoth could address feelings of burnout. Several respondents noted the role of MedMoth in "connection," "engagement," and "meaning-making." Ideas suggested for the thematic focus of future storytelling events included humorous and awe-inspiring moments in medicine, discovering an esoteric or easily missed diagnosis, and differing expectations between providers and patients.

**Conclusions:** Evidence thus far suggests that MedMoth events can increase a sense of connectedness and foster empathetic spaces of care. Future data-gathering efforts will focus on establishing long-term outcomes of participation in MedMoth events. Additional directions for MedMoth will include the introduction of art, music, and dance as forms of storytelling and the use of voice and body language in dynamic ways to express character and emotions. The MedMoth platform may also serve as a pathway for mentoring medical students in primary care, as well as catalyzing narrative medicine scholarly activities such as publications and interest groups.

# Peer-to-Peer (P2P) Faculty Grant Writing Groups: 5-Year Outcomes

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**Introduction:** Peer-to-Peer (P2P) Faculty Grant Writing Groups was formulated in May 2018 as a new peer mentoring framework to develop scientific narrative and grant writing skills, and to accelerate the proposal development and writing process of NIH R or equivalent research proposals for junior faculty and faculty with English-language difficulties. The 5-year outcomes and next potential steps are reported herein.

**Purpose:** Junior faculty and faculty with English-language difficulties often struggle in writing research proposals, requiring frequent feedback to improve. However, writing is an iterative process, and senior faculty lack time to provide repeat critiques. P2P was formulated as a new model to solve both problems.

**Methods:** Since its inception, P2P has had eight total cohorts, with 18 unique faculty participants from 11 different departments. 12 faculty had English-language difficulties, and 4 were also clinical faculty. Each cohort consisted of 3–6 participants that met approximately every other week for 1.5–3 hrs until a quorum of participants had submitted their grants, at which time, new cohorts were formed and populated with new members and past participants who had more grants to submit. For each session, each participant gave a chalk talk/elevator pitch of their research proposal, and peers could interrupt to ask questions, criticize arguments, or suggest a better presentation. A moderator kept discussion on track. At the end of each session, participants left with a refined logic and narrative, which formed a writing outline. At the subsequent session, peers gave feedback on these written sections, contrasting interpretations of the pitch against the written narrative. Drafts finalized well ahead of the deadline were sent to senior faculty with strong track records of NIH funding for review, which was set up by the Associate Dean for Research and Associate Dean of Faculty Affairs.

**Results**: Of the 18 unique faculty participants, 14 faculty have thus far submitted 45 proposals, with 14 reviewed by senior faculty before submission. Of the 14 faculty who have submitted grants, 5 faculty have 11 funded proposals among them, totaling over $8 million. Of the 5 funded faculty, 4 have English-language difficulties, 2 had NIH-designated Early-Stage Investigator (ESI) status, and 4 were Assistant Professors. Three participants also started a new collaborative project that generated exciting preliminary data and will submit for larger proposal funding in the fall.

However, 3 faculty (3 had English-language difficulties, 1 was also a clinician) have decided to no longer pursue extramural funding, although each noted that they were grateful for the opportunity to try for funding. One saw significant improvement in scores (47% to 21%), but ultimately decided to leave academia.

A small subset of 3 faculty also had opportunities to serve in the group moderator role. These faculty are currently being interviewed about their experiences. Their feedback will be used to develop a training module to expand the P2P Program.

**Conclusions:** P2P provides a successful forum for junior faculty and faculty with English-language difficulties to receive critical feedback during the grant writing process, while still preserving the time of senior faculty. Along with accountability, participants noted P2P as key to their successes in grant writing because their peers' diverse expertise helped refine their narratives to appeal to a wider audience.

P2P will next determine whether the intervention can be scaled. P2P will also conduct qualitative interviews with past and current participants to examine any changes in their confidence levels toward writing and experimental design, as well as any attitude changes toward community and career development. Understanding whether any specific activities in this cohort model may be underlying mechanisms that increase the success of faculty participants will aid the development of other such efforts, such as educator hubs to accelerate education projects, publications, and proposals.

## BEST STUDENT ABSTRACT

# An Innovative and Flexible PhD-to-Clinic Transition Course to Improve MD-PhD Trainee Clerkship Performance

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**Introduction:** MD-PhD programs represent a distinct educational opportunity for students to pursue a physician-scientist career. Integrated programs typically require a multi-year gap between pre-clinical and clinical training for students to obtain their PhD, creating a challenging transition from dissertation studies back to the clinic. While MD-PhD programs have been successful in producing graduates highly skilled in research, expanding lines of evidence suggest that these programs are falling short in preparing students for the transition from research to clinical training.

**Purpose:** We explored the efficacy by which MD-PhD programs prepare students for clinical training nationwide, and created an enhanced transition course here at BUSM to better prepare MD-PhD trainees for the rigors of clinical medicine.

**Methods:** We analyzed data gathered by the Texas Seeking Transparency in Application to Residency (STAR) database to determine how well MD-PhD trainees performed clinically compared to their MD-only counterparts. Our dataset included survey data gathered from 30,026 students between 2017 and 2022. Additionally, we determined the distribution of transition and clinical continuity courses offered at the 116 US-based MD-PhD training programs via website data procurement.

**Results:** After adjusting for multiple clinically-relevant metrics, we found that MD-PhD graduates had lower odds of honoring at least one clerkship compared to MD-only graduates (adjusted odds ratio: 0.703; 95% CI: 0.587 - 0.844; p = 0.00014). This was driven by a significantly higher proportion of MD-PhD graduates who did not honor any core clerkship compared to MD-only peers (0.2296 to 0.1716, respectively). Further, despite having higher Step 1 scores on average (p = 0.0011, Z = 3.25; Wilcoxon rank-sum), MD-PhD trainees had lower odds of acceptance into clinical honor societies or scoring above the 50th percentile on the USMLE Step2 exam. Despite this, we found that only 22.6% of U.S. MD-PhD programs offer a clinical preparation course for transition to clerkships along with longitudinal clinical opportunities. Given these data, we implemented a year-long curriculum combining formal seminars and preceptorships with near-peer teaching and mentoring by senior MD-PhD trainees focused on demystifying third-year clerkships and introducing skills that are essential to clerkship success. As of March 2023, our inaugural class of seven MD-PhD students reported reduced anxiety due to the addition of near-peer teaching and mentorship, as well as feeling better-prepared for the challenges of clinical clerkships after successfully passing their second standardized end of second year of medical school assessment (EOSYA).

**Conclusions:** Integrated MD-PhD programs play a critical role in training the next generation of physician-scientists, but our analyses here suggest that programs are falling short in preparing students for the clinical component of their training. To address these failures, MD-PhD programs must find ways to better integrate research and clinical training. We anticipate our new transition course is one such way to address this gap. We hope to extend our course for others to model, and further evaluate the success of this new curriculum by measuring changes in subjective anxiety and clerkship scores.

# Implementation and assessment of a novel program to highlight student stories in the BUMC pre-clinical curriculum

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**Introduction:** Narrative medicine is a pedagogical staple in medical schools, with up to 80% of institutions implementing it in some form within their curricula. Primary examples include introspective journaling, creative writing, and sharing patient encounters with peers. Although these methods effectively enhance communication, empathy, and professional development, they miss an opportunity for students to draw on their personal lived experiences with illness, which may serve as a powerful educational tool for classmates.

**Purpose:** Thus, the purpose of this study was two-fold: (1) to develop and implement a novel student-led program, the Student Perspectives Initiative (SPI), that empowers students to share their personal patient/family experiences with illnesses as they align with the pre-clinical curriculum, and (2) to ascertain the impact of the SPI program on educational enhancement, fostered connections between peers, and student preparation for clinical rotations.

**Methods:** We convened with faculty directors of pre-clinical curriculum at Boston University Chobanian & Avedisian School of Medicine to develop the program, focusing on educational implications, logistics, facilitators, and barriers to program execution. The finalized program was implemented for second-year medical students across three academic years (2020-2021, 2021-2022, and 2022-2023), with 8 annual sessions held either in-person or remotely. Speakers shared personal patient/family experiences as they pertained to the curriculum (i.e., a student discussing childhood cancer shared during the oncology module), and attendance ranged from 25 to 160 students. Next, we emailed an anonymous, comprehensive REDCap survey (IRB: H-41979, exempt) to all medical students who had the program run during their second pre-clinical year. Two reminders were sent 7- and14-days after the original email. Questions consisted of yes/no, 5-point multiple choice scale (1-strongly disagree to 5-strongly agree), and free text and were inclusive of individuals who shared a story, attended a session, or did not engage with the program. We also included targeted questions about longitudinal impact for students who have completed some or all of their clinical training. We have conducted a preliminary review of data to assess broad sentiments regarding the program, and we are in the process of performing a more granular analysis.

**Results:** So far, 44 students (10%), primarily who shared stories or attended sessions, completed surveys. They reported that hearing peer stories in the SPI program increased interest in lecture material (4.42/5), improved understanding of patients with disabilities (4.22/5), and overall was an effective educational tool (4.08/5). Students also stated that it was easier to cultivate connections with their peers (3.97/5) and that the program added value to building community overall (4.42/5). 18 students who underwent clinical training reported that they were better able to retain clinical knowledge (3.72/5) and express empathy for their patients (3.67/5).

**Conclusions:** Highlighting student stories in pre-clinical curriculum through programs like SPI provides a significant contribution to both educational enrichment and community development. Our data also informs ways to internally improve the program, such as better promoting sessions and expanding faculty involvement. Institutions should seek to further incorporate similar narrative medicine programs that enable students to share their personal experiences with illness.

# The Selection and Role of Teaching Assistants in Pre-Doctoral Dental Courses

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**Introduction:** An opportunity for dental students at Boston University Henry M. Goldman School of Dental Medicine (BUGSDM) to gain exposure to academic dentistry is by serving as a Teaching Assistant (TA) in select pre-doctoral courses. At BUGSDM, a total of eight pre-doctoral courses (two didactic and six pre-clinical courses) in the first and second year of the curriculum include upperclassmen TAs as part of the instructional team. TAs have contributed to pre-doctoral students' education by serving as additional faculty members, providing feedback and additional instruction, and promoting peer interaction. Despite the use of TAs, best practices for selection, training and use of TAs in dental education have yet to be identified and described in the literature.

**Purpose:** The objective of the study is to understand the current best practice for selection, training and use of teaching assistants in the pre-doctoral curriculum at BUGSDM. Secondary objectives are to identify specific qualities or characteristics course directors value when selecting students for TA roles and to gauge the interest of course directors in the development of a BUGSDM-wide TA training module.

**Methods:** Course directors who use TAs in their course at BUGSDM were recruited via email to complete an online questionnaire using the REDCap data management platform (n=8). The survey was planned to be open for six weeks and reminder emails were sent once weekly. The questionnaire consisted of three parts. The first included seventeen questions about how TAs were selected, trained and used in their course; their opinion about the value of TA training and evaluation and if they would consider utilizing a generalizable TA Training Module. The second part was an optional survey where course directors could anonymously select which course they were involved in to avoid duplicative responses. The third part allowed respondents to volunteer to participate in a 30-minute Zoom interview to elaborate on their responses from the questionnaire.

**Results:** One hundred percent of invited participants responded to the online questionnaire (n=8) in the first four weeks that the questionnaire was available. Course directors reported recruiting and including TAs in their courses from various stages in the curriculum; 25% from second-year (n=2), 50% from third-year (n=4), 100% from fourth-year (n=8). The primary method of recruitment was through previous course performance (87.5%, n=7), followed by expressed interest in academia (62.5%, n=5), faculty recommendations (50%, n=4), interviews (50%, n=4) and written applications (25%, n=2). Course directors incorporated Tas in their courses to expose students to academia (87.5%, n=7), meet students' interest in such course (87.5%, n=7), foster leadership skill development (62.5%, n=5) and address faculty shortages (37.5%, n=3). To prepare TAs for their role, respondents used small group discussions (62.5%, n=5), one-on-one training with the course director (50%, n=4), regular meetings (50%, n=5), PowerPoint presentations (37.5%, n=3), and role playing (12.5%, n=1). Some course directors did not train the incoming TAs in any fashion (25%, n=2). TAs were generally responsible for providing feedback on pre-clinical formative work completed in the Stimulation Learning Center (SLC) (75%, n=6), reviewing and reinforcing didactic concepts in the SLC (62.5%, n=5), providing feedback on written assignments (37.5%, n=3) and holding review sessions (12.5%, n=1). All respondents felt their TAs were properly prepared for their role, and only one respondent found that TA training was not essential for their performance. When considering the idea of a generalizable Teaching Assistant Training Module to train TAs on the fundamental skills of being an effective educator, 62.5% (n=5) of respondents said they would consider having their TAs participate. Two respondents (25%, n=2) were unsure and one (12.5%, n=1) said they would not consider it. Finally, 50% of respondents (n=4) volunteered to participate in a 30-minute Zoom interview to further elaborate on their responses from the questionnaire.

Conclusions: The results of the questionnaire suggest that TAs play a valuable role in pre-doctoral dental courses at BUGSDM, yet the selection, training and use of TAs varies between courses. All respondents who expressed interest reported willingness to contribute to and utilize the TA Training Module. Next steps include a comprehensive mixed method analysis including interview data from course directors and two subject matter experts to inform the creation of the initial generalizable TA Training Module for course director feedback. Future directions of this project will make valuable contributions to TA preparation.

# Nip It in the Bud: Combating Ageism Amongst Internal Medicine Primary Care Track Residents

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**Introduction:** Those entering the primary care field will likely care for the bulk of older adults in the outpatient setting. It has been shown that many medical students and physicians harbor negative attitudes towards older adults, but little is known about attitudes amongst Internal Medicine (IM) residents training for primary care (PC) based careers. Ageism among healthcare professionals is of significant concern as it leads to negative health outcomes for older adults.

**Methods:** PC track IM residents completed a voluntary, anonymous survey before and after participating in a 90-minute-long interactive ageism workshop. Survey domains assessed residents' prior exposure to ageism didactics, perceived importance of ageism, and confidence in recognizing and confronting ageism. The survey also included the 12 item Expectations Regarding Aging (ERA-12) questionnaire, which is a validated instrument that assesses expectations regarding physical health, mental health, and cognitive function of older adults.

**Results:** Of the 15 residents invited to participate, 12 residents (80%) completed both surveys. Responses were obtained from all training levels including 5 PGY-1 (42%), 4 PGY-2 (33%), and 3 PGY-3 (25%). Most residents (66%) had received at least some level of ageism education while in medical school. Sixty-four percent of residents ranked ageism as less important in their careers compared to other health equity-related topics such as sexism and racism. After participating in the workshop, residents had significantly higher total ERA scores and improved expectations regarding cognitive function (68 vs. 58, $p = 0.012$, 63 vs. 45, $p = 0.003$, respectively). Summed confidence scores for recognizing and confronting ageism increased after the workshop was given by 14% and 23% respectively.

**Conclusions:** PC track IM residents who participated in a pilot anti-ageism workshop had improved attitudes towards aging and increased confidence in recognizing and advocating against ageism. More research is needed to assess if these improvements are sustained over time and can be reinforced through further educational initiatives.

# The Impact of a Patient Support Program on Student-Physician Training in a Gynecologic Procedure Unit

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**Introduction:** With legal barriers making abortion care more inaccessible and stigmatizing, and medical school curricula often minimizing pre-clinical education on abortion and other fertility management options, there exists a gap between what patients need and what future providers are trained for. It is therefore critical for medical education to integrate advocacy, equity, and clinical exposure through direct patient-care opportunities to advance medical student clinical competency and build essential foundations for careers as patient advocates.

**Objective:** This study aims to assess the impact of a volunteer patient-support program SPaRC (Student Partners for Reproductive Choice) for patients obtaining abortions and other gynecologic procedures on clinical preparedness of preclinical medical students. Findings will contribute to a critical body of literature on the impact of preclinical volunteer services, especially abortion clinic exposure, on the confidences and competencies of preclinical medical students.

**Methods:** This project reports initial findings from an original survey exploring medical students' preclinical experiences, confidence and preparedness for clinical training, impressions of the preclinical curriculum, and empathy scores based on their participation in SPaRC and other clinical volunteer settings. Eligible participants included current medical students at Boston University School of Medicine. Participants were recruited through class social media pages and SPaRC participants were specifically recruited via email list-serve. Study fulfillment included completion of an online anonymous survey, which included 14 questions regarding students' perceptions of their clinical competence and confidence, and 4 questions about how students feel the preclinical curriculum prepared them in domains of medical knowledge, management and assessment, and patient-centered communication. It concludes with questions adapted from the Jefferson empathy scale (Hojat et al. 2001). Responses were analyzed using quantitative methods. This study was approved by the Boston University Institutional Board and qualified for exemption.

**Results:** Of those who met inclusion criteria, 37 medical students completed the survey; 13 participated in the SPaRC GPU program and completed 5 or more shifts. Of those who did not participate in SPaRC, 11 participated in a different clinical volunteering program.13 respondents did not participate in any clinical volunteering program. Of the 13 respondents who participated in SPaRC, 11reported the experience significantly influenced their career interests.

Analytic models are in process to determine statistical significance of results. Descriptive findings indicate that students who participated in SPaRC reported increased feelings of team-integration and increased attitudes of clinical preparedness in terms of patient centered communication skills, medical knowledge, diagnostic reasoning, and management planning, compared to those who did not participate in patient-facing preclinical experiences. Students who participated in SPaRC were also more likely to report higher levels of comfort adjusting to new clinical settings and team roles. There were no notable differences in empathy scale ratings between SPaRC and non-SPaRC participants.

**Discussion:** This study assesses whether volunteering in patient-facing clinical spaces during pre-clerkship medical education is associated with increased feelings of confidence, empathy, and clinical preparedness compared to having no patient-support volunteering experience. This is the first project to our knowledge which examines the role of a student-led abortion-support program on medical student education. This study is limited by small sample size and cross-sectional design, which restricts generalization. Further research with larger sample sizes and administration of surveys prior to volunteer engagement and after clinical rotations is warranted to draw stronger conclusions. This survey will be disseminated to other Medical Students for Choice chapters with preclinical volunteer programs to increase

validity and power of findings. At a time when reproductive choice education is facing unprecedented threats, it is essential to expand existing evidence that preclinical volunteering programs are a key component of preparing medical students to enter their clinical years.

# Examining differences in pain catastrophizing in a pediatric sample of racial/ethnic minorities with chronic pain

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*previously presented at USASP (4/12/2023)*

The influence of race/ethnicity on pain catastrophizing (PC: the tendency to magnify the seriousness of pain sensations) is understudied in pediatric chronic pain. Prior research indicates that racial/ethnic minority populations may engage in more PC than white, non-Hispanic populations. These studies, however, have only examined macro-level differences between white, non-Hispanic and minority populations. Less is known about the nuanced differences in PC across individual racial/ethnic groups (i.e., white vs. Asian vs. Black/African American). The current study explores between-group differences in PC across diverse racial/ethnic groups of youth with chronic pain. Youth [(ages 11-17) with chronic pain presenting for chronic pain treatment completed the Pain Catastrophizing Scale, which includes a total score and subscales (i.e., rumination, magnification, and helplessness). Racial/ethnic group sizes were as follows: Black/non-Hispanic (N = 29), Hispanic (N = 58), Asian (N = 17), another race/non-Hispanic (N = 37), and Multiracial (N = 15). One-way ANOVA and post-hoc tests were conducted to test differences in the PCS total score and subscales between racial/ethnic groups. Results revealed a non-significant difference in the PCS total score between race/ethnicities, ($F_{(4,151)}$ = [.503], p= [.734]). Similarly, no significant differences emerged in the PCS subscales. Results suggest that youth with chronic pain may experience PC similarly regardless of racial/ethnic groups. However, these findings were limited by small sample sizes across groups. Future research with larger sample sizes is warranted. This work can inform the development of culturally responsive interventions for pediatric chronic pain patients from diverse racial/ethnic backgrounds.

<span style="color:red">**WITHDRAWN**</span>

# Critical thinking in dental education: A content analysis of student evaluations and feedback

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**Introduction:** Critical thinking skills are essential for dental professionals to make informed and sound decisions for their patients. These skills enable dental professionals to assess complex situations and identify potential problems that may impact a patient's oral health. Through critical thinking, dental professionals can properly diagnose a case, weigh the pros and cons of different treatment options, evaluate the potential risks and benefits, and choose a predictable treatment for their patients. This process not only leads to better decision-making but also helps to develop effective solutions to complex problems related to dentistry.

**Objectives:** The purpose of this study was to investigate the effectiveness of the elective course "Current Topics in Dentistry" in promoting critical thinking skills among dental students, to gain a deeper understanding of their experiences and perceptions of taking the course. The objective was to test the hypothesis that students report an increase in their critical thinking skills as a result of taking the course.

**Methods:** This study used a qualitative analysis approach to analyze the anonymous feedback and comments of the students who took the course "Current Topics in Dentistry". This course was designed to use controversies in dentistry as a vehicle to discuss and learn critical thinking skills. The course included a weekly discussion board in which every student was required to post a response to a specific set of questions, and then to critique a classmate's response, using critical thinking concepts. In class there would be robust discussions that focused on thought process and critical thinking skills to analyze a problem. The data was collected through evaluation forms completed by the students over the years the course has been conducted. The data was analyzed using a content analysis approach, and the book "Critical Thinking" by Richard Paul and Linda Elder was used as a theoretical framework to guide the analysis.

**Results:** The analysis of the data revealed that the students perceived an increase in their critical thinking skills as a result of taking the course "Current Topics in Dentistry", as evidenced by increased engagement in class discussions, and the ability to analyze complex dental topics, research findings, and scientific data. The students reported that the teaching methods using active learning strategies, such as problem-based learning and topics covered in the course were effective in promoting critical thinking skills.

**Conclusions:** The results of this study provide insights into the elective course "Current Topics in Dentistry" in promoting critical thinking skills among dental students, and the importance of using a specific Socratic teaching methods and activities to promote these skills. The course's objectives to equip students with the skills to analyze and evaluate complex dental topics and scientific data, and enhance their ability to communicate findings effectively and collaborate with colleagues were achieved. This study contributes to the broader field of education by providing insight into the teaching of critical thinking skills in higher education, and provides valuable insights into the development of critical thinking skills in dental education and suggests ways to improve the effectiveness of the curriculum.

# Amplifying Student Voice: Assessing the Importance and Need for Personal Days during the Third Year Clerkship of Medical School

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**Introduction:** Given the intensive nature of third year clerkships, personal days are offered by many medical schools to allow students to be excused from the rotation without stating a reason for their absence. At Boston University Chobanian & Avedisian School of Medicine (BUCASM), personal days are differentiated from excused absences, which are limited to acute illnesses, health services, unanticipated emergencies, religious observance, jury duty, and conferences. Current policies at BUCASM offer students two personal days over the third year of medical school. While internal medical education committee data stated that a significant proportion of students in past academic years did not utilize the entirety of their personal day allowance, students had voiced significant concerns via word of mouth about limited personal days and reduced well-being during the clerkship year. In order to formally and comprehensively understand the root of medical student concerns, the clerkship curriculum subcommittee student representatives administered a student survey to collect data on perspectives on personal days.

**Methods:** This study is a qualitative study to understand the student perspective of current personal day policies at Boston University School of Medicine. A google forms survey administered by the clerkship curriculum subcommittee student representatives was emailed to third and fourth year listservs and advertised in class meetings. Questions were carefully crafted by a committee of students, medical school dean, faculty, and administration. Data on extent of personal day usage, reasons for lack of personal day usage, knowledge of differentiating personal day and excused absences, and student coping strategies during third year were gathered. All responses remained confidential and anonymous.

**Results**: A total of 109 students responded to the survey. The sampled population was 53.2% and 46.8% third and fourth year students, respectively. We determined that 49% of students were not comfortable requesting personal days. The reasons for discomfort were segmented into three major themes: 1) anxiety around the impact of personal days on evaluations, 2) active discouragement by preceptors, and 3) logistics for requesting personal days (i.e., advance notice, clerkship specific black-out dates). In addition to discomfort surrounding personal days, we found that many students failed to use all of their personal day allowance because of a need to "hoard" until the end of the year in cases of emergency given the limited supply. We then asked what personal days meant to students and obtained a wide range of responses. These responses were categorized as: 1) obtaining a sense of autonomy, in which students are trusted with the decisions to take or not to take time off, 2) attending major events and catching up on personal necessities, and 3) improving well-being during stressful rotations.

**Discussion:** The survey illuminated the reasons for lack of personal day usage due to discomfort and hoarding, and the importance of personal days during clerkship. Informed by the results of the survey, we made the following recommendations to the clerkship curriculum subcommittee: 1) educating faculty and preceptors to reduce stigma surrounding personal day usage, and 2) increasing the number of personal days to reduce hoarding behaviors and increase student autonomy and well-being. The recommendations were presented to clerkship directors and several models of personal day policy changes were proposed. In March 2023, the clerkship directors at BUCASM approved an increase from two personal days a year to six personal days a year. This initiative illuminates perceptions of personal days at a single US allopathic medical school, and may provide precedence for other medical schools aiming to change their personal days policies.

# Use of ChatGPT in Medical Education: Providing real-time explanations to practice problems

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**Introduction:** According to the educational conceptual framework of deliberate practice, learning is most effective when there are opportunities for repeated performance with immediate feedback. During pre-clerkship years in medical school, students are provided with numerous multiple choice practice questions (MCQ) in preparation for examinations. However, the question banks provided may often lack detailed explanations due to the time-intensive nature of explanation writing, or may not adequately address student inquiries even when explanations are provided. In this study, we aim to assess the capabilities of ChatGPT to provide real-time answer explanations, evaluating its utility as a supplementary learning tool in medical school. While prior studies have examined its effectiveness in answering USMLE questions, this study is the first to assess its abilities in answering medical school faculty-generated questions and to examine the accuracy and robustness of ChatGPT-provided explanations.

**Methods:** We randomly selected up to 15 MCQ per subject block from a database of faculty-generated practice questions in an US allopathic medical school's preclinical curriculum. Questions containing clinical images and graphs were excluded given limitations of ChatGPT. After filtering, we imputed a total of 103 MCQ with their answer choices into ChatGPT to assess its baseline performance in providing the correct answer. We manually reviewed each answer provided by ChatGPT and labeled each question for correctness (denoted as Pass 1 Performance). For each question answered incorrectly, we prompted ChatGPT to answer the question again and assessed its correctness (denoted as Pass 2 Performance).

To evaluate the quality of ChatGPT-generated answer explanations, we compared them against those written by faculty. We excluded questions without faculty-generated answer explanations and those that ChatGPT answered incorrectly after Pass 2. The remaining ChatGPT-generated answer explanations were examined against those provided by faculty and scored on a scale of 0 to 2. A score of 0 indicated that the correct answer was selected, but did not capture any of the main points in faculty-generated response or provided misleading or inaccurate information. A score of 1 indicated that the ChatGPT-generated explanation provided some, but not all, main points provided by the faculty-generated response. A score of 2 indicated that the ChatGPT-generated explanation captured all the main points provided by the faculty-generated response.

**Results**: A total of 103 questions ranging from a large variety of subjects spanning two years of medical school were input into ChatGPT for correctness assessment. The average percentage correct was 77% on the first pass and 94% on the second pass. Subjects with the lowest first pass correct percentage were Pulmonology and Foundations 3 (including immunology, pharmacology, microbiology, and introduction to oncology), scoring at 67% and 60%, respectively. On the other hand, Endocrinology and Cardiology were the two highest performing subjects, scoring at 93% and 87%, respectively.

In total, ChatGPT answered 98 MCQ correctly after the second pass. Of these, we excluded 36 questions without faculty-generated answer explanations. The remaining 62 ChatGPT-generated answer explanations were examined against those provided by faculty and scored on a scale of 0 to 2. Of these, 70.1% of explanations captured all aspects of the faculty-generated response, and 91.0% of explanations were accurate and captured at least parts of the faculty-generated response. Comparing between subjects, Renal and Cardiology had the highest percentage of complete and accurate response (i.e., score = 2) while Foundations 1 (Biochemistry/Genetics), 2 (Histology and Anatomy), 3 and Pulmonology scored relatively more poorly, producing complete and accurate responses among 50 - 57% of questions.

Explanation scores for questions answered correctly on the first pass were compared against questions that were answered correctly on the second pass. We noticed a statistically significant decrease in the percentage of questions that captured all aspects (i.e., score of 2) of faculty-generated responses when they were only answered correctly on the second pass ($p < 0.05$). Notably, only 2.1% of questions that were correct at the first pass did not capture any components of the faculty generated response or contained misleading/inaccurate information.

**Discussion:** Our results demonstrated an overall accuracy rate of 77% among faculty-generated MCQ questions in an US allopathic medical school, which is higher than previously reported performance of ChatGPT in USMLE questions (~60% correctness). Among all questions, 70.1% of explanations provided captured all aspects of faculty-generated response and 91.0% captured some aspects of faculty generated response without providing misleading information. Areas where ChatGPT performed poorly in correctness often included questions requiring mathematical manipulations (e.g., pulmonary physiology). Furthermore, ChatGPT often provided relatively less comprehensive explanations in modules with fact-based dominant questions such as microbiology, pharmacology, biochemistry. Whereas faculty often used fact-based questions as teaching points for an adjacent topic, ChatGPT was unable to expand outside the question stem, which may result in a missed learning opportunity.

With these considerations, our study found that ChatGPT provided high answer accuracy and robust answer explanations similar to faculty-generated ones, particularly if the question was answered correctly on the first pass. We recommend that ChatGPT can be used in the pre-clerkship curriculum as a supplementary learning tool so that students can receive immediate, real-time feedback when utilizing practice questions.

<span style="color:red">**WITHDRAWN**</span>

# Impacts of Implementing an Educational Workshop within a Genetic Counseling Program Cohort

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**Introduction/Background/Purpose:** The standard of care within the field of genetic counseling for patients with limited English proficiency (LEP) involves using professional medical language interpreters for genetic counseling services. Language interpreters (LIs) aid in bridging the language discordance between the patient and the genetic counselor, through translation services. LIs' skills have also been shown to help in building a working relationship between the patient and the genetic counselor. Within the field, communication, and rapport building are essential components of promoting informed consent and decision-making. Skills in best practices in working with LIs are often taught during clinical practice, but to date, no educational workshop has been developed to aid in genetic counseling students' knowledge and understanding of utilizing a LI.

**Purpose:** This pilot study aims to understand whether a dedicated instructional course would improve genetic counseling students' self-efficacy and knowledge of working with language interpreters within a given cohort.

**Methods:** In this quantitative study, a single-group pretest and posttest design were used to understand students' self-efficacy and knowledge of working with LI. Participants comprised of first and second-year genetic counseling students with varying degrees of experience working with LIs.

**Results:** This study found to have overall higher posttest perceived self-efficacy scores, compared to the pretest. Six items on the pretest and posttest surveys evaluated the students' knowledge. It was found that posttest scores testing the students' knowledge were lower on average for the posttest survey compared to the pretest survey.

**Conclusions:** The authors of this study were able to implement the first interpreter workshop tailored to genetic counseling students. The study witness a high percent of participation, which authors believes highlights the enthusiasm and push for more language interpreter resources to be implemented. Given that this is a pilot study, the authors identified workshop's feasibility and its performance, they were unable to comment on a conclusion on whether students' self-efficacy is impacted by the educational workshop.

# MIRES (Motivational Interviewing Resident Education Session) – 80-minute Workshop to Change People for People to Change

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**Introduction:** Motivational interviewing (MI) is a non-judgmental communication style to enhance intrinsic motivation. Commonly used by therapists, physicians employ it as an evidence-based tool to facilitate patients to positive health behavior changes. MI is a skill embodying a spirit of empathy and resident physicians are lacking in adequate training.

**Purpose:** This 80-minute workshop (MIRES; MI Resident Education Session) was designed to teach MI through both didactics and real- or role-playing. Additionally, it challenged participants to identify behaviors consistent with MI from a standardized recorded clinical interaction.

**Methods:** All 3 years of Boston Medical Center Internal Medicine residents attended (n=97). Four resident surveys were conducted: Needs Assessment Survey (NAS; 1 month prior to the MIRES), pre-survey (PreS) and post-survey (PoS; immediately before and after), and post-post-survey (PPS; 1 month after).

**Results:** The NAS revealed nearly half (48%) of residents deemed the residency program "Poorly" or "Very Poorly" prepared them to provide MI in patient care. For confidence in their own MI abilities, the Likert scale was: 'Not at all confident' 1, 'Not confident' 2, 'Somewhat confident' 3, 'Confident' 4, and 'Strongly confident' 5. There was a significant increase from PreS-PoS ($p<0.001$) and PreS-PPS ($p=0.004$) and no difference from PoS-PPS. The average scores were: PreS 3.0 (CI 95% 2.8-3.2), PoS 3.6 (CI 95%3.5-3.8), and PPS 3.6 (CI 95% 3.4-3.7). The HRQ (Health Response Questionnaire) is an established tool to measure empathy and serves as a proxy for MI abilities. Comparing PreS-PoS HRQ, there is a significant increase ($p<0.001$), as well as in PreS-PPS HRQ ($p<0.001$) and a significant decrease from PoS-PPS HRQ ($p=0.03$), although the mean average differences were +3.8(PreS-PoS), -0.8 (PoS-PPS), and +3.0 (Pre-PPS).

**Conclusions:** A brief didactics, behavioral coding, and practice session increased and maintained resident physician confidence in their abilities to practice MI. Importantly, it demonstrated a retained increase in baseline MI ability at 1 month following the session, independent of resident year. This session can easily be incorporated into residency programs hoping to employ MI to guide their patients towards health behavior changes.

# The Evolution of Leadership Training at U.S. and Canadian Dental Schools

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**Introduction:** The American Dental Education Association (ADEA) defines a successful dentist in a number of ways –one of which is a leader. Commission on Dental Accreditation (CODA) standard 2-19 requires graduates to function successfully as leaders of the dental team.

**Purpose:** The goal of this study was to provide an update on how dental schools include leadership training and assessment into their curricula to meet CODA requirement 2-19. The primary objective of this study was to identify specific curricula elements and assessment techniques used to evaluate student leadership knowledge and skills. Secondary objectives were to compare findings to Taichman and Parkinson's (2012) research to identify trends.

**Methods:** In August and September of 2022, a 22-item survey was emailed to academic deans at 78 CODA accredited dental schools. If necessary, deans were encouraged to designate a curriculum expert at their school to complete the survey. The survey was open for a period of four weeks. Two reminders were sent following outreach – one two weeks after survey release, and one 24 hours before closing. Data was analyzed and descriptive statistics were calculated. The project was approved by the Boston Medical Center IRB (H-42408).

**Results:** Eighteen schools (23%) responded; 22% (4/18) from the Southeast, 22% (4/18) from the Plains, 22% (4/18) from the Pacific West, 17% (3/18) from the Northeast, and 17% (3/18) from Canada. Of the eighteen schools, 22% (4/18) had first-year pre-doctoral class sizes less than 50 students, 44% (8/18) had class sizes of 51-100 students, and 33% (6/18) had class sizes of 101 or more students. Results show that in 2022, programs are 95% more likely to integrate leadership training into Ethics and Professionalism courses, and 87% more likely to integrate training into Clinical courses as compared to Taichman and Parkinson's (2012) research. Fifty-three percent (9/17) of respondents indicated that Pre-Clinical courses, an area of the curriculum not assessed in 2012, included leadership development activities. Additional distinctions include that in 2012, programs were 2.20 times more likely to use multiple choice assessments/examinations and 1.88 times more likely to use peer-assessment as a means for the assessment of leadership as compared to 2022. Assessment by observation in clinical settings were 89% more common in 2022 as compared to 2012. Respondents reported the use of assessment modalities not included in Taichman and Parkinson's (2012) research; 33% (6/18) Objective Structured Clinical Examinations (OSCEs), 56% (10/18) student self-assessments, and 33% (6/18) record reviews.

**Conclusions:** Leadership training is present across the dental school curricula, and is incorporated across didactic, pre-clinical, and clinical courses utilizing diverse assessment strategies. Findings in 2022 suggest more robust leadership training opportunities and novel assessment strategies as compared to Taichman and Parkinson's (2012) research. Future qualitative research should focus on specific leadership training programs to help identify best practices and ultimately guide the development of a dental student leadership framework.

# The Gender and Sexual Diversity Curriculum in the School of Medicine: Update on progress and innovations

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**Introduction:** Gender and sexual diversity (GSD) refers to the diversities of sex characteristics, sexual orientations, and gender identities that exist in human populations. There are well documented health disparities and lack of trust in the medical system in gender and sexual minority populations. GSD topics traditionally receive vanishingly small amount of attention in medical school curricula, resulting in many medical professionals receiving inadequate training in these topics.

**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.

In alignment with our institutional values to train healthcare practitioners who appropriately care for diverse patient populations, the School of Medicine has been actively working since 2018 to improve the way gender and sexual diversity is taught in the curriculum. The Gender and Sexual Diversity Vertical Integration Group (GSD VIG) used a multipronged approach to examine the state of the medical curriculum and the learner experience. In 2020 this group reported recommendations for how to systematically improve the curriculum. This report helped guide how GSD content was built into the new medical curriculum which began in the fall of 2022 and various other initiatives. Progress made since the report and areas of ongoing effort are reported here.

**Curriculum:** The 2020 report recommended the development of intentional and comprehensive curricula on several GSD-specific topics such as appropriate medical terminology, sexual and gender identity across the lifespan, taking a sensitive history and physical examination, and mental health needs of GSD patients. In the new medical curriculum, all students learn about GSD health in standalone sessions and in the context of appropriate science topics, which addresses many of the report recommendations. In addition, the GSD health track allows a subset of students with particular interest in the topic to engage in more in-depth and focused learning. The track work involves investigation of the current literature, experiential learning, opportunities to learn from experts and community members, and a scholarly project. GSD track weeks focus on high yield topics such as creating inclusive clinical spaces, gender affirming care, and physician advocacy in a climate of anti-LGBTQ+ legislation.

**Faculty:** The 2020 report found general willingness and enthusiasm on the part of our faculty to provide a progressive curriculum on GSD topics, but a lack of confidence in how to do so. The VIG work also revealed interesting discrepancies between the faculty and student perspectives of what and where GSD content is taught in the curriculum. Numerous initiatives have been undertaken to increase faculty comfort incorporating GSD topics in appropriate places in the curriculum. In 2021 a faculty training was developed to highlight the pervasiveness of binary framings of sex and gender in medical education and why this is problematic, and to provide tools for faculty to expand teaching to be more inclusive. A current initiative is documenting clinical faculty knowledge and attitudes about GSD topics and sex and gender framings to target more focused interventions.

**Conclusions:** The Boston University Chobanian and Avedisian School of Medicine is committed to preparing learners to care for a diverse workforce. The work undertaken since 2018 has achieved significant progress in improving how GSD topics are addressed in the preclerkship curriculum, although the work is far from complete. The next phase of these efforts will focus on the clerkship curricula and continuing to improve our four-year curriculum on key topics such as mental health and physical examination skills and history taking.