Workforce Diversity and Equity Among Critical Care Physicians

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KEYWORDS

- Women underrepresented in medicine • Minoritized populations
- Health care disparities • Critical care physician workforce • Diversity and equity

KEY POINTS

- Health disparities persist among minoritized populations; the coronavirus 2019 disease pandemic exposed and exacerbated these disparities in access to care and outcomes.
- A diverse physician workforce helps to improve and reduce health disparities and patient outcomes.
- However, gender, racial, and ethnic diversity are lacking among the critical care physician workforce.
- The leaky pipeline and vicious cycle of academic medicine contribute to low representation of women and individuals underrepresented in medicine within the field of critical care.
- To improve health care disparities in the critically ill, the authors must increase physician representation of diverse backgrounds through a variety of individual, institutional, and systematic approaches.

INTRODUCTION

Health outcomes for patients with a variety of conditions common in the intensive care unit (ICU) (eg, sepsis, respiratory failure) have improved over time, in part due to advances in medical therapies and technologies.[1–3] Yet, particularly in the Unites States (U.S.), health disparities persist among persons with characteristics historically linked to discrimination or exclusion (eg, race, ethnicity, sexual identity, or orientation).[4–8] For example, a recent study found that Black and Hispanic patients were 42% and 21% more likely to die within 30 days of surgery compared to White patients, respectively.[9]

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Additionally, there is a growing evidence base demonstrating persistent disparities in maternal mortality, with one recent study showing that, during childbirth, Black women die at a rate 2.6 times that of White women.[10]

The coronavirus 2019 disease (COVID-19) pandemic further exacerbated these disparities, with multiple studies demonstrating that racial and ethnic minorities were at increased risk of infection, hospitalization, and death related to COVID-19.[11] Causes of these disparities are multifactorial and include increased exposure to environmental risk factors (eg, air pollution, occupational hazards, obesity, and tobacco use) among minoritized populations over time, in part due to structural racism.[8,12] In addition, social determinants of health (eg, access to transportation, health insurance, stable housing, quality education, and economic stability), are less common among American Indian or Alaska Native, Asian or Pacific Islander, Latino, and Black populations, impacting their ability to access high-quality medical care.[11,13] Addressing and eliminating such disparities is a crucial component of efforts to attain health equality across populations–a goal that is both cost-effective and morally imperative.[14]

Fostering a diverse and inclusive workforce is a key factor in improving access to high-quality care and reducing health disparities among underserved populations. For example, there is evidence that patient-clinician concordance (defined as shared characteristics like gender, race and ethnicity, or socioeconomic status) improves outcomes among general medical populations. Specifically, patient-clinician concordance has been associated with greater satisfaction with care among patients[15–19]; improved medication adherence and continuity of care[20–22]; and more effective therapeutic relationships,[23] potentially through mechanism of increased trust.[24–26] Trust between patients and clinicians is particularly important when eliciting goals of care and treatment preferences among patients with serious illness, as this process requires high-quality communication and shared-decision making between clinicians, patients, and families.[27]

From the perspective of the health care system, patient-clinician concordance has also been associated with lower emergency department use and reduced health care expenditures.[23] Additionally, clinicians from populations under-represented in medicine (URiM)[28] – defined as those who identify as Black, Hispanic, and Indigenous[29] – are more likely to work in underserved areas and include minoritized populations in research studies, reiterating the importance of training a diverse workforce as part of efforts to reduce health disparities.[8,30,31]

Yet, the general physician workforce in the U.S. remains predominantly male and White (Table 1). Women comprise approximately 37% of active physicians, despite making up at least 50% of medical school matriculants since 2017.[32,33] Furthermore, 63.9% of active physicians identify as White, 20.6% as Asian, 5.7% as Black, 6.9% as Hispanic, and 0.3% as American Indian or Alaska Native.[34] Within critical care medicine specifically, disparities in gender, race, and ethnicity persist: approximately 27.3% of critical care physicians are women, 4.1% are Black, 7.5% Hispanic, and 0.1% as American Indian or Alaska native[34]; data on physicians in critical care who identify as LGBTQIA + are wholly lacking.[35] Moreover, the number of Black male physicians in the U.S. – currently at 2.7% –actually decreased between 1978 and 2014.[36] Unfortunately, this lack of representation among women and minoritized populations within critical care medicine is unlikely to improve in the near future, as the proportion of URiM fellows training in the field remains low and essentially unchanged between 2005 (10.5%) and 2018 (10.3%).[8,37]

In this commentary, the authors will first review the systemic reasons underlying the lack of representation of minoritized populations among the critical care physician workforce. To do so, the authors will utilize the conceptual model of the "leaky

Table 1
Proportion of critical care physicians by gender,[a] race, and ethnicity in 2021

Specialty	Total No. Active Physicians	Female N (%)	White N (%)	Black or African American N (%)	Asian N (%)	American Indian or Alaska Native N (%)	Native Hawaiian or Pacific Islander N (%)	Hispanic N (%)
All	946,790	351,117 (37.1)	537,351 (63.9)	48,248 (5.7)	173,283 (20.6)	2,583 (0.3)	961 (0.1)	58,395 (6.9)
Critical Care Medicine	14,142	3,861 (27.3)	7,411 (54.4)	564 (4.1)	4,057 (29.8)	19 (0.1)	17 (0.1)	1,015 (7.5)

[a] AMA Physician Dataset defines gender as "male" or "female" only.
American Medical Association. AMA Physician Masterfile (Dec. 31, 2021).

pipeline"– a framework that conceptualizes low representation within academic medicine based on "leaks" resulting from systemic barriers across the education and training continuum[38,39] – to better understand the reasons behind such disparities among ICU physicians (Fig. 1). Next, the authors will review challenges to retaining and sustaining a diverse critical care workforce, including discussion of how the "vicious cycle" of bias in academic medicine may reinforce the lack of diversity observed within the critical care physician workforce (Fig. 2)[40,41]; the authors will then finish by describing interventions aimed at increasing representation and fostering an environment within medicine that prioritizes equity and inclusion among ICU physicians.

Of note, little is known about critical care physicians who identify as LGBTQIA+; for this reason, the authors chose to focus this narrative review on women and URiM individuals based on the available data. However, the authors acknowledge that LGBTQIA + individuals are underrepresented in the physician workforce (comprising approximately 6.3% of graduating medical students)[42] and that more work is needed to better understand their experiences through medical training and as part of efforts to create a diverse and inclusive critical care workforce.

THE ORIGINS AND CONSEQUENCES OF THE LEAKY PIPELINE
Primary Education

As described earlier, the "leaky pipeline" framework conceptualizes low representation within academic medicine based on "leaks" resulting from systemic barriers faced by women and those identified as URiM (see Fig. 1; Fig. 3). Particularly for URiM individuals, the leaky pipeline begins as early as elementary school.[38,39] Indeed, there is evidence that Black and Hispanic children in the U.S. have worse academic performance and standardized test scores compared to White children.[43–45] Reasons for this are multifactorial, driven in part to the history of racial segregation in schools,[45] as well as historic redlining (ie, government homeownership programs created as part of the 1930s-era New Deal, in which neighborhoods predominantly inhabited by Black residents were deemed risky for investment.)[46] As a result, school districts within historically redlined neighborhoods have had less funding and resources
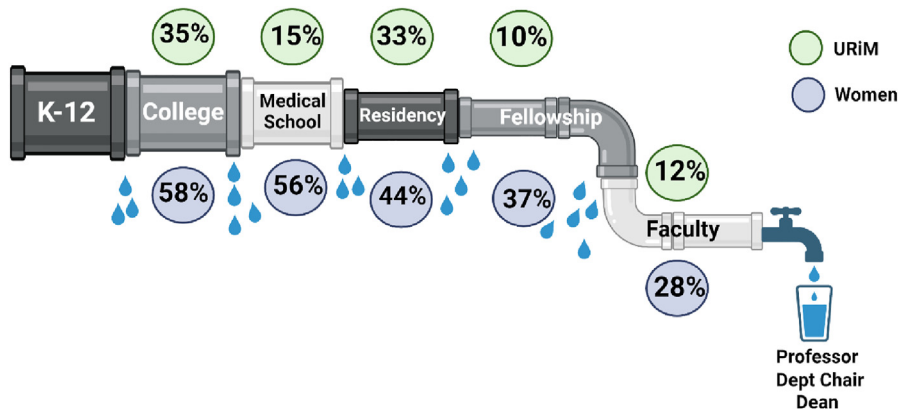

Fig. 1. The proprotion of women and individuals unrepresented in medicine (URiM) within the critical care workforce at each stage of the critical care medicine pipeline. (Created with BioRender.com.)
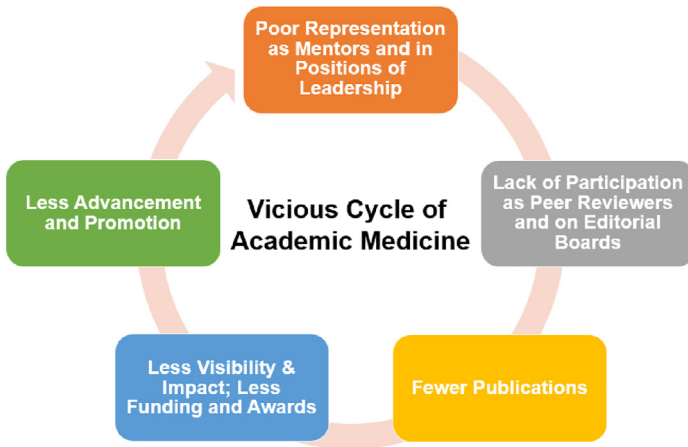
Fig. 2. The Vicious cycle of academic medicine. (*Reprinted with permission from* Elsevier. The Lancet, February 2019, 393 (10171), 508-510.)

compared to predominantly white schools[47]; over the time, the cumulative impact of these policies has resulted in lower quality education and reduced opportunities offered to children of color who predominately attend those schools.[47]

Additionally, unconscious bias may impact recognition of students of color for academic opportunities early on in their academic journeys. For example, a 2016 study found that Black elementary school students were less likely to be seen as "gifted"
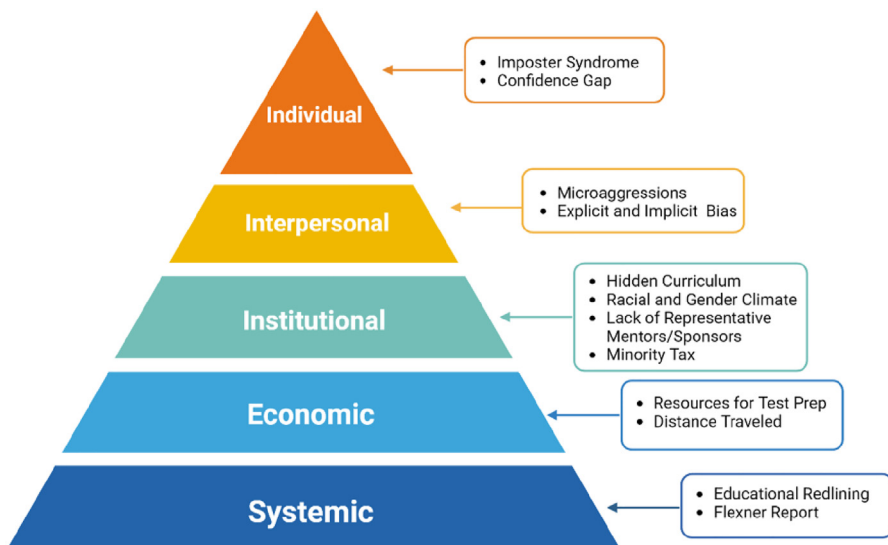

Fig. 3. Diagram showing factors contributing to the lack of retention of women and individuals underrepresented in medicine within the critical care workforce. (Created with BioRender.com.)

relative to White students, and were therefore overlooked for placement into advanced programs, even after controlling for test scores.[48] This gap is further widened by socioeconomic status and parental education attainment where students with parents who did not obtain a bachelor's degree also tend to have worse academic performance.[49]

Premedical Experiences

Gaps in educational opportunity persist for female, Black, and Hispanic students through secondary school. For example, a 2014 study performed by the Association of American Medical Colleges found that, among sophomore students aspiring to enter medical school, 74% were female, 18% were Black, and 48% White. However, women comprised only 50% of medical school applicants and matriculants; Black students comprised only 7% of medical school applicants and 6% of matriculants, whereas White students comprised approximately 60% of applicants and matriculants.[50] Barriers to attending medical school disproportionately experienced by Black and Hispanic students include the financial burden of pre-medical school testing and admissions processes, lack of guidance and social support, and belief that they are not strong enough as candidates to be accepted.[51] In fact, URiM applicants to medical school are disproportionately from low-income households and overrepresented in the lowest strata of the Association of American Medical College's parental education and occupational indicator compared to non-URiM applicants.[29,52] These barriers–financial and otherwise–can be further exacerbated by individual bias among students' advisors, resulting in non-White students being discouraged from applying to medical school more often than White students.[53]

Furthermore, there is evidence that admission tests to medical school may perpetuate the effects of structural racism on non-White applicants. One study found that URiM applicants have lower scores on the Medical College Admission Test (MCAT) compared to non-URiM applicants,[54] in part due to reasons described earlier; another study found that socioeconomic status is a strong predictor of MCAT performance.[55] Yet, despite evidence that applicants with mid-range MCAT scores are successful in medical school, many programs often overlook applicants whose scores do not meet a specific cut-off as part of the admissions process.[29,56] For this reason, it is important for medical schools to reexamine the use of MCAT scores in admission processes as part of efforts to diversify the physician workforce.[56]

In addition to these structural disadvantages, URiM students in particular are often missing a key component to the graduate school admissions process: access to the hidden curriculum.[57] The concept of the hidden curriculum has been defined as "the method by which the values, skills, and attitudes of a group being joined are adopted."[58] Within medicine, the hidden curriculum is distinct from the formal coursework, and instead represents lessons that are embedded in the organizational structure and culture of an institution, which are not explicitly presented.[57] The hidden curriculum can include the social connections required to cultivate clinical experiences and pertinent extracurricular activities, obtain strong letters of recommendation, and acquire guidance on how to be successful through medical school admission processes and beyond. Less familiarity with the hidden curriculum may negatively impact career development opportunities by reducing access to networks of potential mentors, diminishing a sense of belonging within one's field and institution, and limiting knowledge of how to navigate the complex system of influences within medicine more broadly.[29,57]

Finally, URiM individuals in particular often face challenges in the journey to medical school related to underlying systemic barriers as described earlier. This concept– known as the "distance traveled" – is defined as differences between individuals in

the path to their present position.[59] For some, achieving admission to medical school entails "traveling" a greater distance than for others (eg, having to work during undergraduate years to help meet financial obligations at home).[59] Recognizing the distance traveled by individuals, especially among URiM applicants, is a crucial part of efforts to achieve equitable opportunities for career development and ultimately a diverse and proficient critical care workforce.

Medical School and Residency

The underrepresentation of Black physicians in particular can be traced back to the release of the Flexner report in 1910, which examined medical education and suggested reform for medical colleges (including increasing standards, partnering with hospitals for clinical training, and closing schools that could not afford to update and maintain facilities.)[60]

The Flexner report, which was initiated by the American Medical Association's Council on Medical Education, drastically changed medical education and led to the closing of more than half of all medical schools in the U.S. and Canada, including the majority of Black medical schools. Only 2 medical schools remained as options for Black applicants: Howard University College of Medicine in Washington, D.C., and Meharry Medical College in Nashville, Tennessee, both of which remain today.[60]

In practice, the Flexner report all but eliminated medical education for Black individuals, and its effects on health care inequality continue to persist.[61]

In 2008, nearly a century after the Flexner report was published, the American Medical Association issued an apology for its "history of racial inequality toward African-American physicians."[61,62] Since then, societies such as the American Academy of Medical Colleges have urged medical schools to adopt anti-racist and inclusive practices.[63] Despite these efforts, medical school can be a challenging environment for URiM students. For example, in a nationwide sample of approximately 3800 medical students, 64% reported a hostile racial climate, while 81% and 94%, respectively, reported witnessing discrimination toward students and negative role modeling (eg, physicians speaking negatively about Black patients).[29,64] Microaggressions–defined as commonplace interactions that communicate bias against an individual or group–are also commonly experienced by both URiM and female trainees, are associated with increased odds of reporting depressive symptoms,[65] and contribute to an overall negative racial climate.[29] Perhaps not surprisingly, then, there is a disproportionately high attrition rate among URiM medical students.[66]

These trends likely continue throughout medical training as well. A 2021 study describing trends in racial and ethnic diversity in internal medicine subspecialty fellowships between 2006 and 2018 found that no specialties reflected the diversity of the U.S. population. Furthermore, authors found that the subspecialties with the lowest percentage of URiM fellows (including pulmonary and critical care medicine) were also the largest fellowships and the more procedural specialties; these findings raise the possibility that systemic factors are affecting career choices for URiM residents.[37] Even more concerning were findings from a complementary study focusing on the pipeline for pulmonary and critical care medicine specifically. Authors found that less than 33% of all pulmonary or critical care fellows are women, and less than 12% of fellows in the field are URiM. Over the last decade, the percentage of female fellows in pulmonary and critical care fellowship programs has remained unchanged, while the percentage of URiM pulmonary and critical care fellows has decreased. Additionally, authors identified a discrepancy between the number of URiM residents who apply for fellowship in pulmonary and critical care, and the number who match successfully, suggesting that URiM applicants are matching to these fellowships at

a disproportionately low rate.[67] Such persistent disparities in the pipeline must be addressed as part of efforts to grow and sustain a diverse critical care workforce.

CHALLENGES TO RETAINING AND SUSTAINING A DIVERSE CRITICAL CARE WORKFORCE

Disparities in Academic Publishing Within Pulmonary or Critical Care Literature

Even if individuals are able to overcome the multiple structural, institutional, and economic barriers to become critical care physicians described earlier, there is a myriad of challenges to retain and sustain a diverse ICU workforce that persist, particularly within academic medicine. For example, female and URiM physicians remain underrepresented in scholarly critical care activities (eg, academic publishing) that are considered essential for hiring and promotion.[8,14,35,68–71] A recent study found that women comprise less than one-third of first authors and less than one-fourth of senior authors of critical care original research, with minimal increase over the past decade.[70] Additionally, female first authors of critical care literature are also more likely to publish in lower-impact journals compared to men,[70] while female senior authors of original pulmonary and critical care research have lower odds of acceptance compared with articles by male senior authors.[72] Regarding URiM representation in academic publishing, a 2022 study focused on the diversity of authors of publications from the Canadian Critical Care Trials Group found that of among 1,205 unique authors, approximately 15% of first authors and 10% of senior authors were members of a visible minority group.[73]

With these findings in mind–that female and URiM physician and scientists are underrepresented as authors, and are more likely to have their research published in lower impact journals or not published at all–it is not surprising that their expertize might be overlooked, as demonstrated by their underrepresentation on guideline panels and editorial boards, and as speakers or chairs at critical care conferences.[69,70,74–79] For example, women were notably absent from the development of prominent critical care consensus statements and clinical practice guidelines, including the recent Berlin acute respiratory distress syndrome and Sepsis-3 definitions.[69,80–83] Women also comprised between 5% and 26% of speakers across 5 international critical care conferences between 2010 and 2016, despite comprising between 20% and 40% of the critical care workforce globally.[68,84]

The "Vicious Cycle" of Academic Medicine

Taken together, these data reveal possible mechanisms contributing to the "vicious cycle" in academic medicine in which less representation as authors and reviewers may lead to fewer publications and speaking opportunities, less funding and awards, and ultimately less career advancement (see **Fig. 2**).[40,41,70] This "vicious cycle" may, in turn, explain the persistence of the glass ceiling as demonstrated by the underrepresentation of women and URiM in positions of leadership within academic medicine.[40] Specifically, women comprise only 24% of all Division Chiefs, 24% of Vice Chairs, 15% of Department Chairs, and 16% of all medical school Deans.[85] A 2014 study by Jena and colleagues found that, among 90,000 faculties at U.S. medical schools, women were less likely than men to achieve full professor status, even after adjusting for age, specialty, productivity, and experience.[70,86] Similarly, a 2013 study found that only 8% of faculty in U.S. medical schools were URiM.[87] More recently, the data from the Association of American Medical Colleges Medical Association found that in 2022, URiM faculty comprised 13% of interim or permanent Deans at U.S. medical schools compared to 7% in 1993.[88]

Additionally, there are a variety of other factors that likely contribute to the vicious cycle within academic medicine. First, within academic publishing, female and URiM physicians and scientists comprise a minority of journal editors and editorial board members, which may adversely impact their success in publishing their research in a particular journal.[70,76,77,84] Furthermore, most journals do not conduct double-blind review of submitted articles, despite evidence that it may help overcome unconscious biases and gender stereotypes that contribute to underrepresentation of women and URiM as authors.[70,89–91]

Second, the "confidence gap" between men and women that has been observed across a variety of industries may contribute to a reluctance of individuals from underrepresented groups to submit their research to high-impact journals or seek other career advancement opportunities.[70] For example, the journal Science performed an audit of the gender of its published authors and found that the journal received one-third fewer articles from female authors than would be expected based on the number of women in their respective fields.[70,92] Similarly, there is evidence that fewer women apply for National Institute of Health grant applications than men, but with similar success rates.[89,92] Female and URiM physicians may also experience the related but distinct concept of imposter syndrome, defined as the perception that the individual did not earn the position that they are occupying.[93] Overcoming both the confidence gap and imposter syndrome are crucial for individuals to achieve psychologic safety and enable career development and advancement within academic medicine.[94,95]

Third, the institutional climate surrounding diversity, equity, and inclusion within the critical care workforce (eg, implicit bias; funding opportunities; compensation; consideration for leadership, academic, and networking opportunities; sponsorship and mentorship practices; and processes for promotion and tenure) may contribute to lack of representation and attrition among women and URiM faculty.[96] For example, one study found that 70% of female career development award recipients perceived gender bias compared to 22% of male award recipients.[97] Gender bias has been shown to exist in student evaluations of faculty members, as well as hiring practices.[96,98,99] There is also evidence that female physicians are disproportionately responsible for caregiving and family responsibilities, which may impact their productivity over time, as well as job satisfaction, mental health, and burnout.[96]

Finally, faculties from underrepresented groups are often subject to additional responsibilities and expectations in order to "represent" diversity in multiple clinical and administrative roles–a phenomenon described as the "minority tax."[59] Such a tax results in women and URiM faculties being more isolated amongst their peers with less access to faculty development and mentorship, less time to dedicate toward academic pursuits, lower job satisfaction and work performance, and ultimately less career advancement.[59]

STRATEGIES TO IMPROVE DIVERSITY AND EQUITY WITHIN THE PHYSICIAN WORKFORCE
Improving the Pipeline for Women and Underrepresented in Medicine in the Critical Care Physician Workforce

Improving the diversity and equity of the critical care workforce requires interventions far upstream of the faculty hiring process. A 2018 scoping review found that pipeline and pathway programs are the most frequently used approaches to increase representation of women and URiM in the medical workforce.[100] Such programs may start as early as elementary school and include efforts to identify and support future

medical students from diverse backgrounds through outreach programs, shadowing opportunities, guidance on admissions testing, education on financing medical school, and mentorship more broadly.[101] Additionally, combined college-to-medical school pathways (such as the Mount Sinai School of Medicine Humanities and Medicine Program)[102] offer early admissions to medical school that may not require MCAT test scores, thus, removing 1 barrier of acceptance to medical school. Post-baccalaureate pathway programs also represent important strategies for increasing diversity among medical school matriculants.[100] Specifically, post-baccalaureate programs can help URiM overcome known barriers to medical school admission (eg, lower MCAT scores, fewer premedical clinical opportunities) through curricula that emphasize basic science skills required for admission testing, academic enrichment skills, and research options.[100,103] Finally, formal collaborations between historically Black colleges and universities, as well as collaborations between minority medical student organizations (such as the American Medical Women's Association and the Student National Medical Association) and medical school admissions offices, represent potentially underutilized opportunities to facilitate the recruitment of women and URiM students into the physician workforce.[104]

Holistic review of applicants throughout medical school, residency, and fellowship admission processes represents another promising intervention that can be implemented to improve the diversity of the critical care physician workforce. Holistic review is defined as a "flexible, individualized way of assessing an applicant's capabilities, by which balanced consideration is given to experiences, attributes, competencies, and academic or scholarly metrics, and when considered in combination, how the individual might contribute value to the institution's mission."[105] Practically speaking, holistic review seeks to evaluate applicants as a whole rather than as a sum of their parts, taking into account the distances traveled by individuals as part of efforts to create a more diverse physician workforce. It typically involves the use of a set of standardized interview questions and rank system to help reduce bias in the selection process.[105] This technique is being increasingly applied nationwide at the level of undergraduate admissions, as well as for medical school and residency selection processes.[106] A growing body of evidence has shown that holistic review improved the representation of women and URiM among medical school and residency applicants invited for interview, as well as the proportion of URiM matriculants in residency programs.[106,107] It stands to reason that this strategy could be particularly helpful in the field of critical care–a field in which disparities persist and have been slow to improve.[34] However, given the recent Supreme Court decision eliminating race-conscious admissions programs,[108] the future of holistic review in medical school, residency, and fellowship application processes is uncertain.

Additionally, some institutions have implemented academic coaching programs for individuals from underrepresented settings who matriculate into medical training programs. Academic coaching has been defined as a process in which an individual learner meets regularly over time with a faculty coach to create goals, identify strategies to manage challenges, improve the learning environment experienced by URiM trainees, and reach the learner's highest potential.[109,110] It is distinct from mentoring insofar as academic coaching is learner and task driven, emphasizes an individual's goals, and creates space for that individual to determine their own path toward achieving those goals; in contrast, mentoring is a relationship-driven advisory process designed to guide and support a person for their career development.[109]

A recent mixed-methods study of an academic coaching program at a single academic medical institution revealed that URiM trainees reported having distinct needs compared to White students. Specifically, URiM students experienced more pressure

to perform, felt more anxious about showing vulnerability during their coaching sessions, and desired a coach who exhibited cultural humility; however, these differences between URiM and White trainees were largely unrecognized by their coaches.[109] Following this study, a group of faculty advisors called "Diversity Navigators" were formed under the School of Medicine at that institution to improve the URiM experience in medical school, foster community, and support underrepresented medical students through specific challenges that they might face as members of minoritized populations.[111,112] Although the impact of this intervention requires further study, it represents a potential mechanism to enhance the pipeline of URiM individuals within the critical care physician workforce more broadly.

Breaking the Vicious Cycle of Academic Medicine

Within academic medicine, several strategies exist to help break the vicious cycle that has served to perpetuate disparities for women and URiM in the critical care workforce. To begin, journals play a central role in the transmission of scientific knowledge and the validation of academic achievement.[41] Therefore, it is imperative that journals address imbalances among women and URiM in academic publishing through a variety of mechanisms, including: (1) implementing double-blind review of submitted articles, which has been shown to favor increased representation of female authors by overcoming unconscious biases and gender stereotypes;[70,89–91] (2) training journals on diversity initiative and unconscious bias; (3) collecting and publishing data on journals' internal processes, including their proportion of editorial staff and peer reviewers who are women or URiM; and (4) setting diversity targets for commissioned content, peer reviewers, and editorial roles with frequent audits of journals' performance in these areas.[41,113,114] Similar goals could be set for Critical Care Societies as well, including establishing diversity policies for populating panels they commission, as well as tracking and publicly reporting representation of women and URiM individuals on panels for definition documents, consensus statements, and practice guidelines.[69]

At the institutional level, enhancing opportunities for mentorship is a crucial component of strategies to recruit and retain a diverse critical care physician workforce. Mentorship has been associated with increased career satisfaction, faculty retention, research productivity (eg, publication and grant success), and overall career advancement.[70,115] The benefits of mentorship were exemplified in a recent study evaluating gender differences in authorship of critical are literature. In this study, authors found that female senior authors were significantly more likely than male senior authors to publish with female first and middle authors, suggesting that women may mentor and collaborate with other women more often than men do.[70] Yet, prior literature has shown that women are less likely than their male colleagues to have a mentor across varying levels of training.[116–118] There is also an evidence that URiM physicians are less likely to have effective mentorship and apply for awards and grant support compared to non-URiM physicians.[119] Taken together, these findings highlight the value of efforts to increase the pool of women and URiM in senior academic positions who are available to serve as mentors for junior faculty, who are particularly vulnerable to attrition from academic medicine.[70,116]

In addition to mentorship, sponsorship is a necessary component to help break the vicious cycle of academic medicine and help advance women and URiM physicians to positions of leadership within critical care. Sponsors differ from mentors—in that sponsors are in a position of power within an institution, and are therefore, able to advocate publicly for the advancement of nascent talent within an institution.[70,118] Sponsorship programs–which are being increasingly used in the corporate world to raise the visibility of women and help advance them into positions of leadership[120,121]

– represent an additional tool to help address disparities that persist within the field of critical care.

Furthermore, it is important that institutions deliberately implement interventions to enable women and URiM physicians to overcome systemic barriers to career advancement. For example, the University of California, Davis School of Medicine established the Women in Medicine and Health Science program to help women advance to positions of leadership within their institution through explicit advocacy.[122] Notably, the percentage of female faculty doubled from 18% to 36% in the first 10 years of the program, with a concomitant increase in the number of female full professors and department chairs.[70,122] As part of these initiatives, however, it is imperative that institutions collect data (including promotion and tenure decisions) with a commitment to transparency and accountability as part of efforts to inform institutional actions and effect necessary change.

A recent perspective piece by Chesley and colleagues described an approach by which academic institutions can promote equity and address structural racism, anchored by 4 pillars: (1) promoting education on social justice topics (eg, implicit bias, anti-racism); (2) improving community outreach (eg, pipeline development activities, access to voting); (3) restructuring clinical practices to promote anti-racism (eg, establishing racial disparities in critical care outcomes as a quality target); and (4) fostering an anti-racist workplace climate (eg, training faculty on implicit bias; increasing recruitment of URiM candidates).[123] Importantly, authors note that these initiatives must not rest disproportionately on underrepresented members (ie, the "minority tax"), but instead requires collective action from the entire institution and broader community.[123]

Finally, at a national level, several opportunities exist to enhance and sustain a more diverse critical care physician workforce.[8] For example, the American Thoracic Society (ATS) offers Minority Trainee Development Scholarship to support travel for URiM trainees to attend the ATS International Conference, where they can present their work and be exposed to networking opportunities as part of their career development.[124] The Harold Amos Medical Faculty Development Program has also partnered with multiple professional societies, including the ATS, American Lung Association, and American College of Chest Physicians, to address the shortages of scholars with academic and research appointments in the field of pulmonary and critical care medicine who come from historically marginalized backgrounds.[125] In addition, the U.S. National Institutes of Health Office of Research on Women's Health implemented several initiatives to promote the career of women in biomedical scientists; these include the creation of a working group that assists with mentoring and networking opportunities, as well as programming to support researchers returning to workforce after a qualifying hiatus.[126] These efforts are crucial to build and sustain a diverse critical care physician workforce that will ultimately lead to more equitable and higher-quality care for our patients.

SUMMARY

Health disparities persist among minoritized populations; the COVID-19 pandemic exposed and exacerbated these disparities in access to high-quality care and outcomes. A diverse physician workforce helps reduce health disparities and improve patient outcomes. Yet, gender, racial, and ethnic diversity are lacking among the critical care physicians due to a variety of historic and current factors that contribute to the lack of retention (a.k.a. the "leaky pipeline") of women and URiM in the workforce and the vicious cycle of academic medicine. To improve health care disparities in

the critically ill, the authors must increase physician representation of diverse backgrounds through a variety of individual, institutional, systematic, and societal approaches that combat gender bias and structural racism. These efforts should first focus on stabilizing the pipeline to critical care medicine by adopting practices such as pipeline programs, holistic admissions, and academic coaching. Additionally, targeted efforts by journals, professional societies, and academic institutions are necessary to break the vicious cycle of academic medicine in ways that minimize the minority tax. Strategies can include implementation of double-blind peer review of submitted articles; setting diversity targets (eg, representation of women and URiM on editorial boards, guideline committees, promotion and tenure decisions, and in positions of academic leadership); and collecting and publishing data on internal processes and decisions to ensure transparency and accountability. Lastly, both mentorship and sponsorship of women and URiM critical care physicians are vital for career advancement. With increased representation, health care outcomes such as access to high-quality critical care and therapeutic relationships will likely improve.

CLINICS CARE POINTS

Pitfalls
- Beware of unconscious bias, confidence gap, distance traveled, imposter syndrome, and minority tax, which all contribute to and perpetuate lower representation of URiM and women in the critical care physician workforce.
- There is a discrepancy between the number of URiM applicants who apply for fellowship in pulmonary and critical care, and the number who match successfully, suggesting that URiM applicants are matching to these fellowships at a disproportionately low rate.
- Persistent disparities in the pipeline must be addressed in order to grow and sustain a diverse critical care workforce.

Pearls
- Holistic review improves representation of women and URiM throughout stages of medical training.
- Targeted efforts by journals, professional societies, and academic institutions are necessary to break the vicious cycle of academic medicine; strategies can include implementation of double-blind peer review of submitted articles; setting diversity targets (eg, representation of women and URiM on editorial boards, guideline committees, promotion and tenure decisions, and in positions of academic leadership); and collecting and publishing data on internal processes and decisions to ensure transparency and accountability.
- Mentorship and sponsorship of women and URiM critical care physicians are vital to their career advancement.

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FUNDING

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