In this article, the authors review the evolving state of diversity in the field of radiology. The authors discuss several early and recent historical legislative milestones that increased the equitable delivery of health care in the United States, such as Title VI of the Civil Rights Act of 1964, which ensured that funds for Medicare reimbursement would be available only to desegregated hospitals. Furthermore, the authors examine the current state of diversity and representation in radiology, in which underrepresented minorities represent 8.3% of training and practicing radiologists, and women represent 27.8% of radiologists. Finally, the authors present arguments for diversity in the current medical education system, analyze hurdles to increasing representation in radiology, and consider the future of diversity and inclusiveness in the field.

Key Words: Health disparity, physician diversity, legislative milestones, radiology, medical education

INTRODUCTION

The optimal physician relationship is free of bias, discrimination, and barriers to access. Although access to care improved with legislation that discouraged segregation in hospitals, it was not until Medicare and Medicaid that the financial incentive to abolish segregated health care occurred. Although racial discrimination divided patients and their physicians, the status of underrepresented minority (URM) trainees in undergraduate and graduate medical education programs solidified. As racial biases gained attention in medicine, other barriers to care, such as gender, gender identity, sexual orientation, and country of origin, became more apparent. Among major medical specialties, radiology in particular lags behind in URM and female representation among residents, physicians, and faculty members. As the United States moves toward a minority majority society, leveraging incentives to encourage radiology residency programs to recruit these groups and building a physician work force with providers able to provide culturally competent care will be essential.

HEALTH DISPARITY, REMEDIES, AND LEGISLATIVE MILESTONES INCREASING HEALTH EQUITY

The Institute of Medicine defines health care disparity as “racial or ethnic differences in the quality of health care that are not due to access related factors or clinical needs, preferences, and appropriate of intervention” [1]. Provider bias and stereotyping, statistical discrimination (assumption of differing treatment benefit on the basis of race or gender), and geographic and health insurance differences are the major contributors of disparity [2,3].

Today, the status of diversity in medicine reflects the collective responses of social policy and payment movements to reduce bias over many decades. For example, physician advocates, such as Hubert A. Eaton in 1956, fought to reverse medical staff by-law discrimination against black physicians obtaining courtesy hospital privileges in white-only segregated hospitals; future physicians were emboldened to act. Legislative milestones,
such as the Hill-Burton Hospital Survey and Construction Act of 1946, Titles VI and VII of the Civil Rights Act of 1964, and the Social Security Amendments of 1965, laid the foundations for nondiscrimination in the workforce and federal funding of health care delivery, but only to desegregated hospitals (Fig. 1) [4].

Recent key legislative milestones expanded patient access in underserved areas (Fig. 1). In 1976, the Health Professions Educational Assistance Act addressed physician specialty maldistribution and program development through physician incentives with direct federal loan repayment and increased funding to programs such as the National Health Service Corps [5]. In 1994, international residency graduates could obtain special visas to work in the United States, known today in its present expanded form as the Conrad 30 waiver program; under this program, each state’s department of health can sponsor up to 30 international residency graduates to serve in federally designated underserved areas yearly. Underserved communities in the District of Columbia and states such as Wisconsin have benefited from the influx of foreign-trained physicians, though community integration remains a challenge. Although these legislative milestones have differed in their approaches to health equity, they all share in the leveraging financial incentives to enact change [6].

The legacy of these milestones is seen daily, with physicians serving populations of varying ethnicities, races, and national origins, becoming more cultured in the process. An imperfect, but objective, surrogate of diversity is the number of women and URMs in medicine, defined by the Association of American Medical Colleges as “those racial and ethnic populations that are underrepresented in the medical profession relative to their numbers in the general population” [7]. Increasing diversity beyond the demographics of various gender identities and minorities to include individuals of diverse backgrounds, perspectives, and ideas challenges the status quo [8].

Although Titles XVIII and XIX of the Social Security Act made payments to segregated hospitals illegal in 1965, it was not until March 23, 2010, that comprehensive health care was potentially available to all through the Patient Protection and Affordable Care Act [9]. However, despite substantial gains in health care access, whereby approximately 20 million persons across the United States gained health insurance, the future of this law remains unclear, with rising premiums, shortening of the enrollment period, and repeal of the individual mandate [10,11].

THE STATE OF DIVERSITY AND INCLUSION IN RADIOLOGY

The diversity of our patients is not reflected in the physician workforce, a discrepancy that is anticipated to widen as patient populations continue to diversify. The US Census Bureau has predicted that by 2044, more than one-half of all Americans will belong to minority groups; that is, the minority will be the majority [12]. In contrast to these statistics, about 58.8% of medical school graduates are white, 4.6% are Hispanic or Latino, and 5.7% are black or African American [13]. Furthermore, only 4% of full-time faculty members identify as URM women. The diversity discrepancy is more apparent in radiology. In 2010, despite ranking 9th of the 20 major specialties in terms of size, radiology ranked 20th for URM percentage representation (8.3%) and 17th for female representation (27.8%). Women and traditionally defined URMs—defined as blacks, Hispanics, American Indians, Alaskan Natives, Native Hawaiians, and Pacific Islanders—are underrepresented as practicing physicians (23.5% and 6.5%, respectively), faculty members (26.1% and 5.9%, respectively), and diagnostic radiology residents (27.8% and 8.3%, respectively) compared with the US population (50.8% and 30.0%, respectively) [14]. Because diversity positively affects every field of industry, including medicine, these statistics are alarming for the future of radiology.

The successful diversification of faculties starts with recruitment-for-retention measures. Proposed solutions include a committed search committee, URM-focused professional development, cultivation of minority faculty talent, “day-to-day functioning…roles of [URM] faculty in the academic setting,” funding of programs to keep faculty members current, and tenure mentorship. University outreach programs with black and Latino faculty members going into black and Latino communities and health care facilities have also been shown to cultivate retention [15]. Although such efforts represent a sound starting place for increasing diversity among faculty members, programs must go beyond these initial strategies.

ARGUMENTS FOR DIVERSITY AND INCLUSION

Compounding underrepresentation, health disparities related to race, ethnicity, gender, gender identity, socioeconomic class, and sexual orientation riddle the
Fig 1. Timeline for legislative milestones in the promotion of health equity.

1946
• Hill-Burton Hospital Survey and Construction Act required hospitals receiving Hill-Burton funding to treat patients equally regardless of race, creed, or color, though separate, but equal facilities were allowed.

1956
• Despite being lost, Eaton et al v. Board of Managers of the James Walter Memorial Hospital argued that black physicians were discriminated against with denial of courtesy hospital privileges at hospitals that received federal funds.

1963
• Simkins v. Moses H. Cone Memorial Hospital challenged and struck down the "separate but equal" provision of the Hill-Burton Act.

1964
• Civil Rights Act of 1964 Title VI made it so that no program or activity receiving federal funds could discriminate based on race, color, or national origin.
• Title VII of the Act prohibited discrimination by employers, with some exceptions, on the basis of race, color, religion, sex, or national origin.

1965
• The Social Security Amendments of 1965 created Medicare and Medicaid in addition to making it so that only desegregated hospitals could receive federal payments for care delivery.

1976
• Health Professions Educational Assistance Act of 1963 and its amendments went into effect, which set out to increase the proportion of primary care physicians by establishing a minimum percentage of first-year primary care residency positions that must be met nationally for medical schools to retain their eligibility for capitation grant assistance.

1994
• Conrad 30 Waiver program was established, allowing state agencies to sponsor up to 30 international physicians a year for J-1 waivers with the agreement that they work in a federally-designated health professional shortage area.

2010
• The Patient Protection and Affordable Care Act made it so that comprehensive healthcare was potentially available to all legal citizens.
American health care landscape. The landmark 2003 Institute of Medicine report Unequal Treatment noted that racial and ethnic minorities continue to receive lower quality health care in comparison with nonminorities, even when controlling for factors relating to access [1]. For example, although African American women have a lower overall incidence of breast cancer than white women, they are more likely than white women to be diagnosed with cancer at a more advanced stage, have a more aggressive form of cancer, and have higher rates of mortality from breast cancer [16,17]. Here, radiologists can have an active role in recognizing barriers to care in vulnerable populations and acting as agents of change.

Diversification of the health care workforce is one strategy to address health care disparities. It is well established that physicians who identify as URMs are more likely to practice in underserved areas compared with non-Hispanic white physicians [18], and women are also 46% more likely than men to work with underserved populations [19]; thus, health care provider diversity may improve access to health care for the vulnerable and underserved. Further benefit of a diverse physician population is suggested by evidence demonstrating that physician-provider race concordance may improve outcomes for minority patients [20]. Additionally, training within a diverse learning environment prepares non-URM physicians to better serve diverse patient populations [21]. Allowing individuals of various backgrounds to interact with one another fosters familiarity in these interactions, heightening cultural awareness, humility, and competency [22].

Diversity expands patients’ options to select health care providers who best fit their needs. An overwhelming amount of data suggest that patient-provider racial and ethnic concordance can enhance patient-provider communication, patient care satisfaction, and compliance with provider recommendations and better overall health outcomes [23,24]. For example, female patients prefer to have female physicians for breast imaging [25]. Taking into account patient preferences is vital to improving the relationship of trust. Increasing diversity among the health care workforce therefore represents not only a moral and ethical imperative but a practical one as well.

THE RESPONSE IN MEDICAL EDUCATION

The medical profession has moved beyond acknowledging its lack of diversity as a problem to providing solutions as initiatives, policies, and programs that target various points along the educational and medical professional pipeline [26,27]. Undergraduate and graduate medical education is integrating cultural competency and diversity into formal curricula. Accreditation organizations, namely, the Liaison Committee on Medical Education (LCME) and the ACGME, incentivize diversity through LCME standards 3.3 and 7.6, which directly outline nationally accepted standards of education quality in areas of diversity, inclusion, and cultural competence. Standard 3.3 expects “effective policies and practices in place, and engages in ongoing, systematic, and focused recruitment and retention activities, to achieve…diversity outcomes among…relevant members of its academic community.” Standard 7.6 requires that curricula develop “solutions for health care disparities” and recognize “the importance of meeting the health care needs of medically underserved populations” with cultural competency. Such systematic, clear, and ongoing mandatory evaluation by medical schools improves representation in undergraduate medical education [28].

However, medical schools experience varying levels of success regarding the recruitment and graduation of students from underrepresented backgrounds. Historically black medical schools, unsurprisingly, have the most success here; 70% to 85% of their medical school graduates are composed of URMs, compared with the national average of 13.5% [11].

To target students before medical school, a commonly used strategy has been the development of health care pipeline programs, in which students of diverse backgrounds interested in medicine are recruited and provided with tools to advance through the pipeline stages to become successful physicians. Successful programs, such as the Virginia Commonwealth University Health Sciences and Health Careers Pipeline, are continuous pipeline programs, rather than isolated ones, and have critical buy-in from their institutions and partners. Here, recruitment of URM middle school to college students occurs through multipronged approaches, including longitudinal academic and clinical skills workshop series, summer enrichment experiences, and mentorship programs [29]. Continuity and collaboration among partnering schools, from middle schools to graduate health sciences schools, are key components of continuous pipelines.
HURDLES TO INCLUSION IN RADIOLOGY AND SUCCESSFUL INITIATIVES

Although these strategies enjoy variable success in increasing diversity among medical students, they have been limited in their ability to diversify the radiology workforce. URMs and women are disproportionately underrepresented in radiology compared with other specialties [13]. The small URM applicant pipeline pool suffers from a “leaky pipeline”: URMs complete medical school but do not pursue radiology [30]. The attrition of diversity from medical school to residency may in part be influenced by the lack of diversity requirements that residency programs are expected to meet. ACGME common program requirement IV.A.5.e.5 expects residents to demonstrate “sensitivity and responsiveness to a diverse patient population.” Requirement VLA1.b expects residents to receive training in health care disparities and engage in quality improvement activities aiming to reduce them [31]. Compared with the LCME’s standards, the ACGME’s common practice requirements for cultural competency are less systematic and suffer from considerable ambiguity. This may be counterproductive for specialties that have fallen behind with regard to female and URM representation relative to others.

The ACR recognized this alarming demographic trend and established the Commission for Women and General Diversity in 2013. Through this commission, the ACR created the Pipeline Initiative for Enrichment of Radiology mentoring program, which aims to increase URM medical student exposure to radiology and preparation for residency. Here, they formed the Committee on Diversity and Inclusion and the Committee for Women and put forward a series of steps to achieve the goals of increasing representation in radiology. Importantly, they promote the need for engaging students from medical school to grade school and building enthusiasm for radiology and medicine. Among other initiatives, they also urge radiology residency programs to track the percentage of female and URM applicants to mitigate unconscious bias, while providing more accountability for programs [32].

The ACR is not alone in its attempt to change the face of radiology. Among others, radiology leaders at Vanderbilt University Medical Center (VUMC) established their Office for Diversity, Equity, and Inclusion within the radiology department, the first of its kind among US radiology departments, with the mission statement “to foster a department that embraces diversity of backgrounds, experiences and perspectives as a stimulus for: innovation and problem solving, achieving excellence in education, research and scholarship, achieving equity in patient care” [33,34]. In pursuit of its vision of fostering an inclusive and diverse radiology department, the office focuses on three key areas: radiology residency recruitment, faculty enrichment, and women in radiology. Since the office’s creation, the VUMC radiology residency program has increased its pool of URM applicants from 7.5% in the 2012-2013 cycle to 13.5% in 2017-2018 and is projected to surpass 16% in 2018-2019. Additionally, over a 2-year span, VUMC demonstrated an increase from 30% to 39% in female faculty radiologists, much higher than the national average of 21% [31]. Although these results do not indicate completely equitable representation, they demonstrate the impact of making diversity and inclusivity a priority and allocating resources to the problem.

INCENTIVIZING INCLUSION AND LEVERAGING THE “HIDDEN CURRICULUM”

Although academic institutions and medical societies may sponsor inclusiveness initiatives and policies outlined by the ACGME and LCME for accreditation, the culture their faculty members and students create and propagate may counter such policies. The “hidden curriculum” is a well-defined concept in medical education, described as a socialization process through which norms and beliefs implicitly are passed down outside of formal teaching [35]. Paradoxically, the hidden curriculum has the potential to propagate stereotypes, such as the radiologist stereotype of being an isolationist shunning patient interactions. A study that analyzed medical students’ perceptions of radiology found that these stereotypes were more likely to be reinforced through informal interactions [36]. These perceptions are aversive, driving away women and URMs, who have been shown to place high value on interactions with the communities they serve. These perceptions represent a subsection of consequences of the well-described “invisibility factor” in radiology. The ACR and RSNA both recognize this phenomenon as a threat to the profession [37], and initiatives such as Radiology Cares and The Face of Radiology promote engaged radiologists with their communities through volunteering, advocacy, education, and meeting their patients [38].

Radiology residency programs promoting themselves as “community focused” and “patient centered”
may attract more female and URM applicants. Currently, there has been no research in this area. Moreover, external recognition by accreditation societies, such as the ACGME, or specialty societies, such as the ACR or RSNA, could subsidize, promote, and award special certification to programs designated as “patient centered and community focused” after meeting certain standards. Restructuring financial incentives to physician leaders and programs with a community focus could be an effective measure to improve health equity [18]. In this way, radiology residency programs could be incentivized to leverage the potential influence of the hidden curriculum in a healthy way by creating a more humanistic culture that truly values patient satisfaction through direct interaction and community involvement [39,40]. Further research that studies the impact of applicants’ perceptions of radiology residency programs on their ability to recruit diverse applicants is warranted.

SUMMARY
Despite the gains in health equity made in the past 80 years through prior legislation, there continues to be room for improvement. In the pursuit of a more equitable health care delivery system, a diverse workforce that reflects the population they serve is critical. Radiology particularly possesses potential for growth in terms of the low proportions of women and URMs who are currently training or practicing radiologists. To successfully continue the work being done to address this issue, we must understand the current state of affairs, appreciate the value of diversity, learn from our gains, and leverage financial and social capital to improve representation.

TAKE-HOME POINTS
- Early increases in health equity would not have been possible without the financial incentives provided by legislative milestones.
- Diversifying the radiology workforce can address health disparities of an increasingly diverse patient population, such as increased time to diagnosis and treatment.
- Emphasizing positive aspects of the formal and hidden medical education curricula can help recruit and retain promising diverse talent.
- Additional ACGME, ACR, and RSNA recognition and funding will incentivize these programs and approaches.

Future directions for research should include recruitment and retention programs for women and URMs in radiology by external perceptions of radiologists as patient-centered and community-focused physicians.

REFERENCES


