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CASE AND COMMENTARY: PEER-REVIEWED ARTICLE
How Should Clinicians Respond to Race-Based Algorithms as Sources of Iatrogenic Harm?

Madeleine (Maddy) Kane, Rachel Bervell, MD, MS, Angela Y. Zhang, MD, and Jennifer Tsai, MD, MEd

Abstract

Some clinical algorithms use race as an epidemiological shorthand to "correct" for health determinants that are clinically influential but also variable because they are historical, social, cultural, or economic in origin. Such "correction factors" are both clinically and ethically relevant when their use reinforces racial essentialism and exacerbates racial health inequity. This commentary on a case in which the original vaginal birth after cesarean calculator is used argues that this and similar race-based algorithms should be considered sources of iatrogenic harm by undermining decision sharing in patient-clinician relationships and Black birthing peoples' rights to self-determination.

Case

Dr OB is a resident physician in a high-volume obstetrics unit at a county hospital serving predominantly Black and urban Indigenous community members. Like other resident physicians, Dr OB often uses a mobile phone application to calculate, via algorithm, vaginal birth risk for birthing people who have delivered a prior child via cesarean section (C-section).[1] This vaginal birth after cesarean (VBAC) calculator has 2 race-based correction factors.[1] Scores yielded by the calculator are used to inform clinical management decisions—specifically, about which delivery options to offer patients in the unit—and to motivate standard of care. For individuals who have delivered by C-section before, the score is clinically and ethically important, since vaginal delivery complication risk for a person who has had a C-section is lower than C-section delivery complication risk for a person who has had a C-section. Strangely, though, Dr OB notices that most patients in the unit who have had a C-section are not offered an option to attempt labor and vaginal delivery.

Dr OB enters a patient's race as White instead of Black a few times and notices score changes substantial enough to influence whether a patient who has had a C-section will be offered an option to try labor and vaginal delivery. Dr OB wonders about the validity of

the VBAC calculator's "correction" factors in light of such starkly different results based on how a clinician perceives and enters a patient's race.

Given C-sections' higher risk of morbidity and mortality and of longer stay in the intensive care unit,[2] Dr OB worries that patients of color in the unit are more frequently exposed to higher-risk deliveries than White patients. Structural determinants of health, such as systemic racism, which are independent risk factors in maternal mortality and morbidity[3] when other factors such as socioeconomic status[4] are controlled for, are widely documented as exacerbating racial health inequity. In light of long-standing high rates of maternal mortality in the United States[5] compared to other high-income countries, and in light of Black patients suffering stark inequity in childbirth-related mortality within the United States,[6] Dr OB wonders what to do.

Commentary

The trial of labor after C-section (TOLAC) decision should be a clinically nuanced and patient-centered process that balances the increased mortality and morbidity risk associated with VBAC with the major surgical risk of repeat C-section. As Dr OB notes, racial inputs to the original VBAC calculator significantly alter risk assessment and can be used to systematically route Black and Latine patients towards repeat C-sections at higher rates than White patients. (We use the term "Latine" as a gender-neutral form that was developed within Latine/Hispanic communities to describe people of Latin American and/or Spanish descent.[7,8]) For example, for patients with matched profiles (eg, 28 years of age, body mass index of 26, and "prior indication for cesarean"), a White patient would have a 61.6% chance of successful VBAC, whereas a Black patient would have a 45.1% chance of successful VBAC and a Latine patient, 44.9%.[1] Of note, the original VBAC calculator lacks definitions of (and distinctions between) racial and ethnic identity. Physicians are further unable to select "yes" for both African American and Hispanic, creating conundrums for biracial, multiracial, and Afro-Latine individuals.[1]

Choosing between a C-section or vaginal delivery can be deeply personal, and both options come with benefits and risks. Adverse C-section outcomes include protracted hospital stay, increased financial costs, and poorer patient outcomes.[1,2,9,10] Moreover, TOLAC increases risk of uterine rupture (though absolute risk remains low) and morbidity from repeat C-section after a failed TOLAC[11]; long-term concerns after vaginal birth include urinary incontinence, uterine prolapse, and pelvic pain.[9]

The race-based VBAC calculator, however, does not address racialized inequities in childbirth-related morbidity and mortality. It instead embeds multiple invalidated assumptions and omits critical nuance, and its use risks removing patients' exercise of their autonomy in an informed decision on method of delivery. Race is either falsely assumed to be an immutable biological characteristic or implemented as an overly imprecise proxy for the lived consequences of structural racism. Ultimately, this unscientific rationale places patients of color at disproportionate surgical risk, which is discriminatory and causes iatrogenic harm. Accordingly, the VBAC calculator was recently revised[12] to remove race (though the new calculator's implementation is still ongoing). The use and reform of the race-based VBAC tool demonstrates the necessity of critical inquiry in shifting to a race-conscious paradigm emphasizing racism-based structural determinants of health.[13,14,15,16]

Unscientific "Corrections": Structural Racism in Health Care

Racial categorization is a historical, imperial, and erroneous enterprise. While human difference has long been scrutinized, hierarchical racial organization of humans originated from colonial efforts to subjugate people of color.[17] Medical professionals published pseudoscientific racial rankings, baldly motivated by economic gain, White supremacy, and racist colonial agendas.[17,18,19] Bolstered by the authority of Western biomedicine, dehumanizing conclusions about racial inferiority were widely adopted in medical scholarship and served as foundations for racial adjustments. Race was thereby operationalized as an immutable, physiological trait despite lack of evidence of a genetic basis.[18,20,21]

Furthermore, medical education presumes that the typical patient is White (and often able-bodied, slim, and cis-male).[18,22,23,24,25] This logic frames people of color as abnormal human variants, whose manifestations of health and illness require "corrections." Using tools with race-based corrections can lead to delayed care, unequal treatment, and personal and systemic biases.[15] Fundamentally, it is unscientific and unethical to correct for race in any clinical algorithm.

Muddying Causality

Importantly, biological essentialism frames racial genetic variation as the source of health inequities, despite ample evidence demonstrating that structural racism is a major contributor to health injustice.[3,13,20,21,26,27] Nonetheless, extensive resources are allocated to investigate how genetics contributes to racial differences in disease rates and mortality, while funding for investigations that seek to examine and address the social realities that beget unequal health remains sparse.[28,29,30] This funding disparity leads to low-quality scholarship that prevents and muddies broader comprehension while overlooking opportunities to unravel the complex threads of structural power that bar patients of color from healthier lives.

Interdisciplinary scholarship has identified key intersecting drivers of inequities ranging from life-long toxic exposures, epigenetic and hospital-level risk factors, and the impact of structural racism.[3,31] For instance, the authors of the original VBAC calculator analyzed but did not include insurance status,[1,32] which is associated with successful VBAC for privately insured patients.[33] Because structural racism causes access to private insurance to fall along racial lines,[34] utilizing race but not insurance in VBAC possibly exacerbates bias. Using race as a stand-in for such interlocking factors is an overly crude tool in research on root causes of childbirth disparities and morbidity and mortality, let alone in nuanced clinical decision making to address such suffering.

Layered Harms

As discussed above, the unscientific use of race causes patient harm by systematically increasing risk for Black and Latine patients. It also reinforces racist notions by casting birthing people of color as fundamentally different from White birthing people, echoing racist medical legacies that ascribed differing pelvic anatomy and reproductive "fitness" to Black and Latine patients.[1] Using race thus perpetuates medical othering without elucidating actionable factors of VBAC disparities.

Neglect of patient autonomy and consent is another source of harm. Fundamentally, physicians must inform patients of the risks, benefits, and reasonable alternatives (including no intervention) to make their own decision.[35] Although the American College of Obstetricians and Gynecologists recommends implementing shared decision making

for VBAC,[11] the determination and application of race is often done without patient knowledge, let alone patient input or consent. This neglect of patient autonomy reenacts historical legacies of medical disenfranchisement in communities of color, highlights physician paternalism, and infringes upon basic patient rights. Rather than assigning race or engaging in "colorblind" medicine that disregards race and racism, clinicians should prioritize respect for autonomy and shared decision making to enable race-conscious medicine that emphasizes racism.[14] This approach should facilitate transparent discussion of patient values and preferences about TOLAC in the context of the effects of structural racism on their bodies, environments, and hospital care.

It is also necessary to consider the harm of the unscientific use of race to clinicians and the greater society. Teaching clinicians to believe in the fundamental biological inferiority of non-White bodies creates inappropriate, harmful, and unscientific clinical practice. Such a belief renders invisible the toll of structural racism, hinders shared decision making and health equity, and exacerbates injustices that plague already-oppressed populations. Clinicians and trainees of color often bear "chronic minority stress" and can be additionally harmed by internalizing false bioessentialist claims.[36]

VBAC as a Justice Catalyst

Structural justice requires that health care organizations "acknowledge and work to reduce the inequities in society."[37] A structurally just algorithm would prioritize upstream causes of social inequity that can be readily defined, measured, and addressed (eg, insurance status). Critically examining race-based instruments disrupts structural racism's power. Although race-based adjustments seem to address racial disparities, they perpetuate damaging bioessentialist perspectives of race, are fundamentally nonspecific because they do not define or capture clinically meaningful variables, and intrinsically reinforce White supremacy to our patients' detriment. When race-based tools perpetuate health inequities and cause potential iatrogenic harm, we must then practice race-conscious medicine that emphasizes structural justice by analyzing disparities' root causes and materially addressing them.

While African American and Latine patients have decreased rates of successful VBAC in comparison to White counterparts, this disparity is not because of their genetic code but because of historical and contemporary inequities, as the toll of COVID-19 attests.[38,39,40,41] In this respect, race certainly still matters. As social inequities regarding insurance, access to care, educational level, and financial support also affect rates of successful VBAC, these factors could be explored during prenatal care or family planning to more precisely redress inequities.[1] Shifting to race-conscious medicine that emphasizes racism (which requires working with advocates, system-level administrators, and community organizations; addressing the structural justice and societal-level circumstances; and critically examining childbirth-related morbidity and mortality) represents a better and more concrete step towards redressing structural racism. Because no individual clinician can compel these reforms, collaboration is crucial.

In the meantime, clinicians should eschew racialized corrections in individual practice and instead name racism—not race—as a marker in health inequities. Continuing education on race, racism, and race-based medicine is necessary. We invite clinicians to thoughtfully reflect on *What happens if I remove this race adjustment? What factors of social injustice are contributing to this assessment? What additional factors may be relevant?* Such queries remind us that unilaterally assigning race based on phenotype or participating in colorblind medicine (ie, ignoring race) are baseless behaviors. Rather,

firmly repositioning patients as the foremost experts on their illnesses, histories, and lives bolsters shared decision making and patient autonomy. These shifts can improve patient discussions and encourage clinical practice tools to incorporate markers of structural violence while helping clinicians make thoughtful and informed clinical decisions.[14,42]

Creating alternatives to racial categories will require significant effort. Professional organizations must reform race-based guidelines, and researchers across allied health fields must innovate and implement measures of structural harms. Institutions must also address the time and financial pressures in clinics, which reward heuristics and limit clinicians' ability to have nuanced, structurally informed encounters. These constraints most affect underserved patients, whose social realities and resulting comorbidities often require time-intensive efforts to address in order for clinicians to confer high-quality care.

Although there are significant obstacles to race-conscious medicine that emphasizes racism, we remain hopeful about progress. We have witnessed recent professional consensus eliminating race-based corrections in VBAC and kidney function tests,[11,43,44] and we are inspired by new research demonstrating racism as a cause of downstream factors that contribute to preterm birth.[45] These advances have been achieved through collaboration and tireless advocacy and should be a blueprint for the reform of other tools.

Recommendations
In sum, we recommend that clinicians engage in transdisciplinary collaboration to do the following[26]:

1. Acknowledge harms of race-based medicine and continue to critically reflect and question tools that essentialize identity.

2. Incorporate racism's influence in practice guidelines and tools.
    a. Explicitly name racism and partner with affected communities.
    b. Measure specific and modifiable markers of risk (eg, insurance coverage, incarceration).
    c. Use existing or innovative tools to evaluate structural vulnerability; these measures should be fluid and dynamic, reflecting the mutable nature of social forces.
    d. Establish transparency by specifying how and why racial and ethnic data were gathered and used in research and clinical tool development.

3. Address the diversity of lived experience, especially in oppressed populations.
    a. Invite patient-centered conversations to strengthen shared decision making and patient autonomy.

4. Advocate as a profession for structural measures that advance health equity.
    a. These include living wages, universal insurance coverage, access to affordable housing, and quality education.
    b. Within allied health fields, address the recruitment and retention of more trainees of color.

We suggest implementing these recommendations in transdisciplinary collaboration within and beyond academic health care settings.

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Madeleine (Maddy) Kane is a medical student at the UC Berkeley-UC San Francisco Joint Medical Program and a co-founder of the Institute of Healing and Justice in Medicine, a national grassroots group organizing people across the allied health fields and broader community to create a healing and just health care system. Their work centers antiracism, migrant justice, and bringing broader conceptions of healing into the field of medicine. They intend to practice full-scope family medicine.

Rachel Bervell, MD, MS is a physician and reproductive health advocate based in the greater Washington, DC, area. She is dedicated to health equity and wellness for all communities, bringing these interests together on Instagram at the Black ObGyn Project and as a core organizer with the Institute for Health and Justice in Medicine who leads the Reproductive Justice Working Group. Her work has been featured in *Health Affairs* and *NPR*, among other venues.

Angela Y. Zhang, MD is a pediatrics resident at the University of Washington in Seattle in the inaugural Health Equity cohort, a podcaster, and an advocate. Her work focuses on

institutional change, rethinking medical education, structural racism, and climate and spatial inequity. She produces the podcast *Not Built For Us*, works on the clinical podcast *The Cribsiders*, and is a co-founder of the Institute of Health and Justice in Medicine.

Jennifer Tsai, MD, MEd is an emergency medicine physician, writer, educator, and advocate in New Haven, Connecticut. Using activism and disruptive pedagogy, her academic work centers on the intersection between race, medicine, inequity, and trauma-informed care. Among other places, her essays and research have been published in the *New England Journal of Medicine*, *Scientific American*, and the *Washington Post*.

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