

The Path Forward: Using Metrics to Promote Equitable Work Environments

Catherine Cansino, MD, MPH,^{a,*} Kajal Khanna, MD, JD,^{b,*} Xenia Johnson Bhembe, MD,^c Barbara Overholser, MA,^d Helen R. Burstin, MD, MPH,^e Nancy D. Spector, MD^d

abstract

Women continue to be underrepresented in medicine, especially in senior leadership positions, and they experience challenges related to gender bias and sexual harassment. Women who are members of multiple groups that experience marginalization, including, for example, women who are American Indian, Alaskan native, indigenous, Black, or Hispanic, face a compounded challenge. In this article, we explore how institutions and professional organizations in medicine can use metrics to better understand the structural disparities that create and promote gender inequity in the work environment and how to employ these metrics to track progress in narrowing these gaps. Examples in health care (clinical medicine, scientific organizations, scientific publishing), business, and law are used to illustrate how impactful metrics can promote accountability when coupled with transparent reporting.

^aDepartment of Obstetrics and Gynecology, School of Medicine, University of California, Davis, Sacramento, California; ^bDepartment of Emergency Medicine, School of Medicine, Stanford University, Stanford, California; ^cDepartment of Psychiatry, Cambridge Health Alliance, Harvard Medical School affiliate, Cambridge, Massachusetts; ^dExecutive Leadership in Academic Medicine, Department of Pediatrics, Drexel University College of Medicine, Drexel University, Philadelphia, Pennsylvania; and ^eCouncil of Medical Specialty Societies, District of Columbia

*Contributed equally as co-first authors

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Address correspondence to Nancy D. Spector, MD, 2900 W. Queen Lane, K-Wing, Philadelphia, PA 19129. E-mail: Nds24@drexel.edu

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Despite the fact that women make up more than one-third of practicing physicians, 46% of all resident and fellow trainees, and approximately one-half of all medical students in the United States, little progress has been made in addressing the issues unique to women in medicine. Women in medicine face significant challenges, including a lack of mentors, discrimination, gender bias, unwelcoming workplace cultural environments, imposter syndrome, and the need for better work-life integration. The purpose of this article is to explore how institutions and professional organizations in medicine can use metrics to better understand the structural disparities that create and promote gender inequities in the workplace and how to employ these metrics to track progress in narrowing these gaps.

Medicine is an evidence-based profession that uses data and metrics to drive clinical practice. To make significant progress toward gender equity, a similar approach should be used by institutions and organizations to identify which strategies to incorporate to create and promote gender-equitable health care institutions and organizations. Creating and promoting equitable work environments requires dedicated leaders and workforce members to engage in systemwide reflection to determine the values of their institution or organization, pursue and develop metrics to support diversity and equity initiatives that promote such values, and foster a culture of accountability. In addressing gender equity, specifically, systems must also recognize the additional burden of simultaneous intersectional identities based on age, race, ethnicity, ability, sexual orientation, and socioeconomic status, also known as the gender double bind.¹

Yet, many medical organizations are limited by the lack of available data and metrics, because of either gaps in data collection or reporting, leading to a paucity of in-depth data for tracking and change.

Metrics are critical to inform diversity and equity initiatives in the field of medicine and should be harmonized to allow for adequate comparisons. Metrics could include measurements around entry into the field, inclusion in leadership roles, availability of support systems for retention and continued advancement, equitable distribution of awards as well as tasks and demands, and equitable distribution of opportunities and resources (eg, compensation and funding sources; developmental assignments; administrative support; family leave, lactation, and dependent care policies; and access to mentorship and sponsorship). Metrics should be used to track the number of women in leadership, including practice partners, division and department heads, academic deans, health care executives, and editorial boards, and speakers, as well as recruitment into training programs, hiring practices,

authorship, and workforce retention.²⁻⁵ In addition, given known differences in physician burnout by gender,⁶ it is also important to track well-being metrics, such as the Maslach Burnout Inventory or the Professional Fulfillment Index,⁷ as well as other workplace inequities experienced by women physicians (eg, inadequate support for reentry into the workforce).⁸ Key practices that may contribute to or limit advancement and well-being of women faculty should be assessed and compared, including family leave policies,^{9,10} pay gaps,^{11,12} and access to funding sources (scholarships and research grants).

Even medical specialties with a preponderance of women, such as pediatrics, in which women compose 65% of the workforce as of 2019,¹³ need a process to systematically promote gender equity in clinical medicine.¹⁴ Spector et al propose a 6-step cyclic process (Fig 1), work that is an extension of the #BeEthical campaign,¹⁵ to create a gender-equitable workforce. The authors conclude that stakeholders at every level should employ a cyclic

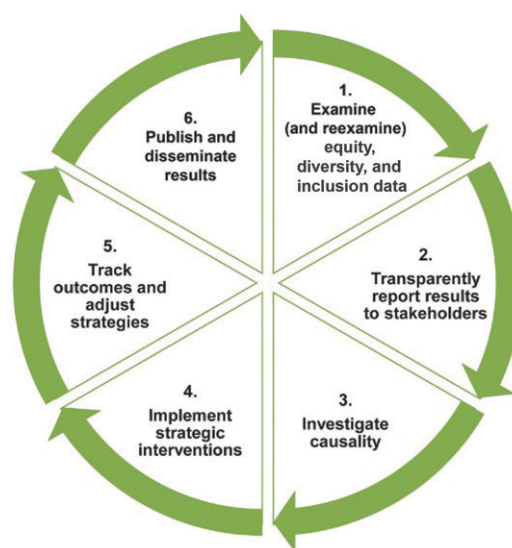


FIGURE 1 The equity, diversity, and inclusion cycle.¹⁴

metric-driven approach of data gathering and transparent reporting to allocate human, financial, and structural resources toward strategies that promote gender equity and eliminate disparities. Lastly, they propose a time line of suggested actions for gatekeepers to hold themselves accountable to ending gender-based disparities. For example, some initiatives should be addressed immediately (eg, “focus[ing] new and existing task forces and alliances on improving diversity and inclusion”), whereas others may require several years to implement (eg, “prioritiz[ing] and achiev[ing] fair pay and equitable promotion for women physicians and scientists, including at the highest levels”).

In addressing gender equity, it is also critical to consider intersectionality, including the added impact of marginalized identities based on age, race, ethnicity, ability, sexual orientation, and socioeconomic status. Issues faced by women experiencing multiple marginalized identities are often even more challenging, yet measurement of these other characteristics is sparse. For example, many medical organizations have data on physician gender, although information on race and ethnicity is not routinely available. The comprehensive data reported by the American Academy of Psychiatrists’ Women’s Task Force Report provides a framework for how quantitative metrics can be used to improve organizational representation.¹⁶ This framework involves using metrics to foster more equitable gender distribution across leadership positions, conference presentations, and recognition awards.¹⁶ In addition, the differences identified by the metrics should be interpreted through the lens of the lived

experiences of women physicians in varying work environments. In their qualitative systematic literature review, Rouse et al¹⁷ describe how traditional perspectives on practice styles, productivity models, and workplace environments undervalue the distinct contributions offered by women in clinical medicine. For example, women physicians better highlight patient-centered care and adherence to guidelines and prioritize positive work environments and work–life integration. Systems-level change requires a comprehensive review of the differential demands on work–life integration (the “second shift”) and their impact on women physicians.¹⁸ The ongoing pandemic has significantly exacerbated these differences, especially for women with young and school-aged children, and these differences may have long-term effects on the advancement of women in medicine.¹⁹ The “third shift,” defined as diversity and equity work, recognizes the frequently unpaid and underrecognized roles that women, especially women who identify as Black, Indigenous, and/or people of color (BIPOC), take on to support gender and racial equity in medicine.²⁰

Without measurement of a variety of equity-focused metrics, health care cannot ensure fair and equal opportunity for BIPOC physicians. Defined in groundbreaking work by Malcolm in 1979,²¹ persistent disparities in hiring for equally qualified postgraduate science, technology, engineering, mathematics, and medicine (STEMM) candidates in 2019 proved that these biases continue to exist. Institutions and health systems need to put forward comprehensive plans to address these persistent disparities for BIPOC physicians and other staff, plans that must include measurement and transparent

sharing of metrics. Structural discrimination^{22–25} also has significant downstream consequences, including hospitals and health systems, academic institutions²⁶, journals, funding agencies, medical societies and professional specialty organizations^{27,28}, regulatory bodies, and executive and legislative entities that interact with health care; thus, it is imperative that organizations routinely look for problems that exist in their organizations.

Given the complexity of gender equity and intersectionality across the continuum, metrics should be used to track longitudinal advancement of women and BIPOC physicians. Metrics should be used to consider critical entry points into medicine (high school, undergraduate school,²⁹ medical school, and residency and fellowship programs)³⁰ that are influenced by inherent biases^{31,32} and factors, including cultural bias in standardized testing; conflicting demands, such as the need to prioritize employment over full-time education or participation in extracurricular activities; financial burden of graduate programs and the associated strain of longer postgraduate training; and impact of decreased representation based on personal characteristics among peers, educators, and clinical preceptors.

USING METRICS TO DRIVE CHANGE: GENDER EQUITY IN HEALTH CARE

In their 2020 report on the representation of women in STEMM, the National Academies of Sciences, Engineering, and Medicine (NASEM) highlighted that women have achieved parity in the number of degree earners and early career professionals in medicine.³³ However, women continue to be underrepresented in senior leadership positions, with women of

color “severely underrepresented” at all levels.³³ Dr Rita Colwell, the report’s primary editor, notes that “[t]he data on underrepresentation of women in STEMM and personal stories of the adverse effects of bias, discrimination, and harassment in the scientific enterprise, underline the fact that there is much that needs to be done.”

In the NASEM report, the authors summarize critical elements to address underrepresentation of women in STEMM, including data collection, accountability, committed leadership, a “deep understanding of the institutional context” (ie, culture), and financial and human resources (Fig 2).³³ Data collection should occur on a continuum, not just during key transition points. The impact of career reentry and relocation should be examined as well, given gender differences on voluntary work disruptions versus biased hiring practices.^{34–36} Such longitudinal information reveals the downstream impact of underrepresentation at entry levels. In addition, NASEM highlights the importance of understanding the impact of bias, discrimination, and sexual harassment³⁷ on gender disparities in recruitment and retention, especially among women

with intersectional identities.³³ Personal stories related to these experiences can offer informative depth that are not often represented in the usual metrics that are collected, highlighting the importance of collecting qualitative data.

NASEM emphasizes that an institutional climate that reflects inclusive excellence comprises diversity champions (including male allies), equitable distribution of resources, fair family leave policies, and unbiased metrics for success (criteria for advancement, awards, and access to mentoring and collaborative networks).³³ Systems-level data, such as Stanford University’s Inclusion, Diversity, Equity and Access in a Learning Environment dashboard³⁸ and University of Michigan’s ADVANCE Program,³⁹ can be used to track progress and identify opportunities to promote institutional change. In addition, metric-driven public policy effects systematic change because NASEM cites “equity audits” and transparent reporting as ways to promote accountability throughout the entire implementation process. Such an audit entails evaluating the representation of women (and other

intersectional identities) within an “institutional context ... over time.”³³

At the National Institutes of Health (NIH), metrics have been proposed as a means to bring accountability, transparency, and rapid-cycle change to support the goals of gender equity. In 2016, to tackle the underrepresentation of women in intramural research at the NIH, the Addressing Gender Inequality in the NIH Intramural Research Program Action Task Force proposed that a top-down approach with leadership accountability and dedicated initiative is critical to promoting gender equity.⁴⁰ The task force targeted both institutional change and individuals as key areas for the development of accountability metrics. Although not unique in proposing systemwide accountability metrics, the combined focus on the institution and the individual is central to the approach, identification, and use of metrics in the NIH’s sustainable change for gender equity. In this systems approach, “clear metrics of inclusion, diversity and equity”⁴¹ are a central guiding principle to achieving “inclusive excellence.”⁴¹ Institutional-level metrics are paired with individual-level metrics focused on coaching, mentoring, and

The interconnected and mutually reinforcing recommendations from

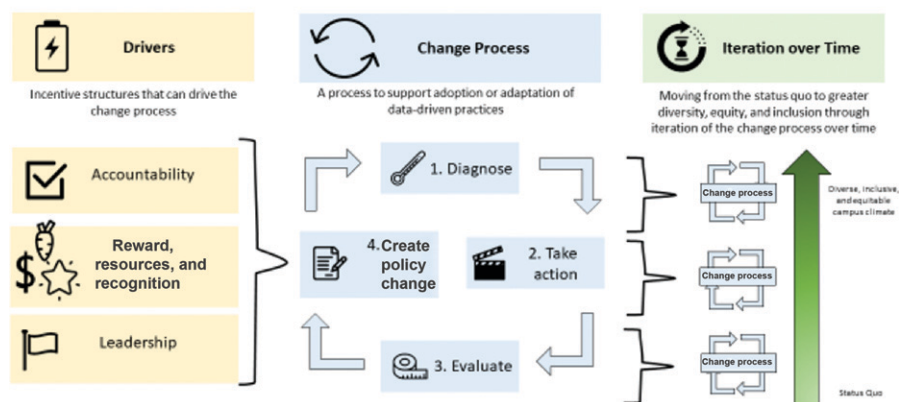


FIGURE 2 Promising practices for addressing the underrepresentation of women in science, engineering, and medicine.³⁷

sponsorship. Simply identifying these metrics is insufficient; they must be tracked, evaluated and “ti[ed] to institutional reward systems.”⁴¹

The task force proposed the development of a dashboard that would provide the following 3 levels of information: institutional performance benchmarked annually with other national peer institutions, directorship-level gender-equality performance metrics measuring transparency in the hiring and promotion process, such as internal versus external hires and number of coleadership positions, and “[dynamic] workforce-turnover data [that would reveal] the effects of interventions on gender equality at various levels of NIH leadership as a means of predicting and measuring impact.”⁴⁰ Metrics must also include “salary, personnel and other support, [and] departmental efforts to support work/life integration.”⁴¹ Elements of this proposed dashboard could occur in any practice setting.

Given the importance of publishing for career advancement in academic medicine, metrics related to publications and editorial boards are crucial. Academic publishing remains the “mode of knowledge dissemination that is most valued and rewarded ... in the scholarly ecosystem.”⁴² For example, women are less likely to be in “gatekeeper roles,” such as editorial boards that may have implications for future funding and academic success.⁴³ In recognition of this issue, the Lancet Group committed to a Diversity Pledge and a Lancet Group No All-Male Panel Policy, by which Lancet Group editors “commit to increasing diversity and inclusion in research and publishing ... among our editorial advisers, peer reviewers, and authors”⁴⁴ and will not serve as “panelists at a public conference or event when there are no women on

the panel and commit to gender balance in events they sponsor or organize.”⁴⁴ The online submission system across all 18 Lancet Journals tracks gender representation by having a field for self-selected gender. Lancet has also committed to having their editorial advisory boards meet a target of 50% female membership.⁴⁴

Challenging current perceptions of how structural discrimination and implicit bias impact editorial decision-making may be the first step in facilitating change in the academic publishing world. Lundine et al⁴² found that “many editors strive to be gender-blind.” Although objectivity and editorial independence are critical to the integrity of journals, the broader social constructs in the academic publishing world that contribute to observed inequity should be considered.⁴² Collecting and reporting metrics in publishing, from reviewers to editorial boards, provides important context and oversight for journals. Because journals rely on expertise, publishers need to invest in programs that provide opportunities for junior women and those underrepresented in medicine to learn and engage in the peer review process. Combining formal commitments to reducing bias, metric collection with effective training and feedback on editors’ implicit association test scores, and practical sessions in identifying situations of bias can result in an even greater impact on the effects on unconscious bias.^{45,46} Given the role of academia in gender equity, publication metrics by gender can also be considered. For example, the Center for Science and Technology Studies at Leiden University introduced a gender indicator for 963 universities that ranks “institutions by percentage of share of publications (male or female),

derived from author names and addresses in scholarly articles.”⁴⁷

USING METRICS TO DRIVE CHANGE: GENDER EQUITY OUTSIDE HEALTH CARE

Although medicine is a profession, health care is a business, and the 2 must work collaboratively. Metrics and methodology from other professions may prove useful in tackling the gender gap in medicine. In business, metrics are used to inform practices related to equitable distribution of resources, including skill-building opportunities, fair compensation, and mentorship.⁴⁸ Accountability among leaders and managers requires buy-in from entire organizations, with everyone believing that examining business practices through an equity lens leads to “employee engagement, higher retention rates, and better business outcomes.” Similar to the value placed by the NASEM report on qualitative data from personal stories of bias,³³ discrimination, and harassment, businesses must investigate and unveil occurrences and effects of second-generation gender bias in performance evaluations, opportunities to undertake developmental assignments, and access to executive coaching.⁴⁹ Whereas first-generation bias refers to explicit discriminatory ideas and actions, second-generation bias refers to ideas and actions that “[maintain] the status quo, or an active approach to strengthen the existing structures of male benefiting traditions, customs, values and beliefs.”⁵⁰ These biases are traditionally considered to be “hidden, invisible, planned and organized, and ha[ve] a more neutral face, but the underlying practices, values and beliefs remain distinctly male-oriented.”⁵⁰ Because second-generation gender bias is more subtle and difficult to detect, women and allies need to be more aware of these biases that discourage advancement (eg, not

seeking promotion because of family responsibilities).⁴⁹

The outcomes-oriented approach of achieving equity goals in business highlights the significant emphasis on productivity. Shifting the focus toward cultural change, however, may be more valuable and also factors the impact of intersectional identities. The Harvard Business Review notes that a closer examination through a systematic root-cause analysis reveals that awareness of racism in society does not necessarily equate to awareness of its existence in the workplace and “seemingly ‘race neutral’ policies can enable discrimination” (Fig 3).⁵¹ Instead, business organizations should take a proactive systematic approach of developing meaningful diversity initiatives.^{51,52} Such initiatives should incorporate accountability^{48,51,52} among employees and leaders and may even require reimagining the historical or traditional “leadership identity”⁴⁹ to support the advancement of women and underrepresented groups.

Another field that may provide for useful study is law. Although entry

into law school is roughly equally divided between men and women, “only 19% of equity partners are women.”⁵³ An even wider equity gap exists for “women of color ... who account for 16% of attorneys at the entry level ... but only 10% of senior associates, 3% of equity partners, and 4% of managing partners.”⁵³ These inequities prompted the Women in Law Hackathon in 2016 to promote innovative solutions to advance women in the legal profession.⁵⁴ A winning idea resulted in the development of the Mansfield Rule, named after the first woman in the United States to be admitted to practice law. This rule measures whether law firms have affirmatively considered “at least 30 percent women, lawyers of color, LGBTQ+ lawyers, and lawyers with disabilities for leadership and governance roles, equity partner promotions, formal client pitch opportunities, and senior lateral positions.”⁵⁵ Firms who pledge to the Mansfield Rule complete a year-long certification process run by the Diversity Laboratory, an incubator

focused on increasing equity, diversity and inclusion in the legal field.⁵⁶

Similar to the processes at the NIH, accountability, transparency, and collaboration are key structural elements of Diversity Laboratory’s certification process. Each firm that commits to the Mansfield pledge has frequent check-ins, data collection, and knowledge-sharing meetings. Before participating in the Mansfield Rule, only “12% of these firms tracked their candidates for leadership roles and 25% tracked their candidates for lateral partner hiring; now, 100% of these firms are tracking these pools. 57% of participating firms elected or appointed a higher percentage of diverse lawyers into Office Managing Partner roles.”⁵⁶ The Mansfield Rule has now gone through several iterations and has expanded to include legal firms in the United Kingdom. The use of innovation in both identifying stakeholder goals in metrics identification and accountability might have successful application in the health care ecosystem.

A Road Map for Racial Equity

Organizations move through these stages sequentially, first establishing an understanding of the underlying condition, then developing genuine concern, and finally focusing on correcting the problem.

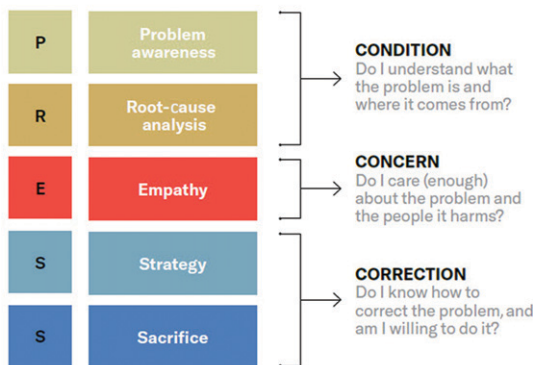


FIGURE 3

A roadmap for racial equity.⁵¹ Organizations move through these stages sequentially, first establishing an understanding of the underlying condition, then developing genuine concern, and finally focusing on correcting the problem.

THE PATH FORWARD: METRICS TO PROMOTE GENDER EQUITY

To achieve gender equity and address intersectionality, routine use of metrics must be part of the path forward (Table 1). Metrics have been used to drive change inside health care and beyond. Ideally, a harmonized set of gender equity metrics would be selected by multiple stakeholders, including physicians, patients, community organizers, government, business, and other clinical providers. The use of standardized demographic categories and metrics to assess gender equity and intersectionality will facilitate comparison and accountability across institutions and professional organizations. Beyond identifying key metrics, it

TABLE 1 Essential Gender Equity and Intersectionality Metrics

Construct	Operationalization	Examples of Metrics or Data Points to Collect ^a
Advancement to leadership roles for women physicians and physicians who are BIPOC	Assessment of advancement and factors that limit advancement	Longitudinal assessments of, for example, relative proportion and rate of advancement based on gender and race University of Michigan ADVANCE Program ³⁹
Networks of support for women physicians and physicians who are BIPOC	Availability and effectiveness of networks of mentors, sponsors, and leadership development programs	Qualitative assessment of efficacy of mentorship
Work burden and access to needed support for women physicians and physicians who are BIPOC	Distribution of uncompensated service assignments and access to administrative or financial support	Qualitative assessment of the impact of uncompensated service assignments on advancement
Structural racism	Includes implicit and explicit racial bias that limit advancement of women physicians who are BIPOC	Stanford University IDEAL dashboard (faculty composition) ³⁸ Impact of generational wealth on career choices (eg, pursuit of advanced degrees, length of training)
Work–life integration	Work–life integration models for physicians that include added burdens differentially faced by women physicians	Effects of family leave policies (eg, “stop the clock” policy) on advancement

^a Metrics should include both quantitative (to facilitate comparisons across sites) and qualitative (to provide depth and context) measurements.

will be critical to consider how the results are used and disseminated to hold institutions and organizations accountable for change. Transparency of data will, furthermore, enable accountability for improvement.

As a starting point, gender equity and intersectionality metrics should include the following:

- 1) longitudinal assessment of advancement and factors that limit advancement to leadership roles for women physicians and physicians who are BIPOC;
- 2) availability and effectiveness of networks of mentors, sponsors, and leadership-development programs;
- 3) access to needed support and work burden for women physicians and physicians who are BIPOC, including administrative support and uncompensated service assignments;
- 4) assessment of structural racism that limits advancement of female physicians who are BIPOC, including implicit and explicit racial bias;
- 5) work–life integration for all physicians, including added burdens differentially faced by women physicians;

6) incorporation of qualitative information and personal stories to add depth and context (eg, “Black in the Ivory” hashtag on Twitter).

Because we cannot improve what we do not measure, a standardized set of metrics should be the starting point to drive meaningful advancement of women in medicine. A commitment to gender equity and intersectionality for women physicians, however, must go beyond metrics and include dashboards, benchmarking, and targets for improvement. Metrics should be incorporated into accountability programs for the entire health care ecosystem, including medical schools, training programs, health systems, research institutions, and professional societies. Although only 1 dimension of inclusiveness, metrics tied to external accountability with clear expectations, goals, time line, and consequences for inaction are a critical step forward on the path to gender and racial equity in medicine. Using metrics in this manner will provide a tangible and actionable way to track changes in how cultural prototypes of health care leadership are changing and becoming more diverse, equitable and inclusive.

ABBREVIATIONS

BIPOC: Black, Indigenous, and/or people of color
 NASEM: National Academies of Sciences, Engineering, and Medicine
 NIH: National Institutes of Health
 STEM: science, technology, engineering, mathematics, and medicine

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