

Just in TIME: Trauma-Informed Medical Education

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Abstract

Numerous organizations implement a trauma-informed approach. This model assists institutions in providing care and education that delivers support to members who have undergone traumatic experiences, and many institutions apply the principles as a universal precaution. Student and trainee experiences in medical education reveal a hidden curriculum that may deliver conflicting messages about the values of an institution, in which equity is promoted, but biased and discriminatory practices are commonplace. Implicit racial bias has been identified in the patient-provider interaction and may also extend its impact on the learner experience. Bias and discrimination inflict trauma on its targets via emotional injury. Applying the principles of the trauma-informed approach, we advocate for trauma-informed medical education (TIME). TIME fosters awareness that students and trainees can experience trauma from a biased system and culture and advocates for the establishment of policies and practices that support learners to prevent further re-traumatization. TIME will serve as a means to deliver just and equitable education.

Keywords Trauma-informed · Medicine · Education · Implicit bias · Unconscious bias · Racial bias · Racism · Discrimination

The clinical learning environment demands a trauma-informed culture. A trauma-informed approach is advocated in the fields of health care [1, 2], education [3], social services [4], law enforcement [5], and many others as a way to understand and attend to individuals affected by traumatic experiences. A critical aspect of the model is to acknowledge that trauma shapes an individual's experience, and organizations

that deliver care and provide education must be attuned to these experiences to interact and collaborate in a way that is culturally sensitive, transparent, establishes rapport, and empowers its members. Trauma is defined as an event or a set of circumstances that are physically and emotionally harmful, can be life-threatening, and adversely affects how individuals function in society, ultimately affecting their mental, physical, social, emotional, and spiritual health [6].

At the institutional level, it is difficult to determine who has experienced trauma; therefore, trauma-informed principles are implemented as a universal precaution [7]. At the individual level, the approach does not require that others know the type of trauma endured. Instead, they operate on a set of principles to create a supportive environment [2], and an individual's ability to provide and maintain a trauma-informed approach is contingent on their well-being. Four essential components serve as the foundation of the trauma-informed approach and implore organizations to (1) realize the extensive impact of trauma; (2) recognize the signs and symptoms of trauma; (3) respond by fully integrating knowledge about trauma into policies, procedures, and practices; and (4) resist re-traumatization [6].

To understand why a trauma-informed approach is an essential and necessary change in medical education, we must first understand that the learner's experience of bias and discrimination in medical education is a traumatizing experience

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that inflicts emotional injury. The implicit racial bias taking place in the patient-provider relationship in medicine may also extend its impact to affect the student-instructor relationship in the learning environment. Students and trainees can also experience bias and discrimination inflicted by patients and their families. Finally, the experience of bias and discrimination elicits measurable physiologic changes to affect health and well-being. As medicine makes progressive strides towards inclusion, it is crucial to recognize that institutional and organizational change is essential to overcome this subversive threat to the integrity of medical education.

A Hidden Curriculum

To obtain a medical education is a highly coveted achievement, and less than half of medical school applicants matriculate [8]. The path is arduous and divided into milestone achievements as one navigates through undergraduate studies in medical school, graduate education in residency and fellowship training, and continuing medical education as a practicing physician. Many espouse a commitment to service as a primary motivator to pursue this career, and the ongoing need to care for the underserved, the aging population, and those affected by the current pandemic is only an example that underscores the demand. Medical training offers more than just a formal and standardized education; it also educates the learner in lessons about life and self. Learning ensues in formal and informal instruction, the latter of which allows the socialization process known as the hidden curriculum to arise, impacting learners' values. The hidden curriculum conveys messages as it relates to beliefs, values, attitudes, and behavior [9]. Often referred to as the "culture of medicine," it is not explicitly taught and is consequent of an organization's customs and structure. Contradictory messaging is not uncommon [10], and it may even convey bias and discrimination, while formal instruction promotes equity [11]. These inconsistencies are not inconsequential in a field where a review of history and current conditions reveals that discriminatory practices carried out in society are also reflected in medical treatment to affect patients and in medical education to impact learners.

A Long History to Inclusion

The adage remains true that in order to understand where we are headed, we must understand where we have been. As individuals, underrepresented racial and ethnic minorities in medicine may have a personal account of adversity in their pursuit of achieving a medical education. Nevertheless, it is the unique experience of Black Americans as a collective who have a well-documented history of denial of access to medical

education, operationalized via the color line in medicine, that further warrants discussion. Black Americans were systematically denied admission to White medical schools, and few were permitted admission in most of the country during the late nineteenth century and the beginning half of the twentieth century. This discriminatory practice was exacerbated by the lack of Black clinicians to care for ailing Black patients who were less likely to be cared for by White physicians [12].

Between 1868 and 1904, seven medical schools were established to educate and train Black physicians. Two of which produced the majority of Black doctors during that time [13]. After the 1910 publication of the Flexner report resulted in widespread closures of over half of US medical schools, only two institutions remained to produce the Black physician workforce to care for an underserved population of 10 million [14]. They would remain the predominant institutions to educate three-quarters of the nation's Black physicians for the next 50 years [15]. In the 1960s, the civil rights movement galvanized widespread awareness of the racial injustice experienced in America, efforts that would prompt US medical schools to actively recruit Black students. Finally, it would take until 1966 until Black students were admitted to all US medical schools [16]. Today, the repercussions of this report are still felt. In 2018, Black physicians made up just 5% of the physician workforce [17], and a crisis of Black men in medicine remains [18, 19].

The report, sponsored by the Carnegie Foundation, was initiated at the request of the American Medical Association (AMA). While it is heralded as a landmark report that established medical education standards, it also reinforced unequal medical education for Black Americans. Flexner supported the coeducation of men and women but advised that Black students should receive different and segregated training to merely serve their race as "sanitarians" [20]. Black Americans were viewed as a source of disease and infection. He advised Black medical graduates to leave larger cities to serve their own in villages and plantations to teach and maintain hygienic practice and sanitation to decrease the disease burden in Black populations, ultimately intended to curtail disease spread to White populations. The Black physician was not encouraged to pursue academic leadership, research opportunities, and the practice of surgery [16].

Systematic discrimination reinforced through policies and practice was widespread. The AMA was established as the national medical association in 1847. There is a unique history between the AMA and Black physicians that dates back to 1868 when the consideration of race in admission to the society was first introduced. From 1870 to the late 1960s, the AMA resigned to inaction, which permitted affiliated state and local societies to exclude membership based on race, subsequently excluding most Black physicians from AMA membership. The denial of membership to a medical society impacted professional and career advancement, affecting

training opportunities, admitting privileges to hospitals, and board certification. In response to racial exclusion, the National Medical Association (NMA) was established in 1895 for Black medical professionals [21]. The AMA listed Black physicians as “colored” in the national physician registry, and this practice remained until the NMA adamantly protested this designation. The AMA was also culpable in not demonstrating support to oppose the “separate but equal” exception in the Hill-Burton Act of 1946 that permitted the allocation of federal funds to construct segregated hospitals. They did not publicly voice support of the Civil Rights Act of 1964 [20]. In 2008, 140 years later, the AMA apologized for its participation in the discriminatory practices that greatly affected Black physicians, their patients, and communities [22].

Defining Racism

While the impact of one’s race has historically rendered lasting economic, social, health, and political outcomes in the USA, the term racism was not formally used and described until the late 1960s. Racism is defined [23] as the use of power directed against racial groups that are characterized as inferior by individuals and institutions; such beliefs are then reflected in policies and procedures and supported either intentionally or inadvertently by the dominant culture. According to the race-based traumatic stress injury model [23], racism is a form of stress that impacts the mental and physical well-being of the affected. Racism induces emotional injury and pain that results in trauma, a marked distinction from post-traumatic stress disorder in which the experience is a life-threatening event. It can, however, create psychological injury and damage to personality just as one would experience such injury due to enduring psychological torture, being held captive, and exposure to community violence. The forms of racism may vary and include racial discrimination, an avoidant form that includes exclusion, withholding information, and deceptive practices. Racial harassment is a hostile form of racism that encompasses verbal and physical assault and an assumed status of criminal or dangerous. Discriminatory harassment is an aversive-hostile form of racism in which one can be isolated at work, denied a promotion, and one’s qualifications are questioned. Racism is a negative experience, often memorable, can be sudden, and is an uncontrollable experience for the target. As a consequence, the personal effects reflect the experience of injury and include increased vigilance, flashbacks, memory loss, inability to concentrate, depression, withdrawal, and guilt.

Racism is a contributing factor to the poor health outcomes in Black Americans [24]. It is an omnipresent threat that impacts clinical decision-making and has historically created barriers for Black Americans to obtain an education in the health professions.

Implicit Racial Bias

Achieving health equity is ideal, but our current health care system has systemic barriers and practices that impede these efforts. Racial and ethnic minorities receive a lower quality of health care as compared with Whites, and these disparities persist after accounting for access-related factors [25]. Discrimination impacts at the organization level and the patient-provider level. It manifests as disparities in care due to bias, clinical uncertainty, and stereotyping. There are widespread and influential socialization processes taking place, causing bias to emerge even in the well intentioned. Those who do not believe they are prejudiced can exhibit implicit negative racial attitudes and stereotypes that unconsciously affect actions and decisions. A systematic review [26] assessing implicit racial and ethnic bias in health care providers with the implicit association test found that the majority of providers have a preference for Whites and bias against Blacks. Furthermore, those that demonstrated stronger pro-White implicit bias also displayed poorer patient-provider communication. Overall, Black practitioners were more likely to demonstrate minimal to no implicit bias compared with Whites and other minority practitioners.

Studies using clinical case vignettes reveal differences in provider treatment management. Black women were significantly less likely to be referred for cardiac catheterization than White men with identical clinical presentations [27]. Medical students assigned lower value to a health state presented by a Black woman as compared with the same health state presented by a White man [28]. Also, students were less likely to provide a diagnosis of definite angina for a Black female patient compared with a White male patient who presented with an identical case presentation. Another study revealed that an increase in White preference bias correlated with a greater likelihood of treating White patients with thrombolysis for myocardial infarction and not treating Black patients with thrombolysis for the same diagnosis [29]. Furthermore, racial bias in pain management is well-documented and perhaps more likely to occur in cases where one endorses beliefs in biological differences between Blacks and Whites [30].

Just as the provider’s implicit racial bias is operationalized in the patient-provider relationship, implicit bias may also impact the student-instructor relationship. There is concern that providers’ implicit biases are also manifesting in their interaction, instruction, and evaluation of medical students and residents. A study that assessed implicit bias among members of an admissions committee at one US medical school found that men, women, students, and faculty exhibited significant implicit pro-White bias. White preference was highest in men and faculty and lowest in women. The magnitude of faculty members’ implicit White preference was two times greater than that of the medical students’ implicit White preference [31]. Alpha Omega Alpha (AOA) membership

selection may be prone to bias. One study found that after controlling for demographic and educational factors, AOA membership for White medical students was almost six times greater than that for Black medical students and two times greater than that for Asian medical students [32].

Experiences in Education

Students and residents perceive differential treatment in their experiences. There are reported differences in medical education experiences between underrepresented minorities in medicine (Black, Latinx, Native American) and their White counterparts as well as gender differences in experience. Underrepresented groups and women reported that their overall medical school experience was affected by their race or gender. Both groups also reported the need to be better than others to be treated as an equal, issue finding mentors and role models for career development, and reported that their gender or race affected the careers they were encouraged to pursue [33]. An analysis of 2016–2017 data of self-reported mistreatment by US medical students found that women, underrepresented minorities (American Indian, Alaska native, Black, African American, Hispanic, Latino, Spanish, Native Hawaiian, or Pacific Islander), Asian, multiracial, and LGB (lesbian, gay, bisexual) students reported disproportionate experiences of mistreatment [34].

Underrepresented minority residents report additional burdens in their training secondary to their race and ethnicity. They experience microaggressions and are resigned to being a race or ethnicity ambassador [35]. An analysis of a 2019 survey taken by general surgery residents nationwide found that 70% of Black surgical trainees reported discrimination during residency, the highest rate among all racial groups assessed. Reported types of discrimination included different standards of evaluation and denied opportunities by attending physicians, social isolation from colleagues, mistaken for a nonphysician by patients and families, mistaken for another person of the same race by nursing and ancillary staff, and hearing racial slurs and hurtful comments most commonly perpetrated by patients and their families [36].

The medical school experience is often challenging, and students may be at risk for adverse effects on their mental health. One study found that, at the beginning of medical school, Black medical students were at a higher risk for depression and anxiety than their White counterparts. A similar finding emerged based on gender in which female medical students were at a higher risk for depression and anxiety than their male counterparts. While Black women had similar levels of social support compared with their White male and female counterparts, Black men were at the highest risk for lacking social support [37]. Black male medical students acknowledged that stress related to race negatively impacted their academic performance, physical and emotional

health, and overall medical school experience. They did, however, identify coping strategies that included bonding with peers and spiritual support [38].

Allostatic Load

Allostatic load is the resultant wear and tear on the body as one repeatedly adapts to stressors [39]. The experience of bias and discrimination is an environmental stressor that may cause one to anticipate the experience of a threat prompting increased vigilance to cope, resulting in physiological changes in the body. A study that assessed an association between race consciousness, in which one thinks about their race, and its impact on blood pressure found that race consciousness among Blacks was associated with higher diastolic blood pressure [40]. Blacks were also found to have higher inflammatory signaling, and stress-related neuroendocrine signaling than Whites, a difference that the authors suggest may be associated with experiences of racial discrimination [41]. In a study that assessed whether Black Americans experienced early health deterioration by measuring biological indicators of stress found that Blacks had higher mean allostatic load scores than Whites at all ages. These findings were not explained by racial differences in poverty [42].

Trauma-Informed Medical Education

The rise of cultural competence education emerged in the wake of a diversifying population with programs implemented throughout US medical schools [43]. Learners receive training to recognize and manage unconscious bias [44]. A cultural shift has occurred, and there is a measurable increase in Black, Hispanic/Latinx, and female medical student matriculation to US medical schools. This change was found to have some association with the implementation of the Liaison Committee on Medical Education (LCME) diversity accreditation standards established in 2009 [45]. Nevertheless, our discussion highlights that there is more to do. The strides made to increase health care workforce diversity are high priority. However, such efforts are less effective if cultural practice conveys exclusion in spaces intended for inclusion.

Trauma-informed medical education (TIME) fosters awareness that students and trainees can experience trauma from a biased system and culture and advocates for the establishment of policies and practices that support learners to prevent further re-traumatization. It can be implemented on the individual level and throughout institutions to foster change in spaces where learners engage, from the lecture hall to the hospital ward. TIME is governed by the four Rs: realize, recognize, respond, and resist. The first step in addressing a problem is to realize that one exists and institutions must first

Table 1 The four principles of trauma-informed medical education (TIME) for the individual and the institution

	Individual	Institution
Realize	Acknowledge bias and discrimination as relevant and current issues in medical education. Consider one's role in either opposing or reinforcing this practice	Acknowledge bias and discrimination as relevant and current issues in medical education. Consider the institution's role in either opposing or reinforcing this practice
Recognize	Recognize one's bias. Individuals may take implicit association tests to identify their implicit bias	Utilize reporting to systematically measure instances of bias and discrimination via an institutional surveillance system
Respond	Employ implicit bias reduction strategies	Institute policies and procedures that counteract bias and discrimination
Resist re-traumatization	Hold oneself accountable to resist reinforcing biased and discriminatory practices	Implement strategies that mitigate bias and discrimination as a universal precaution. Mandate corrective action for those in violation of established practice

understand that issues surrounding bias and discrimination remain current (realize). If organizations are encouraged to diversify, they must also acknowledge that minority groups may be recruited into an environment where the dominant culture does not align with contemporary standards for inclusion, and this discordant reality can emerge in all facets of institutional practice. Reports of learner mistreatment and discrimination should be actively investigated to identify and systematically measure its occurrence through mediums such as reporting (recognize). Measurable change does not occur without deliberate action, and policies and practices must change accordingly to align with stated values (respond). All stakeholders must resist re-traumatization by first receiving education on the matter to understand problematic behaviors and actions, implement strategies to mitigate bias as a universal precaution, and be held accountable by the system in instances where the discriminatory practice continues (resist). Implementing TIME will aid institutions in achieving a just and equitable culture.

Addressing implicit bias is a critical issue in medicine. Education in implicit bias is emerging in academic institutions [46], and TIME is an essential addition to this burgeoning field. A mandated and formalized TIME curriculum should be established in undergraduate and graduate medical education to affect change. Individuals and institutions should understand their role in adhering to the principles of TIME (Table 1). TIME's formalized curriculum may include a historical review of discrimination in medical education, a review of the current literature related to bias in medicine and medical education, strategies to identify bias, and mechanisms to reduce bias at the individual and institutional level [47]. TIME adds another component to implicit bias mitigation by prioritizing a reduction in the traumatic impact of bias and discrimination on its targets. This view personalizes the experience and allows individuals to understand that their actions can personally affect others, an essential consideration for those who have dedicated their lives to the practice of healing.

Conclusion

In medicine, we have learned that when adverse events and mistakes occur, we must analyze and assess the system [48]. We identify and address the systemic flaws that contributed to the outcome, and while individual accountability is important, it is critical to understand that individuals operate within institutions. The same principle is encouraged in TIME. Individuals have bias, but when biases are invoked to affect action, it cannot continue unchecked by the system, and if it does, it signifies a system failure. If an individual is unable to maintain a standard of practice, the institution should enact corrective action policies. Furthermore, those who have experienced trauma in medical education are not personally responsible for what is imposed on them and neither should they be viewed as frail and weak. Therefore, targets of bias and discrimination should be equipped with strategies that extend beyond personal coping and resiliency, and they must recognize that they are immersed in a system that, historically, has not valued inclusion. Today, diversity and inclusion are encouraged, but the hidden curriculum has taught us that an organization's culture may espouse one message while practicing another. Trauma-informed medical education will equip institutions with the means to foster a culture of inclusion to protect their learners; such benefits will be perceived throughout medical education for students, instructors, and patients alike. We advocate for TIME as a means to promulgate social justice, a much-needed strategy that has come just in time.

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Compliance with Ethical Standards

Conflict of Interest The authors declare that they have no conflict of interest.

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