AAMC
Tomorrow's Doctors, Tomorrow's Cures®

Learn
Serve
Lead

Anti-Racism, Clinical Algorithms and Medical Education: What is our role?

Malika Fair, MD, MPH, FACEP

June 23, 2023

Association of American Medical Colleges

Disclosures

Financial: None

Positionality:

Black American, Descendent of Enslaved People

Cisgender, Heterosexual, Able-bodied woman

Pentecostal Christian faith

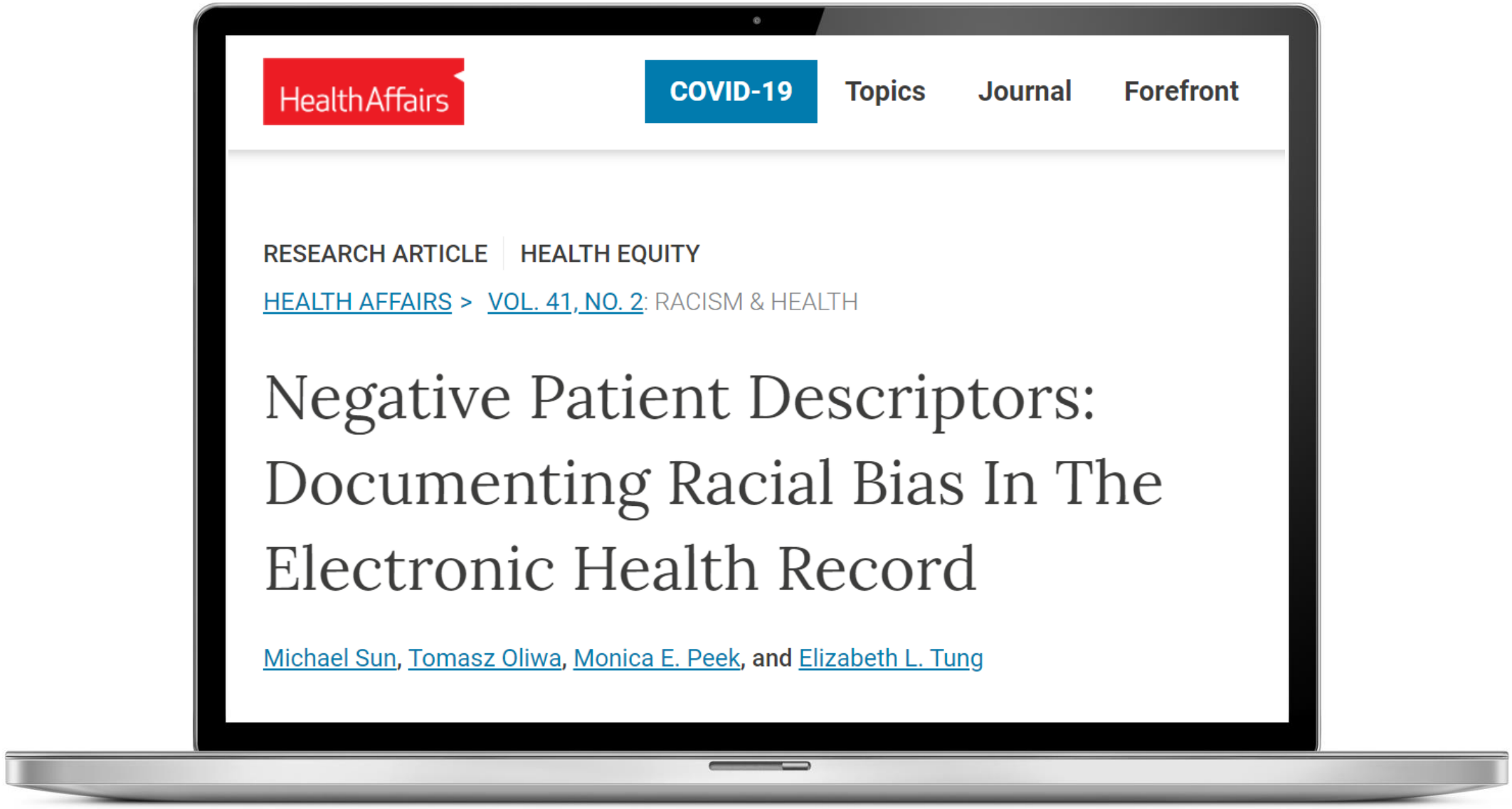
Midwesterner (Michigan)

Daughter of two preachers, sociologist and counselor

Physician, Medical educator, **Public Health**, **DEI** & Health Equity professional

One of four sisters, **widow**, preschool mom

AAMC



AAMC

The NEW ENGLAND JOURNAL of MEDICINE

MEDICINE AND SOCIETY

Debra Malina, Ph.D., *Editor*

Hidden in Plain Sight — Reconsidering the Use of Race Correction in Clinical Algorithms

Darshali A. Vyas, M.D., Leo G. Eisenstein, M.D., and David S. Jones, M.D., Ph.D.

Physicians still lack consensus on the meaning of race. When the *Journal* took up the topic in 2003 with a debate about the role of race in medicine, one side argued that racial and ethnic categories reflected underlying population genetics and could be clinically useful.[1] Others held that any small benefit was outweighed by potential harms that arose from the long, rotten history of racism in medicine.[2] Weighing the two sides, the accompanying Perspective article concluded that though the concept of race was "fraught with sensitivities and fueled by past abuses and the potential for future abuses," race-based medicine still had potential: "it seems unwise to abandon the practice of recording race when we have barely begun to understand the architecture of the human genome."[3]

The next year, a randomized trial showed that a combination of hydralazine and isosorbide dinitrate reduced mortality due to heart failure among patients who identified themselves as black. The Food and Drug Administration granted a race-specific indication for that product, BiDil, in 2005.[4] Even though BiDil's ultimate commercial failure cast doubt on race-based medicine, it did not lay the approach to rest. Prominent geneticists have repeatedly called on physicians to take race seriously,[5,6] while distinguished social scientists vehemently contest these calls.[7,8]

Our understanding of race and human genetics has advanced considerably since 2003, yet these insights have not led to clear guidelines on the use of race in medicine. The result is ongoing conflict between the latest insights from population genetics and the clinical implementation of race. For example, despite mounting evidence that race is not a reliable proxy for genetic difference, the belief that it is has become embedded, sometimes insidiously, within medical practice. One subtle insertion of race into medicine involves diagnostic algorithms and practice guidelines that adjust or "correct" their outputs on the basis of a patient's race or ethnicity. Physicians use these algorithms to individualize risk assessment and guide clinical decisions. By embedding race into the basic data and decisions of health care, these algorithms propagate race-based medicine. Many of these race-adjusted algorithms guide decisions in ways that may direct more attention or resources to white patients than to members of racial and ethnic minorities.

To illustrate the potential dangers of such practices, we have compiled a partial list of race-adjusted algorithms (Table 1). We explore several of them in detail here. Given their potential to perpetuate or even amplify race-based health inequities, they merit thorough scrutiny.

CARDIOLOGY

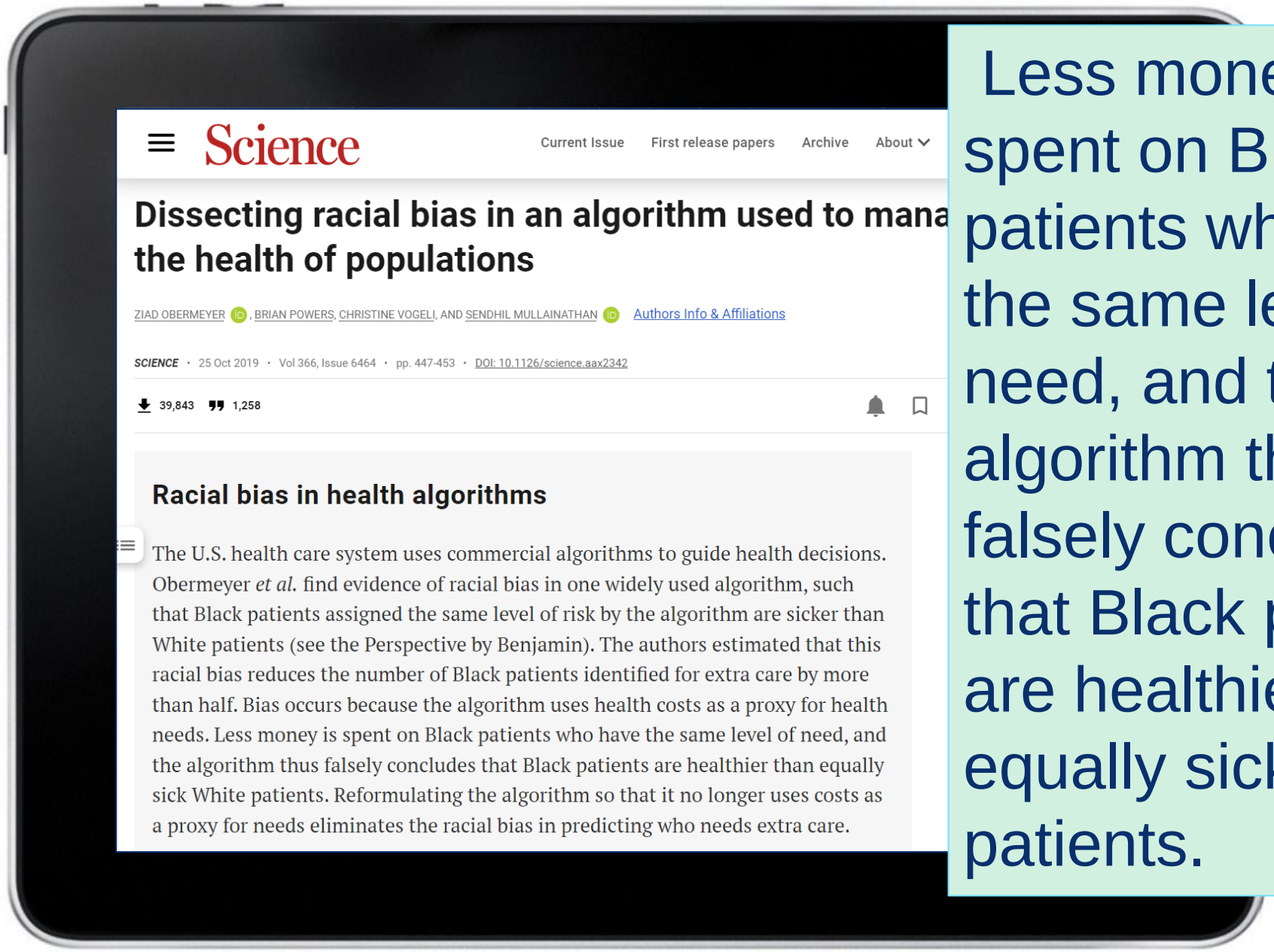
The American Heart Association (AHA) Get with the Guidelines–Heart Failure Risk Score predicts the risk of death in patients admitted to the hospital.[9] It assigns three additional points to any patient identified as "nonblack," thereby categorizing all black patients as being at lower risk. The AHA does not provide a rationale for this adjustment. Clinicians are advised to use this risk score to guide decisions about referral to cardiology and allocation of health care resources. Since "black" is equated with lower risk, following the guidelines could direct care away from black patients. A 2019 study found that race may influence decisions in heart-failure management, with measurable consequences: black and Latinx patients who presented to a Boston emergency department with heart failure were less likely than white patients to be admitted to the cardiology service.[24]

Examples of race correction in clinical medicine*:

- Kidney function
- Kidney stones
- Heart failure
- Urinary tract infection
- Lung function

Source:
Vyas DA, Eisenstein LG, Jones DS. Hidden in plain sight – reconsidering the use of race correction in clinical algorithms. N Engl J Med. 2020;383:874-882.

AAMC



Less money is spent on Black patients who have the same level of need, and the algorithm thus falsely concludes that Black patients are healthier than equally sick White patients.

JAMA Health Forum

Original Investigation

Awareness of Racial and Ethnic Bias and Potential Solutions to Address Bias With Use of Health Care Algorithms

Anjali Jain, MD; Jasmin R. Brooks, MA; Cleothia C. Alford, MPS, MSc; Christine S. Chang, MD, MPH; Nora M. Mueller, PhD, MAA; Craig A. Umscheid, MD, MS; Arlene S. Bierman, MD, MS

Abstract

IMPORTANCE Algorithms are commonly incorporated into health care decision tools used by health systems and payers and thus affect quality of care, access, and health outcomes. Some algorithms include a patient's race or ethnicity among their inputs and can lead clinicians and decision-makers to make choices that vary by race and potentially affect inequities.

OBJECTIVE To inform an evidence review on the use of race- and ethnicity-based algorithms in health care by gathering public and stakeholder perspectives about the repercussions of and efforts to address algorithm-related bias.

DESIGN, SETTING, AND PARTICIPANTS Qualitative methods were used to analyze responses. Responses were initially open coded and then consolidated to create a codebook, with themes and subthemes identified and finalized by consensus. This qualitative study was conducted from May 4, 2021, through December 7, 2022. Forty-two organization representatives (eg, clinical professional societies, universities, government agencies, payers, and health technology organizations) and individuals responded to the request for information.

MAIN OUTCOMES AND MEASURES Identification of algorithms with the potential for race- and ethnicity-based biases and qualitative themes.

RESULTS Forty-two respondents identified 18 algorithms currently in use with the potential for bias, including, for example, the Simple Calculated Osteoporosis Risk Estimation risk prediction tool and the risk calculator for vaginal birth after cesarean section. The 7 qualitative themes, with 31 subthemes, included the following: (1) algorithms are in widespread use and have significant repercussions, (2) bias can result from algorithms whether or not they explicitly include race, (3) clinicians and patients are often unaware of the use of algorithms and potential for bias, (4) race is a social construct used as a proxy for clinical variables, (5) there is a lack of standardization in how race and social determinants of health are collected and defined, (6) bias can be introduced at all stages of algorithm development, and (7) algorithms should be discussed as part of shared decision-making between the patient and clinician.

CONCLUSIONS AND RELEVANCE This qualitative study found that participants perceived widespread and increasing use of algorithms in health care and lack of oversight, potentially exacerbating racial and ethnic inequities. Increasing awareness for clinicians and patients and standardized, transparent approaches for algorithm development and implementation may be needed to address racial and ethnic biases related to algorithms.

JAMA Health Forum. 2023;4(6):e231197. doi:10.1001/jamahealthforum.2023.1197

Key Points

Question How are racial and e
biases associated with health c
algorithms and efforts to addre
biases perceived?

Findings In this qualitative stu
views regarding health care alg
responses from 42 respondent
suggested algorithms are in wi
use and may be biased whethe
they include race; there is no
standardization in how race is
bias can be introduced at all st
algorithm development and
implementation; and algorithm
and bias should be discussed b
clinicians and patients, who ar
unaware of their use and poter
for bias.

Meaning Findings suggest tha
standardized and rigorous appr
for algorithm development an
implementation are needed to
racial and ethnic biases from al
and reduce health inequities.

Supplemental content

Author affiliations and article informa
listed at the end of this article.

"…algorithms' use and bias should be discussed between clinicians and patients, who are often unaware of their use and potential for bias."

Source:
Jain A, Brooks JR, Alford CC, et al. Awareness of Racial and Ethnic Bias and Potential Solutions to Address Bias With Use of Health Care Algorithms. JAMA Health Forum. 2023;4(6):e231197. doi:10.1001/jamahealthforum.2023.1197

AAMC

New and Emerging Areas in Medicine: *Competencies Across the Learning Continuum Series*

2019 Quality Improvement and Patient Safety

2020 Telehealth

2021 Diversity, Equity and Inclusion

2022+ TBD

To learn more, see https://www.aamc.org/CBME

AAMC

Scope & Approach

Tiered based on level of learner – student, resident, and attending physician

Integrate and build from existing milestones, EPAs, competencies in specialized areas

Aligned with the six core domains of competence by ACGME/ABMS

Physician—level competencies that are applicable to all physicians regardless of specialty

Engage diverse stakeholders throughout development process

Continuous enhancement model

Domain: Diversity
Subdomain: Advancing Diversity and Integration in Practice

Knowledge and practices demonstrating that one values and understands how aspects of an individual's overlapping identities create unique lived experiences that may influence health and health care outcomes

Entering Residency

Demonstrates evidence of self-reflection and how one's personal identities, biases, and lived experiences may influence one's perspectives, clinical decision-making, and practice

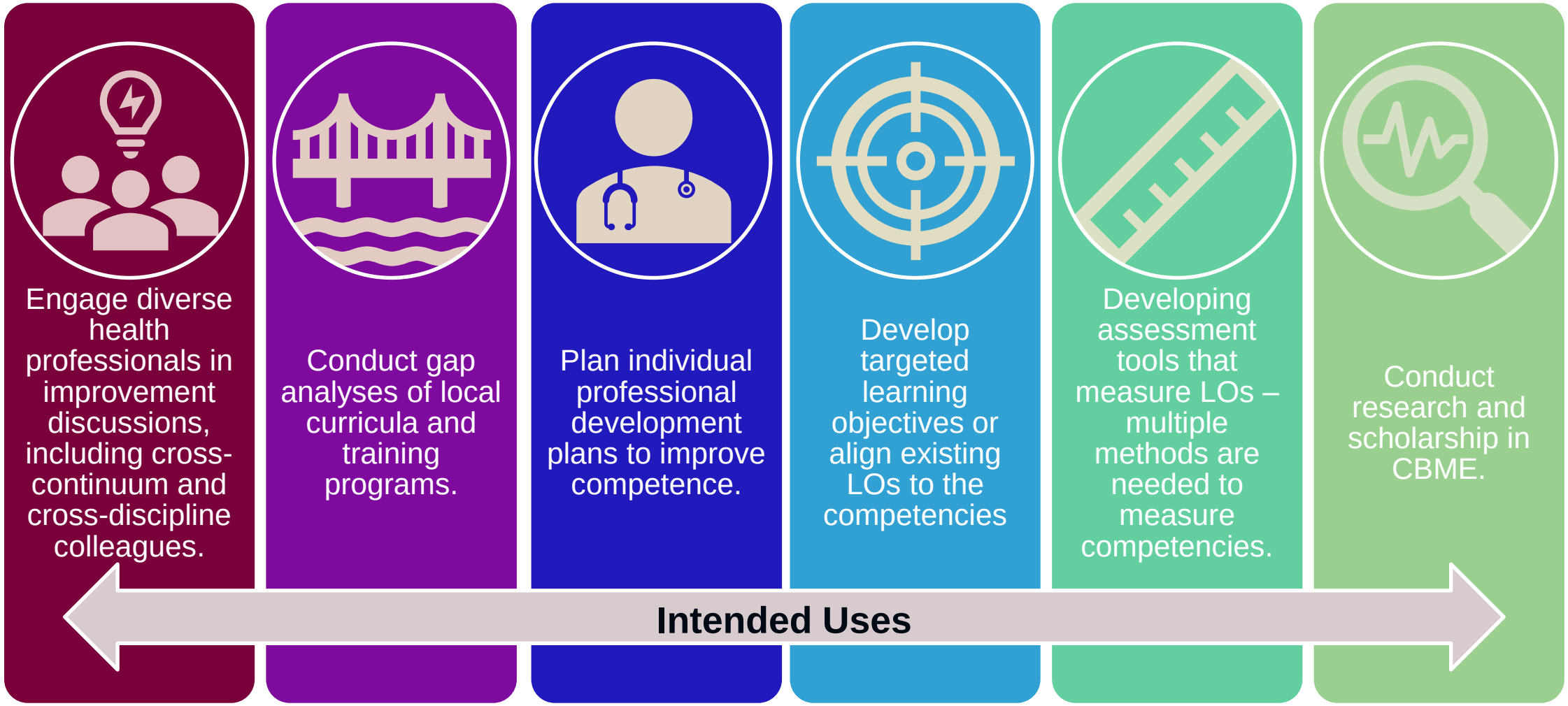
Entering Practice or Fellowship

Mitigates the effects of personal bias in clinical decision-making and delivery of patient care

Experienced Faculty Member

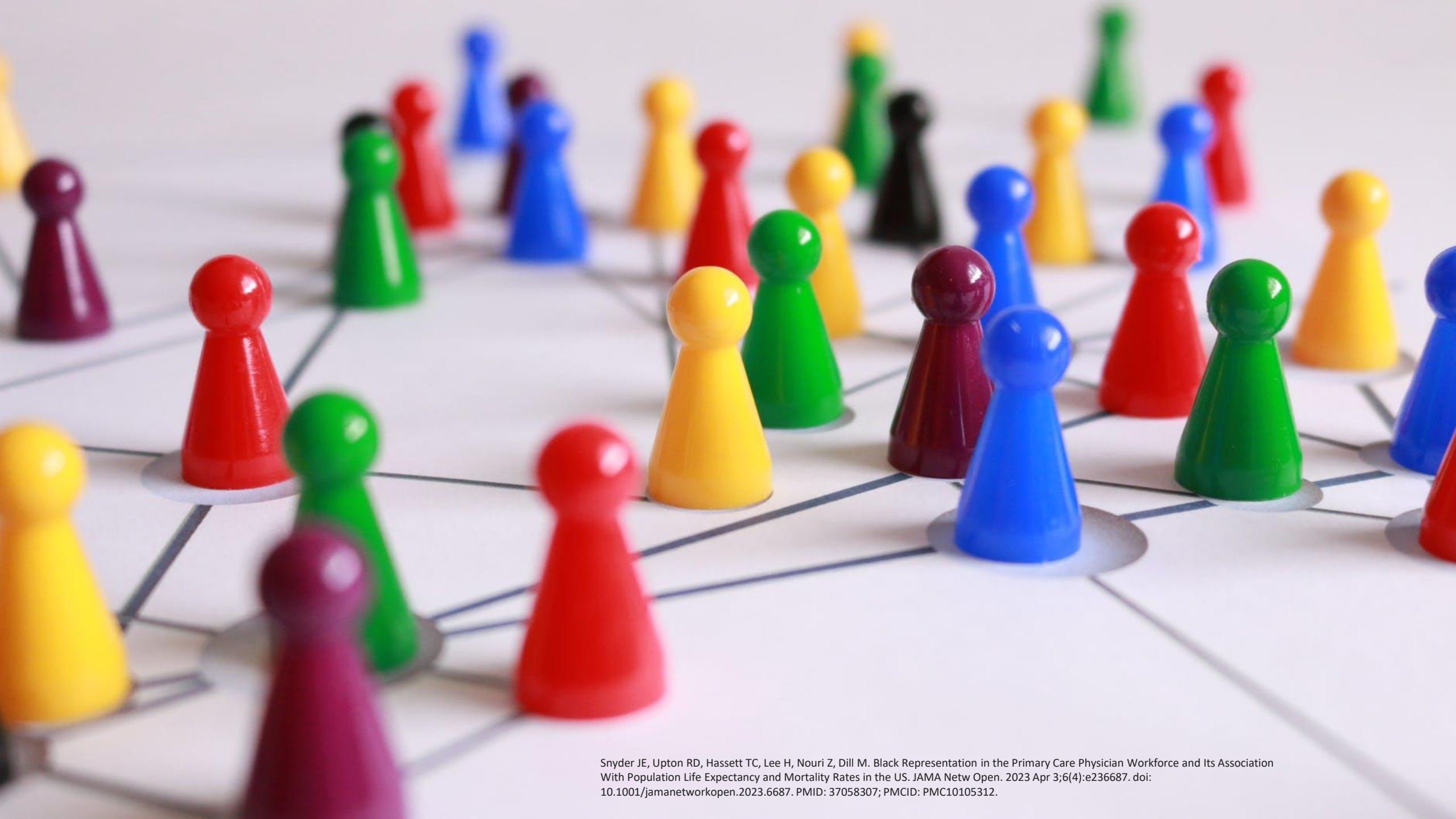
Role models how the practice of self-reflection can help with identifying and mitigating effects of personal biases

AAMC

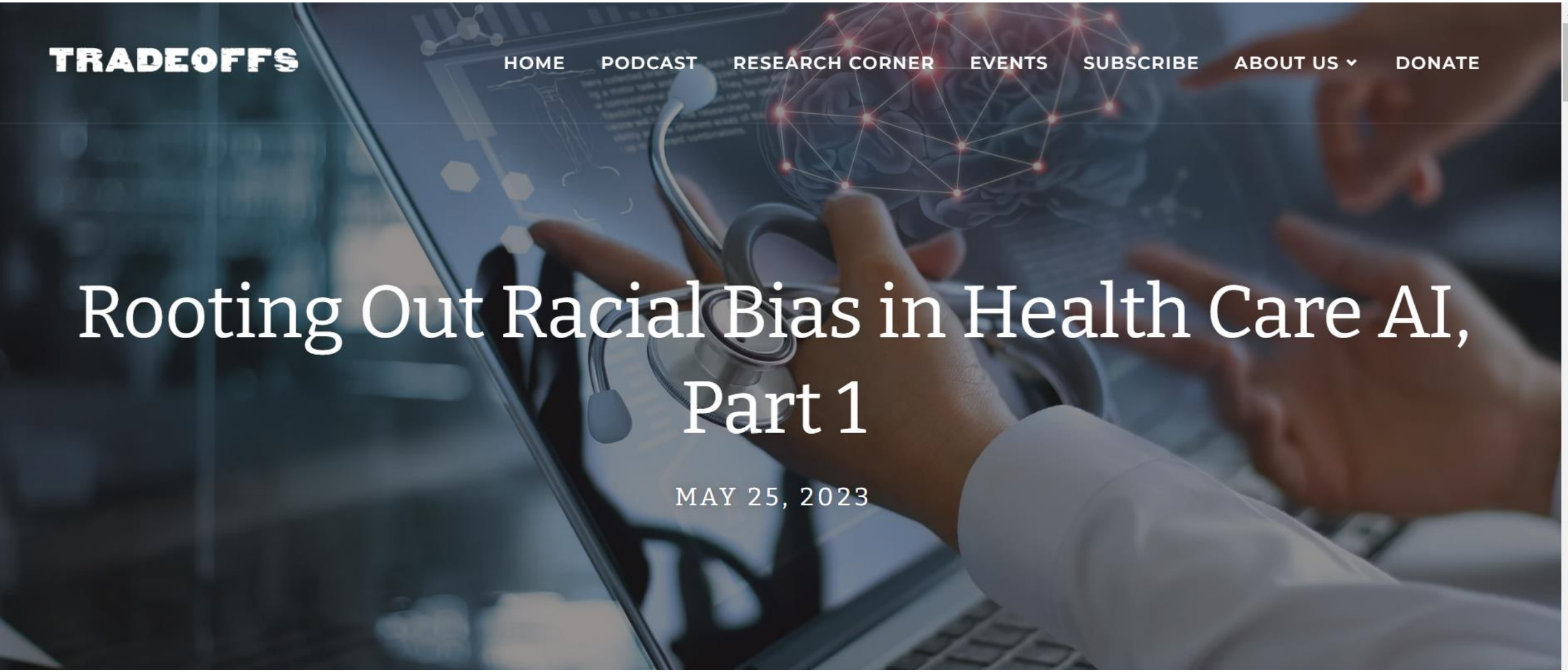

Engage diverse health professionals in improvement discussions, including cross-continuum and cross-discipline colleagues.
Conduct gap analyses of local curricula and training programs.
Plan individual professional development plans to improve competence.
Develop targeted learning objectives or align existing LOs to the competencies
Developing assessment tools that measure LOs – multiple methods are needed to measure competencies.
Conduct research and scholarship in CBME.
Intended Uses

Advocates for policies and practices that promote, build, and sustain diversity of the health care team (D4)

What is our role?



Snyder JE, Upton RD, Hassett TC, Lee H, Nouri Z, Dill M. Black Representation in the Primary Care Physician Workforce and Its Association With Population Life Expectancy and Mortality Rates in the US. JAMA Netw Open. 2023 Apr 3;6(4):e236687. doi: 10.1001/jamanetworkopen.2023.6687. PMID: 37058307; PMCID: PMC10105312.

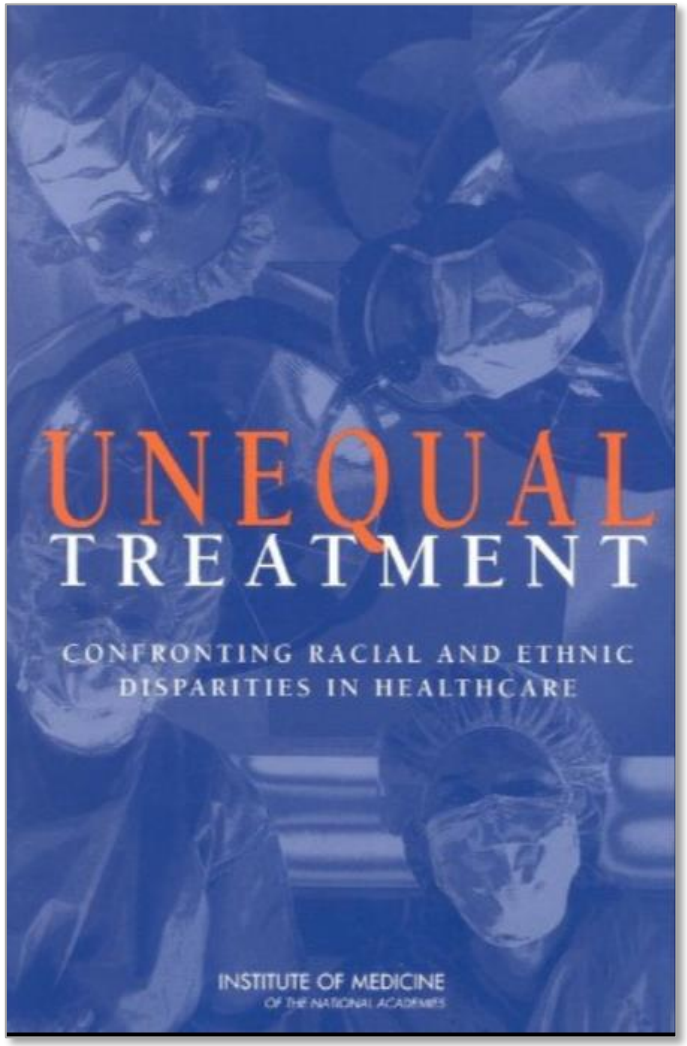


AAMC

Advocates for policies and practices that promote, build, and sustain diversity of the health care team (D4)

Explores stratified quality improvement (QI) data for their patient population and uses these data to identify health care disparities(E5)

What is our role?

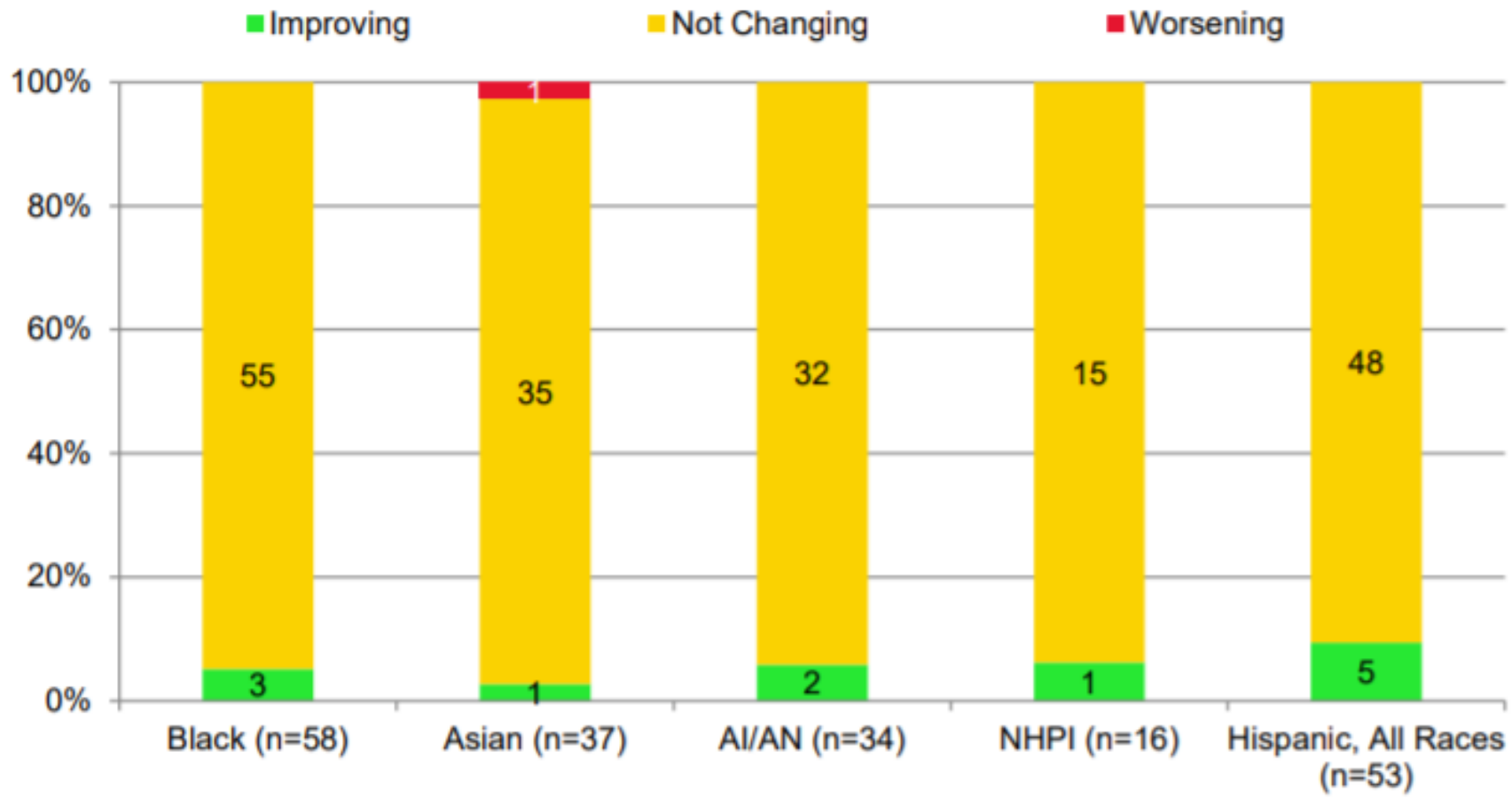


“Even after [socioeconomic conditions] are accounted for, race and ethnicity remain significant predictors of the quality of health care received.

Institute of Medicine of the National Academies Consensus Study Report

AAMC

Figure 2. Number and percentage of quality measures with disparity at baseline for which disparities related to race and ethnicity were improving, not changing, or worsening over time, 2000 through 2014, 2015, 2016, 2017, or 2018



Source:
2019 National Healthcare Quality and Disparities Report. Rockville, MD: Agency for Healthcare Research and Quality; December 2020. AHRQ Pub. No. 20(21)-0045-EF. https://www.ahrq.gov/sites/default/files/wysiwyg/research/findings/nhqrdr/2019qdr-cx061021.pdf

Scholarly Perspective

Deconstructing Racism, Hierarchy, and Power in Medical Education: Guiding Principles on Inclusive Curriculum Design

Kaye-Alese Green, MA, Rebecca Wolinsky, Sabreea J. Parnell, Daniela del Campo, Ajay S. Nathan, MS, Priya S. Garg, MD, Samantha E. Kaplan, MD, MPH, and Shoumita Dasgupta, PhD

Abstract

In the context of current U.S. racial justice movements, analysis of racism in medicine within medical education is a critical task for all institutions. To educate the next generation of physicians about racism in medicine and out of concern that the curriculum required critical assessment and change, a group of students and faculty at Boston University School of Medicine (BUSM) initiated a longitudinal curricular analysis through a vertical integration group, commissioned by the Medical Education Committee, from May 2019 to June 2020. The curriculum analysis and the major outcomes and guiding principles that emerged from it are described as a path forward, toward a more inclusive curriculum. The major elements of this analysis included a comprehensive internal curricular assessment and an external assessment of peer institutions that led to the development of key curricular recommendations and overarching equity and specific racially focused equity competencies. The curricular recommendations fall into the following domains: (1) challenging the persistence of biological/genetic notions of race, (2) embedding structural practices in medical education to dismantle racism in medicine, and (3) promoting institutional climate change. Initial steps to implement these recommendations are described. The authors believe that the historic and present reality of racism in America and in medicine has impacted medical education specifically, and more broadly, the practice of medicine, trainee experience, and patient outcomes. The key findings of the BUSM analysis are transferable to other medical education institutions, and the described review process can support peer institutions as they engage in the imperative work of institutional reflection and addressing the salient ideas and practices that uphold racism in medicine.

Racism has been embedded in the institution of medicine and medical education for centuries. The origin is linked to Samuel Morton, Josiah Nott, and Paul Broca's theory of racial inferiority, which permeates throughout the teachings of modern medical practice.[1] Today, racism in medicine manifests in many ways including, through the use of race as a risk factor for pathology, even though the literature clearly defines race as a socially derived concept that is founded on unequal distribution of power.[2,4] This misuse of the social construct of race creates an improper connection between race, genetics, and sociological racial disparities, which perpetuates the misconception that there are biologically derived racial differences.[5,6] This misconception is connected to the stunting of physicians' clinical reasoning and the disproportionate level of health care disparities experienced by communities of color.[6] These phenomena converge in the experiences of trainees and physicians of color who, despite being members of the institution of medicine, are still subject to the social injustices of racism. These experiences may involve the explicit and hidden curriculum about race in undergraduate and graduate medical education; a lack of representation; overt racism from colleagues and patients; and the implicit and explicit biases expressed by supervisors, colleagues, and patients.[7]

Given the diverse clinical and educational environment of Boston University School of Medicine (BUSM) and the role that all medical schools play in preparing students to care for, work with, and advocate to ensure health equity for all patients, we believe the work of removing racist ideologies and practices from medical curricula is of critical importance for all medical educators.[8] In this article, we describe the ways in which the curriculum at BUSM has unintentionally reified the disproven notion of biological races and describe the curricular analysis undertaken to dismantle these harmful concepts with the goal of promoting health equity through a more inclusive curriculum. The key findings of our analysis are transferable to other medical education institutions, and the described review process can support peer institutions as they engage in the imperative work of institutional reflection and addressing the salient ideas and practices that uphold racism in medicine.

Vertical Integration Group Commission and Design

To educate the next generation of physicians about racism in medicine and out of concern that the curriculum required critical assessment and change, we, a group of students and faculty at BUSM, initiated a longitudinal curriculum analysis. This analysis was performed through the creation of a vertical integration group (VIG), commissioned by the BUSM Medical Education Committee (MEC), from May 2019 to June 2020. The VIG was

Please see the end of this article for information about the authors.

Correspondence should be addressed to Kaye-Alese Green, Medical Education Office, Boston University School of Medicine, 72 East Concord St., A3, Boston, MA 02118; telephone: (904) 635-9402; email: kagreen@bu.edu; Twitter: @KayeAlese.

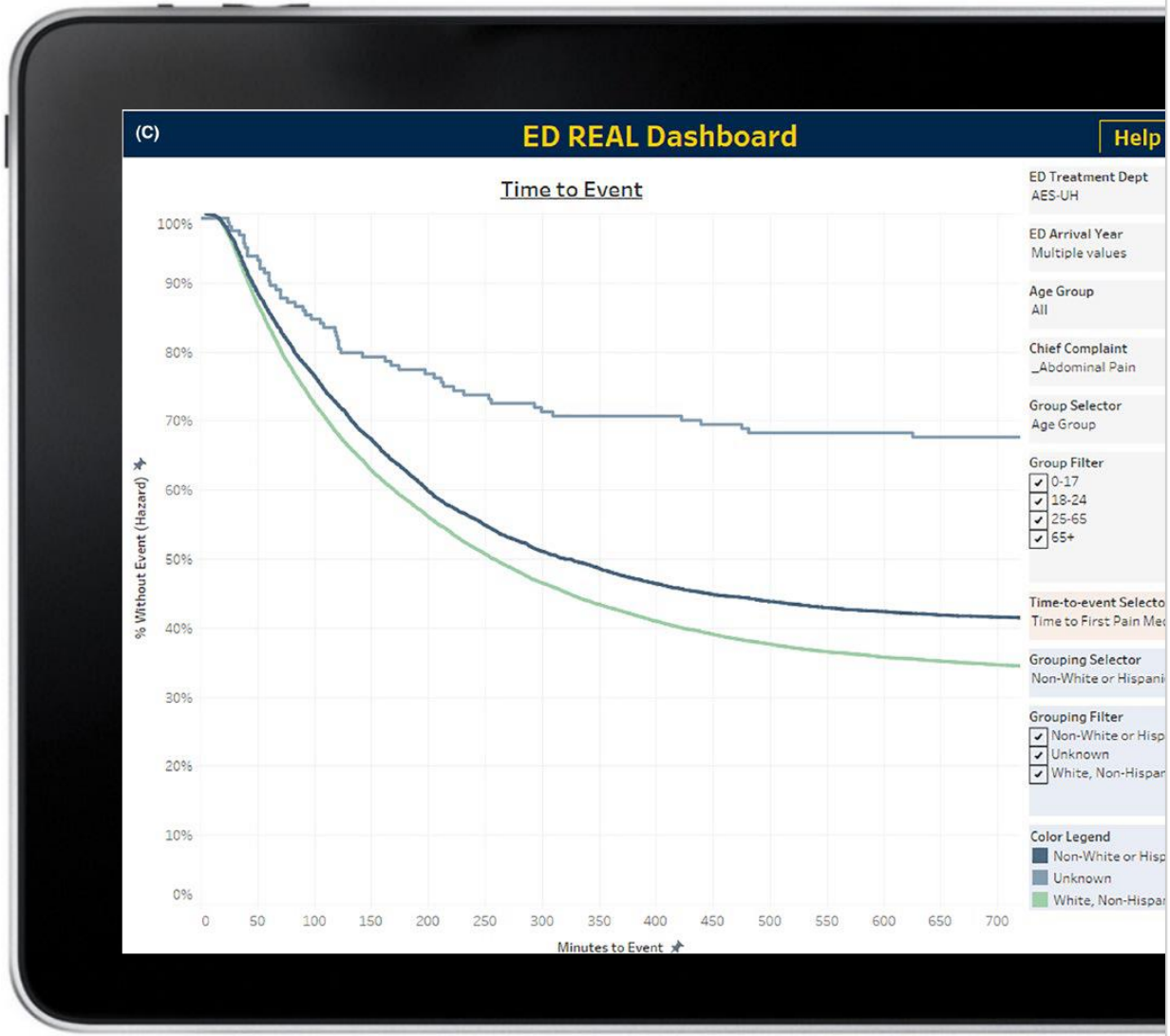
Acad Med. 2022;97:804-811.
First published online November 23, 2021
doi: 10.1097/ACM.0000000000004531

Supplemental digital content for this article is available at http://links.lww.com/ACADMED/B212.

Embedding structural practices in medical education to dismantle racism in medicine

- Critically examine the use of race in clinical vignettes and exam questions.
- Diversify clipart and medical images.
- Critique the strength of evidence in race-based medical practices

Source: Green, Kaye-Alese MA[1]; Wolinsky, Rebecca[2]; Parnell, Sabreea J.[3]; del Campo, Daniela[4]; Nathan, Ajay S. MS[5] Garg, Priya S. ; MD[6]; Kaplan, Samantha E. MD, MPH[7]; Dasgupta, Shoumita PhD[8] Deconstructing Racism, Hierarchy, and Power in Medical Education: Guiding Principles on Inclusive Curriculum Design, Academic Medicine: June 2022 - Volume 97 - Issue 6 - p 804-811



Received: 28 February 2021 | Revised: 22 May 2021 | Accepted: 14 June 2021
DOI: 10.1002/aet2.10682

INNOVATIONS REPORT

AEM

Developing an electronic health record–derived health equity dashboard to improve learner access to data and metrics

Ryan E. Tsuchida MD | Adrianne N. Haggins MD, MS | Marcia Perry MD | Chiu-Mei Chen PhD | Richard P. Medlin MD, MSIS | William J. Meurer MD, MS | John Burkhardt MD, PhD | Christopher M. Fung MD, MS

Department of Emergency Medicine, University of Michigan, Ann Arbor, Michigan, USA

Correspondence
Christopher M. Fung, Taubman Center B1-380A, 1500 E. Medical Center Drive, SPC 5305, Ann Arbor, MI 48109, USA.
Email: chfung@med.umich.edu

Funding Information
CMF has received research support unrelated to this work from the National Heart, Lung, and Blood Institute (1K12HL133304).

Abstract

Objectives: It is essential to engage learners in efforts aimed at dismantling racism and other contributors to health care disparities. Barriers to their involvement include limited access to data. The objective of our study was to create a data dashboard using an existing quality improvement (QI) infrastructure and provide resident access to data to facilitate exploratory analysis on disparities in emergency department (ED) patient care.

Methods: Focusing on patient populations that have previously been shown in the literature to suffer significant disparities in the ED, we extracted outcomes across a variety of metrics already collected as part of routine ED operations. Using data visualization software, we developed an interactive dashboard for visual exploratory analyses.

Results: We designed a dashboard for our resident learners with views that are flexible and allow user selected filters to view clinical outcomes by patient age, treatment area, and chief complaint. Learners were also allowed to select grouping and outcomes of interest to investigate questions and form new hypotheses of their choosing. Available dashboard views included summary counts view to assess ED visits over time by selectable group, a rooming and triage acuity view, time-to-event survival curve view, histogram and box plot views for continuous variables, a view to assess outcome variables by time of day of ED arrival, customizable contingency table views, and correspondence analysis.

Conclusions: Utilizing an existing QI infrastructure, we developed a dashboard that provides a new perspective into commonly collected ED operations data to allow for the exploration of disparities in ED care that is accessible to learners. Future directions include using these data to refine hypotheses on ED disparities, understand root causes, develop interventions, and measure their impact.

KEYWORDS
antiracism, dashboard, EHR, health equity, quality improvement, visualization

Supervising Editor: Alden Landry, MD, MPH.

Tsuchida RE, Haggins AN, Perry M, et al. Developing an electronic health record–derived Health equity dashboard to improve learner access to data and metrics. *AEM Educ Train*. 2021;5(Suppl. 1):S116–S120. https://doi.org/10.1002/aet2.10682

AAMC

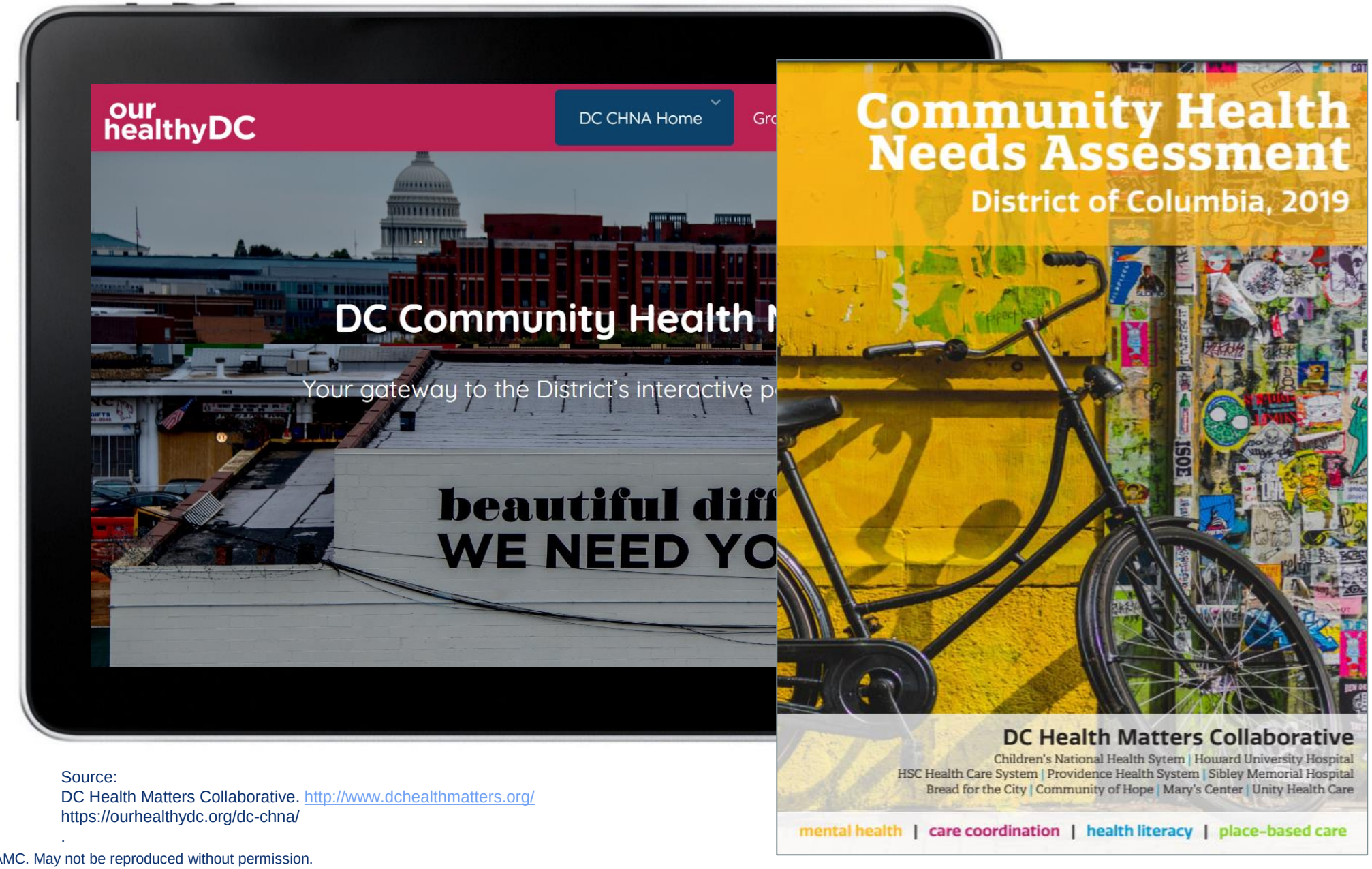
Advocates for policies and practices that promote, build, and sustain diversity of the health care team (D4)

Explores stratified quality improvement (QI) data for their patient population and uses these data to identify health care disparities(E5)

What is our role?

Collaborates with a diverse interprofessional team within their system and with community members to meet identified community health needs (E6)

Source:
Hoffman KM, Trawalter S, Axt JR, Oliver MN. Racial bias in pain assessment and treatment recommendations, and false beliefs about biological differences between blacks and whites. Proc Natl Acad Sci U S A. 2016 Apr 19;113(16):4296-301.



Source:
DC Health Matters Collaborative. http://www.dchealthmatters.org/
https://ourhealthydc.org/dc-chna/
.

What is our role?

Advocates for policies and practices that promote, build, and sustain diversity of the health care team (D4)

Explores stratified quality improvement (QI) data for their patient population and uses these data to identify health care disparities(E5)

Collaborates with a diverse interprofessional team within their system and with community members to meet identified community health needs (E6)

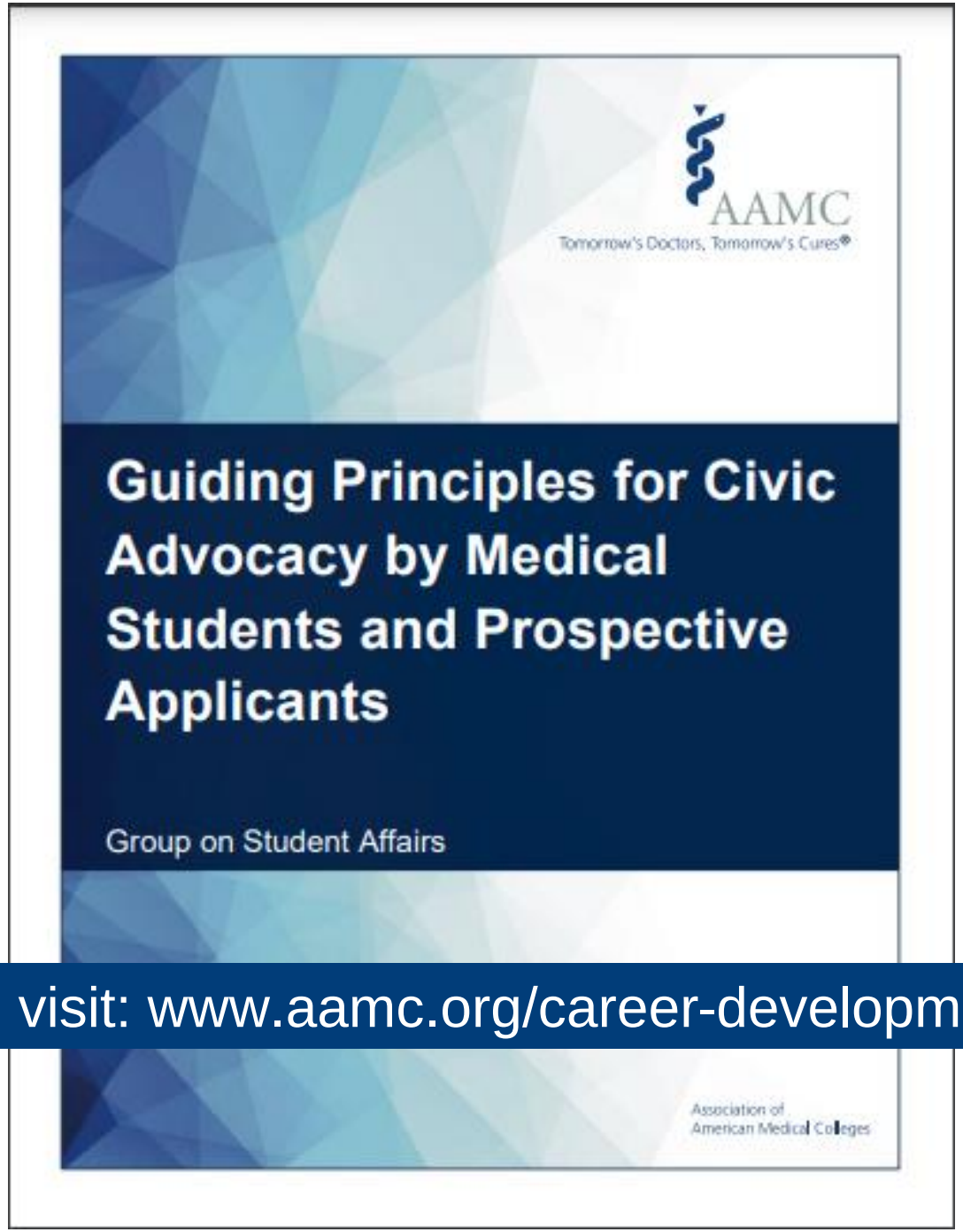
Promotes social justice and engages in efforts to eliminate health care disparities (E10)

Confronting race in diagnosis: Medical students call for reexamining how kidney function is estimated

For 21 years, physicians have corrected for race in a formula that estimates kidney function. Students are increasingly questioning why, especially since kidney failure disproportionately impacts Black patients.

Source:
https://www.aamc.org/news/confronting-race-diagnosis-medical-students-call-reexamining-how-kidney-function-estimated

AAMC



For more information, visit: www.aamc.org/career-development/affinity-groups/gsa

AAMC

Use of Clinical Algorithms in Decision-Making (§ 92.210)

Proposed § 92.210 states that a covered entity must not discriminate against any individual on the basis of race, color, national origin, sex, age, or disability through the use of clinical algorithms in its decision-making. This is a new provision, and this topic has not been addressed in previous Section 1557 rulemaking. The Department believes it is critical to address this issue explicitly in this rulemaking given recent research demonstrating the p algorithms that may result in discrimination.[545] Further, th became aware that clinical algorithms in state Crisis Standar used during the COVID-19 pandemic may be screening out i disabilities, as discussed in more detail below. OCR believes 92.210 would put covered entities on notice that they cannot clinical algorithms and may need to make reasonable modifi of the algorithms, unless doing so would cause a fundamenta health program or activity. The intent of proposed § 92.210 is not to prohibit or hinder the use of clinical algorithms but rather to make clear that discrimination that occurs through their use is prohibited.

While covered entities are not liable for clinical algorithms that they did not develop, they may be held liable under this provision for their decisions made in reliance on clinical algorithms.

Source: https://www.federalregister.gov/documents/2022/08/04/2022-16217/nondiscrimination-in-health-programs-and-activities#p-979

AAMC

What is our role?

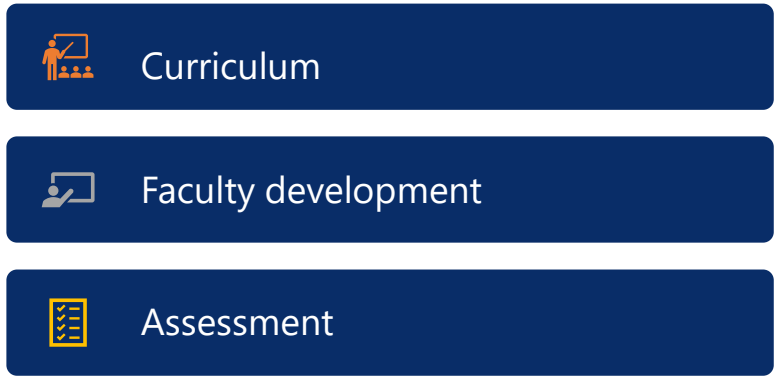
Advocates for policies and practices that promote, build, and sustain diversity of the health care team (D4)

Explores stratified quality improvement (QI) data for their patient population and uses these data to identify health care disparities(E5)

Collaborates with a diverse interprofessional team within their system and with community members to meet identified community health needs (E6)

Promotes social justice and engages in efforts to eliminate health care disparities (E10)

Constructing an Equitable, Inclusive, and Antiracist Learning Environment Compendium

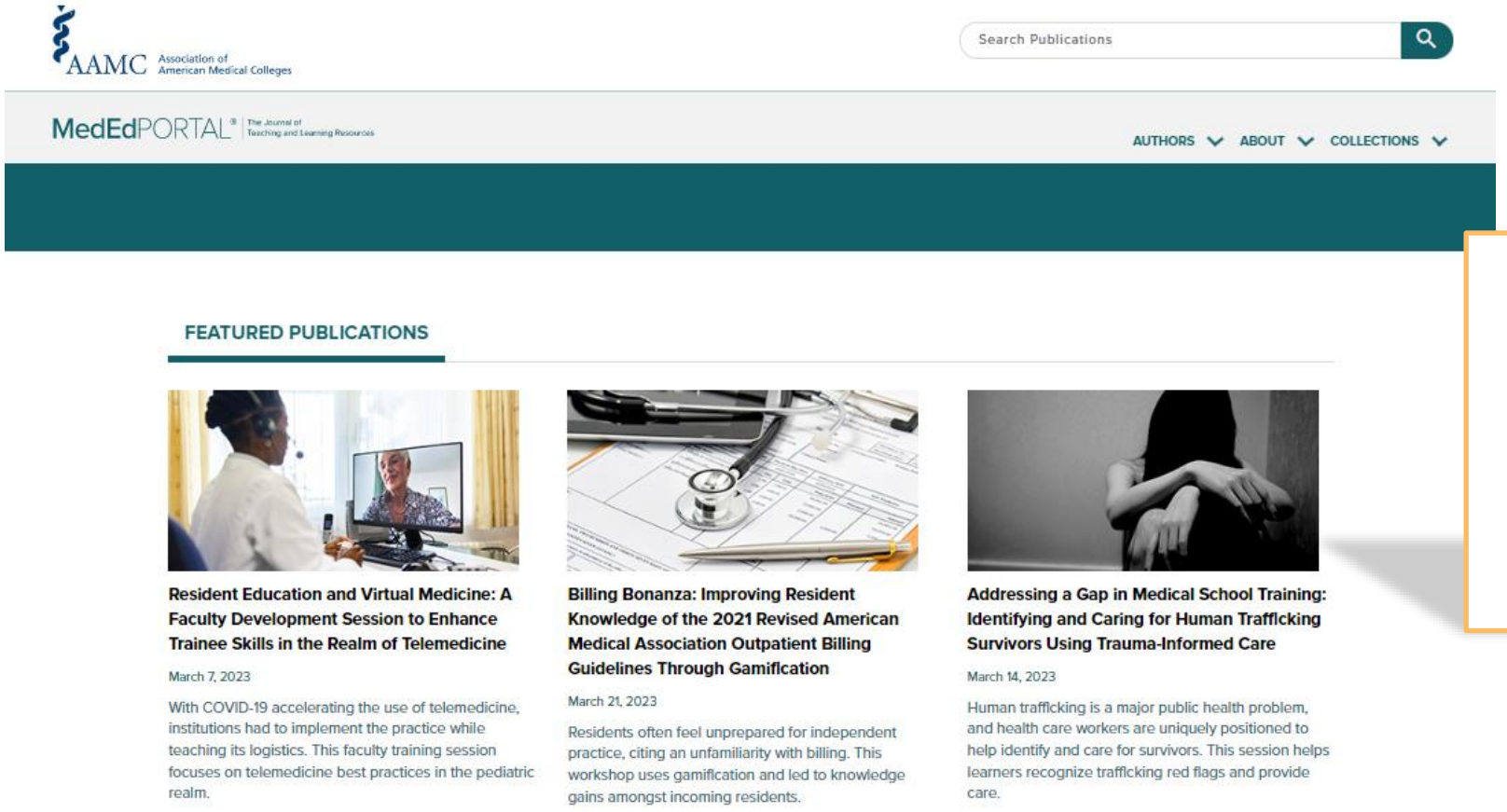


Collection of timely and diverse materials that support an antiracist, inclusive, and equity-centered learning environment

- Examples may include guides, didactics, educational frameworks, guidelines, assessment tools, tip sheets, and checklists
- Encouraged to align submissions with the DEI competency domains
- Compendium is distinct from, and will complement, existing DEI collections in *MedEdPORTAL*

AAMC

MedEdPORTAL: The AAMC Journal of Teaching and Learning Resources



Collections

- **Diversity, Equity, and Inclusion**
- **Antiracism in Medicine**
- **Language-Appropriate Health Care**
- Climate Change and Health
- Telehealth Education
- Interprofessional Education

www.mededportal.org

Self-Directed Learning

Learn more:
www.aamc.org/what-we-do/equity-diversity-inclusion

Academic Medicine Podcast

Anti-Racism Resources

Beyond the White Coat Podcast

IDEAS Learning Series

AAMC

Malika Fair, MD, MPH, FACEP
Senior Director, Equity and Social Accountability
Associate Clinical Professor of Emergency Medicine
The George Washington University
E-mail: mfair@aamc.org

For more information, visit:
aamc.org/diversity

AAMC