

## MEDICAL EDUCATION: PART I

## PITT PUZZLES: A CLINICAL REASONING TOOL BY BUSY RESIDENTS FOR BUSY RESIDENTS

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Clinical reasoning is fundamental for the safe, effective practice of medicine. In its seminal 2015 publication “Improving Diagnosis in Healthcare,” the National Academy of Medicine urgently called for enhanced training in the diagnostic process for all health-care professionals to help reduce the burden of diagnostic errors occurring each year.<sup>1</sup> In the years since this publication, many resources have emerged to address the lack of clinical reasoning education available.<sup>2</sup> Published cases, such as in the *Journal of General Internal Medicine*’s “Exercises in Clinical Reasoning,” have become popular vehicles for teaching clinical reasoning principles, but lack interactivity.<sup>3</sup> Although interactive digital resources for simulating practice with unknown cases do exist, many are behind paywalls or are too long to allow meaningful participation by busy trainees.

To address the need for efficient, interactive resources for teaching clinical reasoning, the University

of Pittsburgh’s internal medicine residents developed the “Pitt Puzzles” series. Written by residents and edited by faculty with training in clinical reasoning, this series presents participants with brief, interactive, case-based tutorials to enhance clinical reasoning skills on an easily accessible online platform. The concept for this resource was developed in conjunction with the University of Pittsburgh Medical Center (UPMC) Clinical Center for Medical Decision Making, as part of a comprehensive curricular intervention to create a

“culture of clinical reasoning” within the residency.<sup>4</sup> The curriculum emphasizes a common language for discussing clinical reasoning and diagnostic error while modeling a systematic approach to clinical problem solving through case conferences and didactic teaching. Adding resident-driven, interactive exercises (Pitt Puzzles) to the curriculum has increased resident engagement while also

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**“Our experience reinforces the need to listen to one’s educational audience when distributing an optional educational resource in order to balance audience engagement with the desire to meet stated learning objectives.”**

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## FROM THE EDITOR

# LEARNING STATE OF MIND

Tiffany I. Leung, MD, MPH, FACP, FAMIA,  
Editor in Chief, *SGIM Forum*

As 2022 comes to an end, the last quarter's *SGIM Forum* articles have explored various aspects of medical education that stemmed from the October theme issue on "Medical Education Innovations and Explorations" and provided vital updates from SGIM leadership on future meeting planning. As 2023 approaches, honing and nurturing our learning state of mind ensures that we are prepared to adapt to the undergraduate, graduate, and continuing educational needs of our membership. Articles in this issue are loosely focused on residency educational innovations and experiences.

McQuade, et al, offer a creative approach to case-based learning with their Pitt Puzzles series. Keyserling, et al, share lessons learned on developing a residency primary care track to foster a passion for primary care. Kearns, et al, engage residents in developing and implementing ambulatory curricula in residency on moving beyond only assessing social determinants of health for patients towards managing them as a routine part of patients care. Mansour, et al, conducted a preliminary evaluation of a residency telehealth curriculum. Additionally, the Education Committee offers readers the first of two parts of the Update in Medical Education presented during the 2022 SGIM Annual Meeting that focuses on studies that identify inequity in various domains in medical education.

Also, we remain civically engaged to tackle the most impactful issues for our patients, our learners, and for us as general internists. Importantly, this month's President's Column and Q&A with the SGIM CEO both follow up on specific actions and decision-making points considered by SGIM leadership in regional and national meeting planning, elaborating further in response to concerns that were introduced in last month's issue.<sup>1</sup> Early registration for the 2023 SGIM Annual Meeting is open through March 13. I look forward to seeing everyone in Aurora, CO, bringing their learning state of mind to meet the promise of tomorrow!<sup>2</sup>

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SGIM

# THE LIGHTS THROUGHOUT SGIM

LeRoi S. Hicks, MD, MPH, FACP, President, SGIM

*"The consistent desire to take initiative and develop strategies to strengthen the ways in which SGIM can support our population-oriented mission is a great demonstration of how members can drive organizational change and help to lead SGIM initiatives."*



A few days ago, I had the pleasure of attending my organization's celebration of Diwali, which was being held in-person for the first time in three years. The best part of the day was being invited toward the stage and participating in the Bollywood dance line. Like many of us, so much of my time is spent focusing on tasks related to improving our clinical processes that I rarely have the opportunity to celebrate with colleagues the things for which we should feel fortunate. The Diwali celebration allowed me the opportunity to engage with a sizable community of our health system's physicians. I also had the privilege of being able to speak during the celebration and do something infrequently done by health system leaders—I was able to directly express my appreciation. I have come to understand Diwali as a celebration of good overcoming

evil and a recognition of light overcoming darkness.<sup>1</sup> I fully appreciate the contributions my extraordinary colleagues have made toward overcoming many of the ills that have plagued the community we serve. Throughout the pandemic, our ambulatory and hospitalist physicians substantively stepped up, modified their usual scope of work, and jumped feet forward into doing what was necessary to promote patients' well-being. I felt compelled to make sure that each doctor in that audience understood my belief that they were part of the light that helped us overcome dark times. By the time this issue *Forum* publishes, the celebration of Diwali will have passed. However, as I reflect on the purpose of the internationally celebrated holiday, I am compelled to continue to discuss those things that are good and to focus on the positive.<sup>1</sup>

I have several positive things to report about my experiences this year in SGIM. Since becoming SGIM

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The SGIM *Forum*, the official newsletter of the Society of General Internal Medicine, is a monthly publication that offers articles, essays, thought-pieces, and editorials that reflect on healthcare trends, report on Society activities, and air important issues in general internal medicine and the healthcare system at large. The mission of the *Forum* is to inspire, inform, and connect—both SGIM members and those interested in general internal medicine (clinical care, medical education, research, and health policy). Unless specifically noted, the views expressed in the *Forum* do not represent the official position of SGIM. Articles are selected or solicited based on topical interest, clarity of writing, and potential to engage the readership. The Editorial staff welcomes suggestions from the readership. Readers may contact the Editor, Managing Editor, or Associate Editors with comments, ideas, controversies, or potential articles. This news magazine is published by Springer. The SGIM *Forum* template was created by Howard Petlack.

# Q & A WITH SGIM'S CEO, DEPUTY CEO, AND PRESIDENT ABOUT THE UPDATED MEETING SITE SELECTION POLICY

Eric B. Bass, MD, MPH; Kay Ovington, CAE; LeRoi Hicks, MD, MPH

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## **EB: Why did SGIM's Council update our policy on meeting site selection?**

**LH:** Many members have expressed concern about holding our national meeting in a state that has implemented one or more policies that conflict with members' core values. When members are upset about a state's policy, they ask us to cancel plans to go to the state and sometimes they threaten to boycott the meeting. The Council must respond to such concerns by being sensitive to the political considerations while also considering the financial ramifications for the Society.

## **EB: How did the Council weigh the political and financial considerations in updating the site selection policy?**

**LH:** The Council recognizes that members are deeply concerned about an increasing number of policies implemented by states that conflict with their core values, including legislation on reproductive rights, gun violence, access to care, physician autonomy, and health care for people who identify as being lesbian, gay, bisexual, transsexual, queer, or questioning (LGBTQ). Although we cannot assume that all members feel the same way about all political issues, many members have asked us to act in response to the recent flurry of restrictive state-level policies. At the same time, we must be sensitive to the fact that about 40% of our members live and work in states affected by these restrictive policies.<sup>1</sup> Part of the challenge is that it is hard to predict what will happen in cities and states when decisions must be made at least five years in advance to secure sites that meet our needs.

As stewards of SGIM's resources, the Council must consider the financial impact of decisions about meeting sites, keeping in mind that the national meeting is the Society's largest source of revenue. In addition, SGIM has an external funding policy that strictly limits commercial support. To maintain funding for a full range of programs, the SGIM team must manage expenses carefully. To change a contracted meeting site to a new

location would impose an exorbitant financial loss based on current contractual standards. Cancellation penalties depend on the lead time but range from \$270,000 two years before a meeting to \$550,000 less than six months before a meeting. Moving to another facility on short notice would incur substantial additional expenses because we would have limited options and little room for negotiation of a contract. Thus, the financial impact of withdrawing from a meeting site contract would seriously undermine our ability to support all the programs that are important to members.

To reconcile these competing concerns, the Council made a commitment to support local or state advocacy efforts as part of the programming for every meeting. The Annual Meeting Program Committee will develop programming early in the meeting planning cycle, targeting initiatives or organizations that may have a sustained impact through connections established at a local level. In addition, the Council committed to exploring opportunities to collaborate with other medical societies to better leverage our collective impact on state-level policies.

## **EB: What factors then will be considered when choosing future meeting sites?**

**KO:** In the updated site selection guidance,<sup>2</sup> the Council explicitly calls for consideration of several factors, including:

- geographic rotation to facilitate equitable access to meetings
- venue cost
- direct flight access
- available dates and conflicts with competing meetings
- condition of meeting space
- attendee experience in the city, including safety
- prior experience with the venue
- environmental sustainability
- political considerations.

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# ADDRESSING INEQUITY AND BIAS IN MEDICINE AND HIGHLIGHTING INNOVATIONS FROM THE SGIM UPDATE IN MEDICAL EDUCATION: PART ONE

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## Introduction

In this two-part series, we highlight 10 impactful medical education articles presented at the Update in Medical Education during the 2022 Society of General Internal Medicine (SGIM) Annual Meeting. In part one, we summarize studies that identify the status of inequity in various domains in medical education. In part two, we will highlight studies that offer targeted solutions to address racism, lack of diversity and bias in medical school admissions and trainee evaluations, and share innovative approaches to delivering educational content and improving trainee wellness.

## Methods

Study authors, all members of the SGIM Education Committee, employed a modified Delphi methodology to achieve group consensus on the selection of publications. Studies from a consensus list of journals that regularly publish medical education research were reviewed by the authors (see table). To be included, studies were required to involve internal medicine participants from the United States or Canada, describe original research, and relate to the SGIM 2022 meeting themes (“Discovery, Equity, and Impact”).

In phase one, authors reviewed the table of contents and abstracts of all studies published December 2020-December 2021 in 13 journals. During phase two, authors performed a full-text review of 130 studies identified in phase one. Studies were scored according to the SGIM 2022 National Meeting peer review rubric in the following categories: importance to the audience, soundness of methodology, generalizability of outcomes and relevance to meeting themes. Numerical ratings were aggregated and shared with the group. A subsequent consensus meeting was held to select 10 studies for presentation at the 2022 SGIM Annual meeting. Here, we summarize a subset of those selected publications that

highlight the current landscape of racial, gender, and patient equity in medicine to elucidate challenges we face today. This will provide context for the need to address inequities that follow in part two.

## Racial Diversity of Faculty, Residents, and Medical Students

Bennet and Ling examined trends in the proportion of U.S. medical school faculty who self-identify as Black by sex, academic rank, and clinical specialty between 1990-2020.<sup>1</sup> A slight increase, from 2.68% in 1990 to 3.85% in 2020, in Black faculty representation was seen. While there was a notable increase in Black female faculty representation, from 0.96% in 1990 to 2.32% in 2020, the percentage of Black male faculty decreased by 0.21% between 1990 and 2020. Most Black faculty held the academic rank of assistant professor, which showed the greatest increase over this period (0.89 percentage points).

In our second article highlighted, Bennett, et al, applied logistic regression modeling to examine trends in racial and ethnic diversity of Black and Hispanic resident physicians across the twenty largest medical specialties between 2007-18.<sup>2</sup> In 2018, 13.4% and 18.3% of the U.S. population identified as Black and Hispanic, respectively, while the Accreditation Council of Graduate Medical Education (ACGME) trainee population in 2017-18 included only 5.5% who identified as Black and 7.8% as Hispanic, respectively. Only five specialties indicated statistically significant increases from 2007-18. The investigators estimated that if current trends hold, it will take almost a century to achieve proportional Black and Hispanic workforce representation in certain specialties.

A third investigation, Morris et al, examined trends in gender, racial, and ethnic diversity of U.S. medical school enrollees 1978-2019.<sup>3</sup> The percentage of women

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# REKINDLING CONNECTION AND PASSION FOR PRIMARY CARE: AN ANNUAL WORKSHOP FOR PRIMARY CARE TRACK RESIDENTS

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Fostering a passion for primary care remains an opportunity for improvement in Internal Medicine (IM) residency programs. Residents spend limited time in the outpatient setting and face unique challenges in developing confidence and competence during the relatively short training time of IM residency.<sup>1</sup> Thus, it is important to make training in the ambulatory setting a priority, especially within primary care tracks (PCTs). Currently, opportunities within our PCT for education delivered to the group of PC-bound residents are limited to elective evening get-togethers that attract a few residents at a time due to call schedules and other responsibilities. The COVID-19 pandemic added to the challenge of primary care education by taking the focus away from ambulatory medicine given the need to care for the critically ill. The intense focus on COVID-19 led to a sense of isolation, increased physician burnout and decreased bandwidth to participate in non-required learning.<sup>2</sup> We recognized the need for a stronger primary care focus and, despite pandemic challenges, developed an annual PCT workshop for our residents that has allowed us to rekindle connection and passion for primary care among residents and teachers.

In early 2019, we began working with program leadership to plan the inaugural PCT workshop. We reviewed our current

curricula for individual PCT rotations and developed a survey for current residents, program graduates and faculty to determine our biggest areas of need. All groups requested additional training in musculoskeletal exam, general procedures, dermatology, and women's health.

There was agreement that including topics on efficiency, difficult conversations, and boundary setting would help develop resiliency skills. Residents requested career specific information related to addiction medicine, policy and advocacy, and public health. After reviewing the survey and reflecting on our mission statement, we decided on the following objectives to frame our workshop:

1. expand knowledge, attitudes, and skills useful for primary care
2. build a sense of a primary care community and mentorship within our PCT
3. recognize varied career paths within primary care
4. promote primary care and general internal medicine as a career
5. demonstrate leadership skills and resiliency strategies to promote career sustainability.

Based on these goals, we designed a three-year workshop curriculum that includes hands-on procedural skills

sessions, an annual career panel of recent graduates and community leaders, and medical improv sessions to help us work through common challenges in primary care communication and embrace ambiguity. In addition, we

include an annual narrative medicine activity to promote sharing of joys and challenges in primary care and a series of knowledge boosters focused on enhancing knowledge of historically marginalized populations and

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**“We recognized the need for a stronger primary care focus and, despite pandemic challenges, developed an annual PCT Workshop for our residents that has allowed us to rekindle connection and passion for primary care.”**

topics in which residents in the PCT requested additional training.

We planned for our inaugural workshop to take place in March 2020 entirely in-person; however, we had to cancel the event that year due to the COVID pandemic. In 2021, we hosted the workshop with a half day of virtual events followed by an in-person skills session, and in 2022 the entire workshop was in-person with appropriate COVID precautions. Eleven to 12 PCT residents participated in the workshop each year. The workshop sessions were consistently rated as moderately to extremely helpful to professional growth and development. Overall, the workshop made 95% of the residents indicate they felt more excited about primary care. After three years of planning and two years of execution, our PCT workshop serves as an example of how to foster professional development and excitement about careers in General Internal Medicine and Primary Care.

We will highlight several innovations in this PCT Workshop curriculum including having both a virtual and in-person component, focusing on hands-on procedural skills, and debuting a medical improvisational curriculum.

The mixed virtual and in-person format was required to abide by social distancing measures but also provided additional benefits. While still having time for essential skills practice during our in-person sessions, we were able to include a variety of speakers from across the state who may not have all been able to attend an in-person event. The virtual session allowed residents a more relaxed morning and an opportunity to participate in self-reflection from the comfort of their homes with the ability to share their pets and children with their peers. Despite the above benefits, the virtual session did decrease opportunities for one-on-one interpersonal interaction and discussion between residents which contributed

to our decision to have the second workshop all in person.

A major objective of the workshop was to increase trainee exposure to common outpatient procedures. In general residents feel less comfortable performing outpatient procedures compared to inpatient, and faculty expertise is often a major limiting factor in learning these skills.<sup>1</sup> Based on our survey results, we decided to focus on ultrasound, basic MSK, dermatology, and women's health procedures. Hands-on procedure training was completed using simulation models for joint injections and women's health procedures (including certification in Nexplannon placement); while pigs' feet were used for skin biopsies and trigger point injection practice. We also incorporated point of care ultrasound teaching related to the outpatient MSK exam and divided into small groups whenever possible to encourage active participation. Residents requested additional time for ultrasound and procedure training, which we will incorporate in the future workshops.

One final innovative session that we will highlight is "medical improv" where basic theater improvisational strategies were used in medical scenarios. The goal is to promote effective communication strategies and to build relationships by harnessing teamwork. Studies looking at the use of medical improv in medical students showed improvements in student wellbeing, engagement with studies, and communication skills.<sup>3</sup> For our 2021 workshop, we invited an outside improv facilitator to lead foundational activities focused on teamwork and understanding the hierarchy of status in health care. The following year our improv activities involved patient cases surrounding difficult conversations including a "worried well" patient, a patient with chronic pain seeking opioids as first line therapy, and a patient frustrated with previous doctors. For these sessions, volunteers were asked to try a series of communication

strategies with standardized patients including a "too passive" approach and a "too aggressive" approach to start. We then facilitated a discussion as a group and crafted responses that struck a balance before practicing a "just right" final version. Resident noted that the "improv session was actually more helpful than I realized" and that "the instructor did a good job at getting us out of our comfort zones in a very structured way that made it feel less anxiety provoking." Given the initial success, we plan to continue to explore creative ways to involve improv in our primary care learning.

Our annual primary care workshop has been an immensely positive experience for our residents. This dedicated time for procedural training, career planning, knowledge boosters, communication strategies, and time for reflection has added value to our trainees' education. We look forward to continuing these workshops and further refining our three-year curriculum in the future. We would love to hear from others about their positive experiences or challenges in primary care training as well.

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# RESIDENT-DRIVEN SOCIETAL DETERMINANTS OF HEALTH CURRICULUM: A PATHWAY TO PATIENT EQUITY?

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## Introduction

**S**ocial Determinants of Health (SDH)—such as housing, racism, education, access to nutrition, and language and literacy skills—have a major impact on people’s health, well-being, and quality of life.<sup>1</sup> Inequities created by SDH have a large effect on patient outcomes, such that zip code has a stronger correlation to life expectancy than genetic code.<sup>2</sup> In recognition of its significance, the Accreditation Council for Graduate Medical Education requires residency training programs to develop residents who can demonstrate awareness and responsiveness to SDH as part of competency in systems-based practice.

Much existing SDH content focuses on macroscopic inequities by comparing differences between countries and large populations; other curricula have leaned heavily on experiential activities with patients.<sup>3,4</sup> However, these curricula leave gaps in quantitatively understanding inequities in learners’ own communities and developing physician-specific skills to confidently approach a wide spectrum of patient challenges inherent to SDH.

We introduced a curriculum developed in the ambulatory setting for internal medicine residents. This curriculum teaches learners to understand the principles of Social Determinants of Health, identify the role of Social Determinants of Health in patient outcomes, and confidently address Social Determinants of Health in ambulatory practice.

## Methods

This curriculum was presented to primary care-focused internal medicine residents through eight weekly one-hour sessions during outpatient clinical rotations. Sessions included brief didactics, paired-learner practice, interactive community assessment activities, and small group discussions. A senior resident facilitated each session with assistance of faculty. Week 1 began with a

presentation that defined and illustrated the categories of SDH and the significance they play in patient outcomes. Learners reflected in group discussion on their own attitudes/experiences regarding these topics and how they influence patient care in their own clinics. Week 2 focused on financial stability. Visualized data highlighted the distribution of poverty in the clinic’s zip code and in the neighborhoods of the patients served by the clinic. Week 3 highlighted health literacy and numeracy with trainees predicting “reading level” for various patient instructions. They were given tips for adapting communication to match patient needs. Learners went on a virtual “neighborhood visit” in Week 4. Pairs of learners were given a list of details to explore a neighborhood in one of the three main zip codes where their clinic patients predominantly live. This included availability of transportation to clinic and necessary resources. Following this they shared their findings aloud and brainstormed as a group what physicians can do to reduce the health & wellness barriers discovered. Epidemiologic data on the impact of suboptimal housing and homelessness/housing insecurity and food insecurity were addressed in weeks 5 & 6. In weeks 7 and 8, ancillary staff members in social work, pharmacy, and nursing care coordination presented their work to the trainees. Then, learners participated in case-based discussions to identify relevant SDHs, altering care plans appropriately, and assigning applicable clinic-specific resources to optimize a patient’s quality of care.

A survey assessing knowledge, attitudes, and skill confidence related to SDH in the clinic was completed at the beginning and the end of the curriculum. Residents were asked to recall information from didactic session materials and rate their perceived skill at addressing SDH in the clinic using a 5-point Likert scale. Statistical analysis of the data included paired pretest and posttest

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differences of median. The Wilcoxon Signed Ranks Test and Exact test methods were utilized based upon inability to meet normality assumptions for parametric analysis in the context of small sample size.<sup>5</sup> IRB approval was obtained.

### Results

Eleven residents (PGY1-PGY3) participated in the curriculum. The distribution by training level: 4 PGY-1s, 4 PGY-2s, 3 PGY-3s. When assessing their understanding of the principles of SDH, residents reported higher familiarity of SDH on health outcomes ( $p = 0.047$ ) and confidence in their ability to discuss evidence-based literature ( $p = 0.008$ ). Assessment of specific environmental barriers improved significantly by the end of the curriculum ( $p = 0.004$ ). Residents began to value routine screening of SDH in the clinic, though were unclear on the importance of aggregate data analysis on patient outcomes. Residents reported more confidence in their ability to manage SDH in the clinic ( $p = 0.004$ ) and to coordinate care with ancillary services to overcome identified barriers ( $p = 0.008$ ). There was no change in perceived ability to address language barriers in the clinic ( $p = 0.125$ ). Confidence in adapting for low literacy patients and ability to use evidence-based literature improved but were not statistically significant.

### Discussion

Understanding and actively managing SDH is an emerging need in medical education. This ambulatory curriculum integrates didactics, experiential activities, and reflective discussion to develop learners understanding and confidence in managing SDH as part of a team-based approach to care in the clinic. Curricular evaluation demonstrated that residents often bring existing SDH knowledge and positive attitudes toward collecting SDH information. However, this curriculum fills significant gaps in skills necessary to confidently manage SDH in

the ambulatory clinical setting.

A unique aspect of this curriculum is that it was developed by a senior resident to enhance the ambulatory educational experience for other residents. Our clinic environment can be challenging given its location in an underserved area of the city; this exposes trainees to a wide variety of SDH factors which impact patient care. Through independent research and reflection of her own clinical experiences, this resident designed the curriculum to be particularly relevant to our clinic patient population and her peers' needs. This curriculum utilized specific local resources for addressing health inequities in the resident clinic patient population. The discussions encouraged by this curriculum prompted reflection and brainstorming sessions on how to approach barriers to health equity in the future. While the richness of these discussions was not captured by the survey, the anecdotal feedback was overwhelmingly positive.

Generalizability is an area of weakness in this curricular design. However, the basic general outline can be followed and modified to meet the needs of communities and residency programs across the country. For instance, the Social Vulnerability Index for the area surrounding our clinic was obtained through an interactive map through the Agency of Toxic Substances and Disease Registry (<https://svi.cdc.gov/map.html>). Visualized data through Data USA (<https://datausa.io>) was also useful in summarizing trends in a variety of metrics such as distribution of poverty and property prices compared to income. Discussion and reflection are integral to the curriculum, and these can mirror the specific SDH factors that learners experience with their own clinic populations.

While our results are promising it is important to note that it has only been introduced to 11 residents. Even though the course was presented during a time blocked off

from clinic responsibilities, not all of the participants were able to attend every lecture. Future directions include involving a larger cohort of residents. Additional study on how health outcomes are affected by the intervention of SDH education is still needed.

It is crucial for physicians in training to not only understand SDH but be empowered to address them. The structure and practical applications of this curriculum allowed for resident physicians to immediately apply the principles learned in their own clinical practice. Further investigation on optimal timing for SDH didactics in the clinic and the impact of SDH training on clinical outcomes remains to be determined.

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# TEACHING VIDEO VISIT SKILLS TO INTERNAL MEDICINE RESIDENTS: A BRIEF CURRICULAR INTERVENTION

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Clinical closures during the COVID-19 pandemic forced organizations to quickly maneuver towards virtual care models in the ambulatory setting. In recognition of the need for telemedicine during this health crisis, the American Medical Association (AMA) encouraged telemedicine training for learners<sup>1</sup> and the Accreditation Council for Graduate Medical Education (ACGME) encouraged resident-patient interactions via video visits. The ACGME also announced digital health as an updated milestone, with a focus on identifying and utilizing telehealth technology, triaging, and disease management.<sup>2</sup> While asynchronous telemedicine activities, such as MyChart messaging and remote chronic disease monitoring, were already underway at some teaching hospitals, the shift to video visits presented new challenges for residency programs inasmuch as it required skills-based training during a highly stressful time. Recently published studies of cross-sectional surveys of internal medicine programs have shown a need for telehealth curricula in the era of COVID-19, unfortunately there are few published articles about successful interventions.<sup>3</sup>

Mount Sinai Hospital is an urban, academic hospital in New York City. Our internal medicine residency program consists of 150 residents practicing at one ambulatory care site for two weeks every two months (6+2 model). The curriculum was presented to internal medicine (IM) PGY2 and PGY3 residents, who had one video visit session on each outpatient block every eight weeks, for a total of four clinical sessions in a six-month period. In order to onboard our residents for video visit practice, we delivered a zoom-based telehealth curriculum consisting of four sessions: 1. introduction to telemedicine and technical practice; 2. telemedicine triaging; 3. communication and physical exam skills via telemedicine, and 4. video visit ambulatory morning report. The first two sessions were delivered prior to any resident video visit encounters, the last two sessions were delivered after residents had at least one clinical video visit session.

The first session was an introduction to telemedicine and technical practice that covered synchronous and asynchronous telehealth practices. We began the session by outlining a brief overview of the history of telemedicine and some of the strengths and challenges of this patient care modality.<sup>4</sup> We then reinforced the asynchronous models of telemedicine already in place in our residency practice, including electronic medical record (EMR) direct-patient messaging, telephone triage, and remote monitoring of patient's blood pressure and diabetes management. Then, a mock patient was created within our telemedicine platform to practice video visit log-in logistics from both the provider and patient perspective. Documentation basics, such as pre-visit patient messaging and visit templates and highlighting comparison with in-person encounters, were reviewed.

During the second session, we focused on the types of patient encounters best served for video visit management, such as diabetes management, hypertension control, hospital discharge appointments, and medication reconciliation visits. Utilizing Cochrane review data, case-based clinical presentations that were appropriate for a video visit were presented, including heart failure and diabetes management.

During the third session, telehealth communication and physical exam skills were taught. We discussed the feasibility of triaging patient acuity via a general exam using a mock patient video. Then, using breakout rooms, residents updated a live online document that outlined physical exam findings that are feasible via video for each body system.<sup>5</sup> Using this model, we highlighted the physical exam portions that are amenable to video visit (such as mental status examination, dermatologic examination, and patient abdominal self-examination), and the portions that are more challenging (such as cardiopulmonary examination). For body systems that have limited examination via video visits, we reiterated the importance of

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triaging by measurement of basic vital signs such as heart rate and respiratory rate.

During the final session, residents were asked to submit a video visit case for ambulatory morning report. These cases allowed us to review common primary care concerns that may present via video visits, such as urinary tract infections, upper respiratory infections, and abdominal pain. We highlighted the literature supporting the use of telehealth for diagnostic and treatment strategies.

Residents were surveyed immediately before the first zoom-based session in July 2020 and six months later in February 2021. Based on prior work on perceived attitudes towards telemedicine, residents were asked about familiarity and comfort with patient care via telemedicine, perceived barriers to patient care in the telemedicine setting, and prior telemedicine experience.

Eighty-one residents received the curriculum, with 66 residents completing the survey immediately before the first curricular session in July 2020 and 61 responded to six-month post-curricular survey in February 2021, for an overall response rate of 78%. Only 7.5% reported they had sufficient training in telemedicine during residency or medical school prior to the initial curricular session. There was considerable baseline interest, with 97% agreeing that they wanted to learn more about telemedicine.

After our curricular intervention, residents were significantly more confident in an array of telemedicine-related skills. On the pre-test, residents were significantly more likely to report feeling confident in determining a treatment plan for a patient with a physical exam and labs than without; on the post-test, there was no difference in confidence in determining a treatment plan with or without labs perhaps highlighting the impact of careful history taking or appropriate triaging cases for video visits. Additionally, residents

reported significant improvement in agreement that telemedicine improves the quality of care for patients and that telemedicine improves outcomes for chronic diseases. Overall, residents reported fewer perceived barriers to video visits after our educational intervention.

Unfortunately, there was no significant change in resident belief that telemedicine is a way to address health disparities in medicine. Further, there was disappointingly a significant decrease in the belief that telemedicine is a way to improve access to care for all patients, despite literature indicating that telemedicine may be a means to improve access to care. This decrease may reflect the unique technical challenges facing our ambulatory patient population such as limited smartphone and internet access.

The ability to effectively care for patients via video visits has become a critical skill for physicians during the COVID-19 pandemic and will continue to be essential in IM ambulatory practice. Therefore, it is important to consider how to integrate this training into existing clinical and curricular structures. We describe our experience with a four-hour telemedicine curriculum followed by four half-days of video visits, demonstrating significant improvements in internal medicine resident self-reported confidence and skills associated with moderate effect sizes. Importantly, residents reported a high degree of satisfaction with the curriculum; on the post-test, 78.7% reported feeling as though they had had sufficient training in telemedicine during residency. The most significant improvements were in the confidence triaging a patient's acuity via video visits, indicating that this crucial skill can be developed quickly. Residents also had significant reductions in concerns about their ability to build rapport with patients and address concerns without a face-to-face encounter.

Our results are potentially influenced by maturation bias, as

residents' confidence in their clinical ability would be expected to naturally improve throughout the course of their residency; however, the lack of improvement in related skills not taught in the curriculum (i.e., ability to triage patients' concerns using telephone calls or electronic messages) suggest that these improvements were in part due to the curricular and clinical intervention. Further limitations include the exclusion of PGY-1 residents and the reliance on resident self-report rather than objectively observed skills.

We believe the structure of our intervention and the results of this study are generalizable to IM training programs across the country. The intervention required very little curricular time and no additional cost aside from teaching time and can inform the design of interventions in programs without existing telemedicine programs or limited patient volume. While further training is undoubtedly needed to achieve mastery in video visits, our brief curriculum assuaged many concerns about the utility of telemedicine and increased the residents' recognition of their need to use this skill in their post-residency careers.

*Acknowledgements:* We would like to acknowledge the resilience of our residents during the COVID-19 pandemic, and their willingness to engage in this intervention during this challenging time.

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president, I have been able to meet regularly with a diverse group of our members. I have had meetings with leaders in medical education and clinical research as part of our SGIM Council. I have also taken the opportunity to interact with trainees and SGIM members at regional meetings and have had a few meetings with past presidents of both SGIM and ACLGIM. With each conversation, I've been impressed by our mutual desire to strengthen the society's effectiveness in advancing the careers of academic general internal medicine physicians and in advocating for equitable care and health outcomes for the patients we serve.

One of the good things I've experienced as president occurred as a result of a SGIM member traveling to meet individually with me during the New England regional meeting. During this one-on-one meeting, he clearly articulated the concerns I've heard from several of our members about future annual meetings being held in states where local policies are counter to our stated vision. During that discussion, we took the time to brainstorm ways in which SGIM members and leaders can work together to balance the need to avoid tacitly supporting health policy that restricts physician autonomy (e.g., restriction of gender affirming care and abortion rights) while supporting colleagues who live within these states who desire to have our continued presence and the academic and advocacy opportunities the SGIM annual meetings can bring. After reflecting on that conversation and the many individual emails I've received from faculty in many states, it is clear our members are seeking transparency as to how organizational decisions are made and feel that clarity about our processes is as important as the decisions them-

selves. As a result, SGIM council revised our process for selection of future meeting sites, developed a new statement on site selection, and is in the process of developing methods to disseminate our statement more easily to SGIM members.

Another wonderful thing I've experienced is the work of the #SGIM23 program committee. This year's committee is comprised of a diverse array of our members working to provide meaningful advocacy opportunities for SGIM members to work with local agencies in Colorado with a focus on housing stability. Clearly, one recurrent theme from my discussions about meetings has been the desire to more proactively work at local levels to discover ways in which members can advocate to improve human health. The work of the #SGIM23 program committee may represent a great model for work to be done for future annual and regional meetings, regardless of where they are held. The consistent desire to take initiative and develop strategies to strengthen the ways in which SGIM can support our population-oriented mission is a great demonstration of how members can drive organizational change and help to lead SGIM initiatives.

My conversations have also provided encouragement through the support I've gained to enlist past SGIM leaders to engage. Long tenured SGIM members frequently ask for ways to contribute to our organization, provide ideas for growing membership, and bring attention to the changing landscape of academic medicine with the goal of assuring that SGIM is prepared to continue to be a valuable resource for internal medicine faculty across the country. In speaking with our past-presidents, many are volunteering their time to participate in sessions at our

next annual meeting and are looking for ways to engage with mid-career faculty to provide mentoring. During #SGIM23, we plan to include past presidents in discussions on the ways our organization can support SGIM members who live in states with laws that our counter to our mission. Further, we are soliciting participation of past-presidents to participate in mid-career mentoring and coaching opportunities to address a desire expressed by our members to obtain guidance from senior colleagues throughout their academic careers.

Last, I'd like to take this opportunity to further encourage participation in our #SGIM23 meeting in Aurora, Colorado. I am excited about the program committee's progress. In addition to the efforts described, the committee has secured internationally renowned experts in medical education, clinical research, and environmental and public health as keynote speakers. Beyond the exceptional content developing, there is another reason I'm excited about the meeting. As I think forward to #SGIM23, I'm excited about the opportunity to see 3,000 members in person again! Spending time with my professional colleagues at meetings has been one reason that SGIM has always felt like my professional home.

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SGIM

Complete List of Medical Education Journals Screened for 2022 Update in Medical Education	
<i>Academic Medicine</i>	<i>Annals of Internal Medicine</i>
<i>New England Journal of Medicine</i>	<i>Medical Teacher</i>
<i>Journal of the American Medical Association</i>	<i>BMC Medical Education</i>
<i>Journal of General Internal Medicine</i>	<i>Advances in Health Science Education</i>
<i>Journal of Graduate Medical Education</i>	<i>Teaching and Learning in Medicine</i>
<i>Medical Education</i>	<i>Medical Science Educator</i>
<i>American Journal of Medicine</i>	

enrollees increased substantially from 24.4% in 1978 to 50.6% in 2019. However, trends again highlighted a decrease in the number of enrollees identifying as Black men (from 3.1% to 2.9%). This study, viewed in combination with those preceding it, suggest that tremendous efforts will be required to build a physician workforce that reflects the population we serve. Action is needed to acknowledge and address the structured biases that have perpetuated the underrepresentation of Black and Hispanic physicians within medicine.

### Role Misidentification of Physicians Identifying as Women

Role-based misidentification, a manifestation of gender bias routinely experienced by women physicians, occurs when a physician is mistakenly identified as a non-physician hospital staff member. Berwick et al aimed to quantify the frequency of role-based misidentification in a 2018 cross-sectional survey of resident physicians from three specialties in an academic medical center.<sup>4</sup> The authors assessed the frequency as well as participants’ psychological and behavioral response to misidentification events in the preceding inpatient month.

Of 182 respondents, 47% self-identified as women, 72% as White, and 63% were internal medicine residents. 100% of women respondents reported being misidentified (most often as nurses) at least once over the preceding month, compared with 44% of men. Self-assessment of their psychological responses to misidentification

showed that 85% of women “felt annoyed” when mischaracterized, 38% “felt angry,” and 36% reported “feeling less satisfied with their jobs.” In response, 51% changed the way they dress, while 81% began emphasizing their title (“Doctor”). Misidentification manifested as requests to complete tasks deemed inappropriate given physicians’ time pressures and training—this added a significant burden to women physicians at the detriment of the physician-patient therapeutic relationship and physician well-being.

### Inequity in Patient Care in Ambulatory Resident Clinics

Resident continuity clinic is a key part of internal medicine training and an integral healthcare access point for many patients with vulnerable needs. Amat, et al, retrospectively compared characteristics and outcomes of resident and faculty patient panels in a large urban, academic, hospital-based primary care clinic.<sup>5</sup>

Their analysis found that faculty panels had significantly better population health metrics for chronic disease management and cancer screenings when compared to resident panels. While both resident and faculty patients had similar burdens of chronic and acute illness, resident patients were significantly more likely to have greater economic vulnerability, higher burden of psychiatric illness, increased high-risk behaviors, lower health literacy, and less engagement with the healthcare system overall. Resident patients were more likely to be “lost” to follow-up upon

provider graduation with 53% of patients not successfully transitioning to their new provider.

This study suggests that disparities in resident and faculty panel metrics are driven by factors such as socioeconomic vulnerability and continuity of care. This is an issue of health equity and emphasizes the importance of designing systems (both educational and clinical) that better support vulnerable patients in the academic setting.

### Conclusion

The studies we have highlighted help to clarify the current landscape of inequities in various domains in academic medicine, including selection of medical trainees, promotion of academic careers, and in patient care in residency training. These works provide important context and act as a necessary step toward exploration of solutions to the vast inequities that persist across these realms. Creating positive change will require thorough and thoughtful interventions on multiple levels, from individual to systemwide. In part two of this series, we will share recently published interventions aimed at improving structural inequities as well as impactful innovations aimed at improving trainee education and promoting trainee wellness.

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stimulating retention of reasoning concepts through spaced repetition.

Pitt Puzzles are a collection of case-based educational exercises that require 10-15 minutes each to complete and are accessible on mobile electronic devices. Cases focus specifically on atypical presentations of typical diseases or classic presentations of rarer diseases to promote the development of robust illness scripts. In contrast to traditional case simulations focusing on building medical knowledge, Pitt Puzzles focus on clinical reasoning principles as the primary learning objective. For example, a case of toxic shock syndrome may be used to demonstrate how changes to the problem representation can change the differential diagnosis through a framing effect. Throughout each Puzzle, case information is revealed sequentially, with probing questions asking participants to write summary statements, describe a differential diagnosis or a problem list, identify cognitive biases at play, or choose the next step in the diagnostic work up. As such, the instruction focuses on the process of clinical reasoning rather than the resulting diagnosis. This focus on metacognition and a common language of clinical reasoning provides a foundational framework that physicians-in-training can use to continue to develop their clinical reasoning throughout their careers.<sup>1,5</sup>

Pitt Puzzles are constructed by resident volunteers, many of whom have a special interest in clinical reasoning and/or medical education, in cooperation with faculty mentors. Mentors assist residents in identifying an appropriate case and the associated learning objectives, after which residents outline and write the Puzzle cases. Cases are de-identified and the details changed to protect patient privacy. A final version is then negotiated over several drafts with the faculty mentor. Depending on interest from year to year, case mentors have also included senior residents or chief residents. For

example, in 2022 we have two senior residents who will serve as editors with a single faculty editor-in-chief. Once finalized, cases are entered into Qualtrics, an online survey tool which allows branching question logic to further simulate the results of different choices participants make during the case. Since Pitt Puzzles' inception in 2018, 27 cases have been written with an average of 125 participants per case. Engagement both locally and broadly has exceeded expectations. Feedback from our residency program has been overwhelmingly positive and there has been continued interest from our residents to continue to develop additional cases.

There were several challenges during the initial development of the Pitt Puzzle program: how to increase participation among busy trainees, and how to balance trainees' desire for clinical knowledge content with our clinical reasoning-specific learning objectives. We suspect that low initial trainee participation in the program had two likely causes: first, Puzzles have never been required learning for trainees, so cases were less likely to be completed despite their short length; second, Puzzles were initially distributed to trainees by e-mail only, making them susceptible to being ignored due to e-mail fatigue. Puzzle participation subsequently increased during the COVID-19 pandemic as trainees' appetite for digital educational increased and as familiarity with the program grew over time. We were also able to increase participation by releasing cases via the Twitter handle @MedEdPGH, thus expanding our potential audience to other institutions.

The most frequent negative feedback from post-case surveys has been the request for more disease-specific teaching. While the easiest solution would have been lengthening cases to add clinical content, we wanted to maintain each case's brevity while balancing our educational agenda with our learners' educational de-

sires. Thankfully, there are multiple avenues for disease-specific clinical reasoning teaching. For example, teaching about testing characteristics (e.g., the sensitivity of pleural fluid cytology for malignancy, or D-dimer likelihood ratios for pulmonary embolism) allows for dual discussion of Bayesian reasoning and clinical content. In other instances, narrowing the scope of cases to focus on a single diagnostic decision allowed more space for clinical content discussion while still emphasizing reasoning-specific teaching points. We observe that, whereas required education can afford to have teachers solely decide content coverage, *optional* educational must adjust to its audience's interests lest it risk losing the audience's attention.

In summary, we have developed a resident-driven, case-based clinical reasoning educational tool that allows learners of all levels an opportunity for skill practice in the context of a busy clinical schedule. This educational tool is innovative in that it is created by resident physicians, for resident physicians and focuses not only on medical knowledge but also on clinical reasoning concepts. Pitt Puzzles can serve as a model for other grass-roots educational projects to engage learners in their own educational process. Our experience also reinforces the need to listen to one's educational audience when developing an optional educational resource in order to balance audience engagement with the pre-determined learning objectives. Next steps include evaluating what educational benefits case creation has for the resident authors and editors of Pitt Puzzles, as well as exploring comparative effectiveness of this modality for teaching clinical reasoning compared to other teaching settings.

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## FROM THE SOCIETY (continued from page 4)

### EB: What are the implications for SGIM's regional meetings?

KO: Our members live and work in regions having a wide variety of social and political perspectives. Thus, political considerations may be weighed differently when selecting sites for regional meetings. Since the timeline for selecting regional meeting sites is usually only 12 months ahead of the meeting date, it may be possible to better predict issues within a state that would be particularly upsetting to members. We hope that regional meetings will be able to incorporate more programming on local or state advocacy issues.

### EB: How will the updated policy be implemented?

LH: We plan to establish a new *ad hoc* workgroup that will work with SGIM staff and a site selection consultant to advise the Council on selecting sites according to the updated policy. The workgroup will include two past Program Committee Chairs (or their designees), the Treasurer, the Chair of the Board of Regional Leaders, and a member at large. The workgroup will present a proposal to SGIM's Executive Committee and then to the full Council for a vote. The site selection policy and subsequent decisions will be posted on

SGIM's website. We hope that the new policy will help members understand how site selection decisions are made while also stimulating more local and state advocacy.

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