

# Diversity, equity, and inclusion in anesthesiology

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Disparities in population health are driven by a dynamic set of factors, known as social determinants of health. Although individuals may not have a direct influence over the upstream social factors (poverty, homelessness, racism) that drive disparities, awareness of the complex social determinants of health at an individual level may facilitate efforts to improve health outcomes. In addition, awareness of how health care, as a component of social determinants of health, is associated with health disparities can also serve as a driving force for change. In this manuscript, we provide working definitions and discuss concrete ways to uncover and mitigate factors that contribute to disparities in health care. We begin at the level of health care systems before focusing on care processes and patient-level factors.

## Health, health care, and social determinants of health

Disparities in health care outcomes are linked to bias on the individual, health system, and societal level.<sup>1-4</sup> The United States Department of Health and Human Services defines disparities in population health as a difference that is closely linked to social, economic, and/or environmental disadvantage. *Health* disparities refer to differences in health outcomes caused by economic, social, and environmental disadvantage.<sup>5</sup> Health disparities adversely affect groups who have systematically experienced greater obstacles to health based on their racial or ethnic group; religion; socioeconomic status; gender; age; mental health; cognitive, sensory, or physical disability; sexual orientation or gender identity; geographic location; or other characteristics historically linked to discrimination or exclusion.<sup>6</sup> *Health care* disparities refer to differences in “health insurance coverage, access to and use of care, and quality of care” linked to social, economic, racial, and environmental disadvantage (Fig. 1).<sup>5</sup>

A social determinants of health model offers a way to consider the role that health care services play since health disparities are caused largely by factors outside of health care (Fig. 2). These

include socioeconomic status (education, income, occupation); race and exposure to racisms; living, workplace, and physical (air, water) environments; and culture. However, health care does play a role when considering health service utilization, health care quality, and the upstream factors that influence access, for example allocation of resources and financing care.<sup>7</sup>

## Health equity

The concept of equity is multidimensional and is based on principles of distributive justice. Health equity<sup>8,9</sup> refers to the absence of remediable differences in health among population groups defined socially, economically, demographically, or geographically<sup>10</sup>; “the absence of systemic disparities in health (or its social determinants) between more and less advantaged social groups”<sup>7</sup>; and where everyone has a fair and just opportunity to be as healthy as possible.<sup>11</sup> Admittedly, these definitions leave unanswered questions, including the meaning of fairness and justice; however, an explosion of scholarship has provided further guidance and has extended theories of justice to address health outcomes and its social determinants.

## Workforce diversity to address health care disparity

Addressing health care disparity through workforce initiatives is in part predicated on the concept that a more diverse workforce improves health care outcomes that will translate to improved patient health outcomes. Studies have demonstrated that more diverse workforces have been associated with improved health care outcomes including patient satisfaction, health care delivery,

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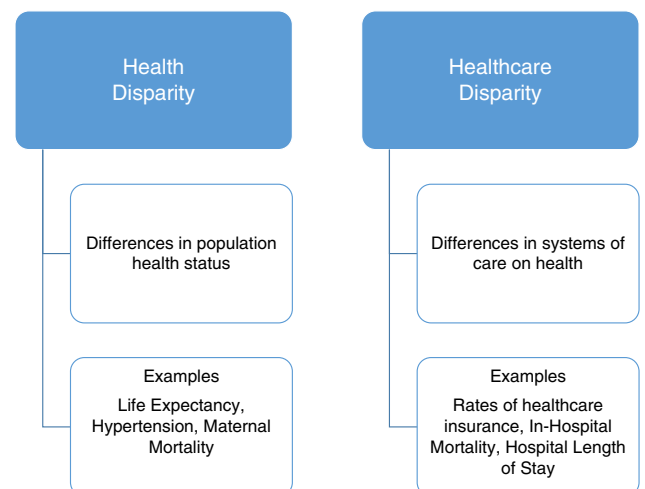


Figure 1. Disparities in health versus health care. [full color online](#)



**Figure 2.** Social determinants of health model. Healthy People 2030, US Department of Health and Human Services, Office of Disease Prevention and Health Promotion. Available at: <https://health.gov/healthypeople/objectives-and-data/social-determinants-health>. Accessed April 28, 2021. [full color online](#)

and financial performance.<sup>12,13</sup> Creating an infrastructure to support a more diverse health care workforce has been associated with improved access to care for underserved populations and more expansive research agendas.<sup>14</sup>

To address workforce definitions, we must define underrepresentation. The Association of American Medical Colleges (AAMC) uses the term Underrepresented in Medicine (URiM) to include “racial and ethnic populations that are underrepresented in the medical profession relative to their numbers in the general population.” The role of graduate medical education programs as contributors to the physician workforce pipeline and mitigate health care disparities has been recognized by the Accreditation Council for Graduate Medical Education (ACGME).<sup>15</sup> By increasing diversity in the physician pipeline, this can drive a more balanced workforce that may facilitate inclusion and reduce bias. Although diversity, equity, and inclusion (DEI) efforts extend beyond race/ethnicity and gender, expanded discussions are limited by the available data of other groups.

Racial and ethnic disparities in the workforce are particularly evident in academia. For example, those from Black and Hispanic backgrounds make up just 6% of full-time academic physicians despite comprising 31% of the US population.<sup>13</sup> This is partly due to leaks along the physician pipeline resulting in smaller reservoirs of potential Black and Hispanic physicians.<sup>16</sup> In addition, “taxes” such as the minority tax and gratitude tax have been identified as contributing factors. A minority tax is an umbrella term that encompasses the harassment, bias, discrimination, isolationism, and burdens of representation.<sup>17</sup> A gratitude tax occurs when individual achievement is attributed to circumstance and mentors rather than to individual merit.<sup>18</sup>

In contrast to URiMs, the gender gap has significantly closed along the physician pipeline and women now represent over 50% of medical students in the United States.<sup>19</sup> However, this has yet to translate into the upper echelons of medicine, where gaps persist in leadership and among certain specialties. In

anesthesiology, 34% of residents and 13% of chairs are women<sup>19</sup> and in pain medicine and critical care, only a quarter of trainees are women.<sup>20</sup> There are fewer women in anesthesiology leadership positions at the departmental and national levels, and fewer women in national speaking engagements and on editorial boards.<sup>21</sup> These gender disparities in anesthesiology have been attributed to leaks along career advancement pipelines from factors that include the influence of careers on childbearing; disproportionate responsibilities related to domestic work; harassment; lack of mentorship; gender-based differences in resources and negotiations; and pervasive implicit biases about women in the workplace, all of which can lead to gaps in career productivity and advancement.<sup>22–25</sup> These gaps widen when considering intersectional identities. As an example, Black female physicians experience ageism and sexism variably, but racism persists throughout their career and life spans.<sup>26</sup>

Mentoring and career development programs can be effective interventions to address leaks in the career pipeline related to faculty retention and promotion.<sup>27,28</sup> Finding mentorship can be challenging for women and minorities. Organic mentor-mentee relationships are often informal and are based on shared interests and personal comfort for which shared race, ethnicity, and gender can be strong influencers. Mentoring is best when used in addition to other multifaceted initiatives within a department, including implicit bias education and reducing salary inequality. An academic department witnessed dramatic increases in the number of women promoted to associate professor while reducing gender bias and improving the mentoring experience for both women and men when this combination approach was used.<sup>29</sup> Previous work has observed greater challenges when dyads differ by sex and race/ethnicity.<sup>30</sup> Social proximity within mentoring relationships, that is overlapping life experiences, may contribute to these challenges in relationship building, which may be overcome by front loading relationship-building efforts to find common ground, develop trust, and establish boundaries.

### Institutional approaches to improve DEI

Structural barriers are thought to be partly responsible for workforce disparity in academic medicine. Tenure and academic promotion systems place value on productivity in early career phases through which peer-reviewed publications, external funding for research, and leadership positions are heavily weighted. However, there are significant funding gaps where racial and ethnic minorities are less likely to receive funding from organizations such as the National Institute of Health.<sup>31</sup> In addition, early career is a time where competing demands overlap such as with childbearing and childrearing responsibilities.<sup>32</sup> These systems-level metrics for promotion are considered to be structural barriers that prevent academic promotion leading to the “leaky pipeline.” The National Science Foundation is addressing barriers to career development, promotion, and retention through funding for institutional changes,<sup>33</sup> and are modifying tenure track timing to better align with work-life balance for young professionals. An awareness of the aforementioned barriers serves as a starting point in circumnavigating these structural challenges.

At the institution level, work has been done to drive DEI principles through the formation of pivotal committees such as

those responsible for workforce hiring, promotion, and retention. Through intentional formation, these committees may better reflect organizational diversity goals. Specifically, search committees may assess hiring policies and interview techniques to reduce unintended bias. The Department of Medicine at Johns Hopkins instituted several interventions to address academic promotion of women, including shifting the timeline requirements for promotions. After three years, the department witnessed a 66% increase in the proportion of women expecting to remain in academic medicine and a 57% increase among men. In addition, there was a marked increase, from 4 to 26, in the number of female associate professors.<sup>29</sup>

Institution-level hiring and retention can be reformed so that open positions are advertised through targeted outreach channels that represent under-represented groups such as the National Medical Association and through venues such as national conferences. Before engaging applicants, internal consensus should be established within hiring committees on specific credentials and concrete measures for evaluating applicants.<sup>34</sup> Institutions can ensure that their mission statements and public-facing social media make it clear that representation and diversity are prioritized. In addition, informal networks that can have significant influence over organizations can be made more formal so that all members of an organization or department have an opportunity to join and participate such as through steering committees, budget task forces, and planning initiatives.

Institution leaders can create accountability for decision makers to demonstrate and adhere to processes that are intentional, inclusive, and effective in overall efforts to mitigate bias and reduce disparities in health care clinicians.<sup>35</sup> Measures may include identifying factors that contribute to attrition of providers; improvement in provider satisfaction or morale through periodic climate surveys; tracking trends in offers, recruitment, and retention of under-represented providers; and diversity of committees. In some instances, measures related to structure, process, and outcomes can be tied to leadership evaluation and compensation.

Health system opportunities to interrupt bias are expansive. At baseline, a health system's infrastructure should enable response to data trends that may impact the quality of health care for vulnerable populations (racial/ethnic minorities, LGBTQ community, underinsured, urban/rural residents). Although workforce and patient data collection may highlight health care and workforce disparities, comprehensive data collection is a controversial strategy. Data collection, management, and use require careful consideration. Transparency regarding the alignment of data efforts with institutional mission and values is critical, especially when data may compromise the privacy of underrepresented identities. At an institutional and departmental level, understanding the demographic makeup of the workforce and leadership can provide an objective marker for how the health care workforce represents its patient, community, and national population. Data on patient and provider characteristics that shape the health care experience (self-reported race, ethnicity, gender, and language preference) may inform the initiatives, policies, and practices that can address gaps in recruitment, retention, faculty development, and health care utilization.

On the individual level, offering training and education that un masks unconscious bias; mentoring individuals from

under-represented groups in anesthesiology (African American/Black, Native American/Alaska Native, Hispanic); and creating a climate of interpersonal inclusion by seeking input and feedback from many sources each provide opportunities that can drive institutional culture. Organization and departmental alignment can facilitate data-driven policies and procedures that amplify DEI principles through recruitment, hiring, mentoring, and inclusive environments throughout the organization.

### **Diversity and inclusion through patient-centered quality improvement**

Quality improvement (QI) efforts that are aligned with equity principles and supported by policy provide an ideal platform to address actions at the individual level in a systematic and sustainable manner as was seen in the patient safety movement. Clinicians and administrators are better poised to implement patient-centered equitable improvement initiatives, and more recently, these efforts have been supported at a national level by the Institute of Medicine (IOM), who named equity a core domain of health care quality,<sup>36</sup> and through federal mandates such as the collection of race and ethnicity data<sup>26</sup> to report health care quality performance measures.

QI efforts focus on systems of care rather than an individual's behavior to promote sustainable change. Multitargeted QI efforts are ideal, given that the drivers of healthcare disparities are multifactorial and principles of equity must be emphasized over simple equality. Although QI efforts were founded on the notion of equality, we now know that uniformly equal interventions applied to a heterogeneous population will yield different results for different groups. For example, efforts to increase patient self-efficacy and patient clinician communication using web-based, online platforms fail to recognize differences in accessibility to computers, reliable internet, health literacy, and language barriers. Focusing solely on equal access may inadvertently create differences in access to health information and can worsen patient-provider communication for vulnerable populations. Equitable QI efforts can incorporate social determinants of health (pertinent to the intervention), and implement and evaluate flexible interventions that consider the needs of individuals (patient-centered care) while engaging all stakeholders and assuring accountability. For example, our individual practice as anesthesiologists may be better informed by understanding particular risk-adjusted performance metrics that can self-inform and mitigate unintentional perpetuation of health care disparities. QI efforts that account for process measures such as appropriate and equitable administration of treatments in a systematic manner can help inform clinicians' behavior at the individual level. For example, Andreae et al found that perioperative patients of lower socioeconomic status (eg, health insurance and median income) were less likely to receive universally available antiemetic prophylaxis despite controlling for risk factors associated with postoperative nausea and vomiting.<sup>37</sup> These results point to perioperative disparities for which individual anesthesia clinicians can make actionable change, and offers risk-adjusted performance metrics that could be used to mitigate perioperative healthcare disparities.<sup>38</sup> However, QI efforts should incentivize the appropriate behavior as there is the potential for inadvertent negative consequences including public reporting and pay-for-performance programs that can promote avoidance of caring for populations perceived to be at high risk for poor outcomes.

**Table 1**  
**Addressing diversity, equity, and inclusion (DEI) efforts in health care.**

Goals	
Improve workforce diversity	Understand local workforce demographic data Support formal mentorship and career development programs Advertise open positions through national outreach channels DEI tailored messaging on outward-facing media
Fix structural barriers in career advancement	Establish formal criteria, vs. informal networks, for evaluating potential hires and promotion criteria Adjust promotion criteria to create flexibility in advancement and promotion timelines Monitor for inequities in salary
Mitigate workplace bias	Implicit bias training Create voluntary safe spaces for open discussions
Drive changes in clinical practice through quality improvement	Collect data (climate survey, clinician satisfaction scores, demographic information when appropriate, health care quality performance metrics) Link process to outcome metrics

## Conclusion

Disparities in health care contribute to disparities in population health. Greater awareness of contributing factors at the health systems, institution, and individual levels will enable anesthesiologists to contribute meaningfully to mitigation efforts (Table 1). The aim of this review was to provide a baseline understanding of broad concepts and stimulate discussion around strategies to enhance DEI efforts. We acknowledge that priorities may evolve and therefore present DEI efforts as fluid and dynamic, rather than working toward a fixed goal. Similarly, the suggestions placed forth are not prescriptive and should be considered in the institutional, organizational, and cultural context in which each reader is working to influence change.

## Conflict of interest disclosure

The authors declare that they have nothing to disclose.

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