New York City Coalition to End Racism in Clinical Algorithms (CERCA)

INAUGURAL REPORT

Fall 2021 to Summer 2022

Office of the Chief Medical Officer
New York City Department of Health and Mental Hygiene
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This pathbreaking report, and the work that underlies it, serve two essential purposes. First, it captures the initial but substantial progress, since its formation in Fall 2021, of the New York City Department of Health and Mental Hygiene (NYC Health Department) and our 11 institutional partners comprising the Coalition to End Racism in Clinical Algorithms (CERCA) to improve medical treatment and care for people of color by eliminating algorithmic "race adjustments" in clinical care. Second, it testifies to the Department's commitment to advancing anti-racism in practice, and to meeting the goals and standards set by our landmark Board of Health resolution declaring racism a public health crisis, from which CERCA originated.

With the vision and dedicated leadership of DOHMH Deputy Commissioner and Chief Medical Officer Dr. Michelle Morse, CERCA is helping to answer the question "What can we actually do to confront explicit and implicit racism in medicine and promote racial justice and equity in health care?" The injustices of systemic racism may be fueled and exacerbated by discriminatory ideology, but they are firmly rooted in the historical, empirical reality of institutional laws, codes, and rubrics that formalize and "neutralize" racial distinction and division, and medicine is not and has not been immune to this. Racism exists in clinical medicine in ways seen and unseen, but most certainly *experienced* by patients and people of color, and reflected in outcomes and quality of care. Undoing these deeply embedded protocols, patterns and the underlying ideas that inform them demand the application of rigorous study and data, in concert with social and anti-racist education, culture and rhetoric.

CERCA is creating a model for such practical restructuring by holding the scientific community accountable to science. Specifically, it is peering into the "norms" of clinical algorithms that make biological distinctions by race when none exist, and laying this pattern bare as not just a medical issue but a *public health* issue. Because it is not just individual patients who are negatively impacted, it is entire communities, and it is passed on intergenerationally. As you will see in this report, kidney function, pulmonary function, and pregnancy and childbirth are three examples of where the misuse of race as a modifier leads to disproportionately compromised care and negative outcomes for patients of color, and where clear actions can be taken to resolve the problem. If the medical and public health communities, in NYC and beyond, are truly committed to dismantling racism in health care, they will turn to CERCA and put its lessons and recommendations into swift action.

Thank you to Dr. Morse and to all my outstanding DOHMH colleagues who have contributed to CERCA's creation, launch and initial success. I am also deeply grateful to our health system partners and to the distinguished members of CERCA's Advisory Council for making this a true cross-institutional collaboration and for demonstrating the solidarity required to create permanent change, improve health at scale, and build a more just and equitable future.

Ashwin Vasan, MD, PhD
Commissioner
New York City Department of Health and Mental Hygiene

Letter From the NYC Health Department's Chief Medical Officer

I am excited to share with you our inaugural annual report for the NYC Coalition to End Racism in Clinical Algorithms (CERCA). These first several months of CERCA have been truly inspiring — our conversations have ranged from critiquing racial essentialism to changing current standards of care rooted in outdated and inaccurate ideas of race as biology. CERCA members come together with a shared belief that racial equity starts with acknowledging the manifestations and impacts of the history of white supremacy in medicine and structural racism then acting to change them. Only from here, can we develop meaningful interventions that will dismantle racism in health care and public health, and redress the harm done.

To our knowledge, CERCA is the first citywide initiative tackling race adjustment as a public health issue. It is a fitting example of *Bridging Public Health and Health care*, one of my priorities as Chief Medical Officer. The NYC Health Department is a natural convener for health systems, hospitals, Federally Qualified Health Centers (FQHCs), community-based organizations and independent providers to rally around important challenges that require unprecedented collaboration. Similar to the galvanizing effect COVID-19 had on partnerships between public health and health care delivery systems, racial equity will require similar, if not stronger, ties to end racist medical practices. We hope CERCA serves as an example of this renewed focus on bridging public health and health care, placing equity and antiracism at the center or our collaborations.

While I know race adjustment is one of many issues that contribute to racial health inequities, I hope CERCA leads to continued internal and institutional reflection on your organization's equity activities, strategies, and commitments. As we all know, this work requires steadfast diligence, despite any backlash that may come. The dedication among CERCA members and Health Department staff is unwavering and I remain encouraged by our collective action to date.

I am eager to see the changes we can make together to ensure that the current spotlight on racial justice and health equity translate into longitudinal policy, program, and education transformation. This is how the pandemic can be a portal for us to emerge as a more just society. As the late Dr. Paul Farmer reminded us, *"With rare exceptions, all of your most important achievements on this planet will come from working with others — or, in a word, partnership."*

With appreciation,

Michelle Morse, MD, MPH
Chief Medical Officer, Deputy Commissioner
Center for Health Equity and Community Wellness
New York City Department of Health and Mental Hygiene

Quotes From CERCA Members

From One Brooklyn Health:

"The revised formula to estimate glomerular filtration rate (GFR) in African-Americans is of utmost importance in advancing equity in the management of chronic kidney disease in our underserved community, a major mission of One Brooklyn Health. . . The importance of this coalition and our participation in it, is reflected by the fact that the Division of Nephrology and Hypertension, the ambulatory care centers, our external affairs committee, and community stakeholders have all collaborated."

From Mt. Sinai:

"Mount Sinai, as part of a large institutional anti-racism initiative, undertook an environmental scan of race-based clinical algorithms, convened a cadre of clinical experts to review the rationale for inclusion of race in algorithms and harms resulting from its inclusion. The health system eliminated race-based eGFR and VBAC algorithms, replaced them with race-neutral algorithms and implemented educational programs to assure appropriate use of the new clinical algorithms."

From Maimonides:

"We at Maimonides Health will continually strive to eradicate any inhumanity, inequality or injustice in the care we provide. The collaborative partnership with the NYC Health Department in removing race-based clinical algorithms that create inequality is a forward movement in providing the 'best of care right here.'"

From NYC Health + Hospitals:

"NYC Health + Hospitals eliminated the race based adjustment for eGFR more than a year ago and is now using a formula that is intentionally designed without an adjustment for African American race. We look forward to continuing and expanding this work by identifying other algorithms that perpetuate the health inequities that directly impact our patients. Collaborating with CERCA on these efforts has provided a forum for enhancing knowledge and sharing best practices that has been important to the advancement of this work."

Executive Summary

In October 2021, the New York City Board of Health passed a resolution declaring racism a public health crisis and called for strategic, unified action to redress harms caused by generations of structural and institutional racism.[1] To date, countless stakeholders — spanning county, city, state, and federal stakeholders, including the U.S. Centers for Disease Control and Prevention and the American Medical Association — have also made similar commitments.[2–5] Here in New York City, the Health Department's antiracism pledge is driving action toward a racially just recovery from COVID-19, alongside other short- and long-term interventions across organizational, community, and health systems levels.[6–8]

The use of race and ethnicity in clinical algorithms has received increasing attention in health systems across New York City and the country. Clinical algorithms are used to aid clinicians in patient care decisions and are often based on predictive analyses of population-level datasets. Race modifiers in these algorithms have been called into question because of disparate, often inequitable impacts on minoritized patients.[9–11] For example, until recent shifts in national guidelines, equations to estimate kidney function ascribed a healthier "adjusted" value for Black patients, sometimes delaying necessary care, such as kidney transplants.[12] Race modifiers in pregnancy-related tools have disparately increased the likelihood of receiving a repeat caesarean section for Black and Latino pregnant people, potentially exacerbating birth inequities.[13] And, race-specific reference equations are used to assess the lung capacity of Asian, Black, and "Caucasian/Other" individuals, insinuating the presence of intrinsic racial differences in lung biology where none exist.[14]

Race-based equations were often built upon now debunked race-as-biology theories. White bodies have been defined as inherently "normal" and minoritized bodies as "other" leading to harmful and incorrect blanket racial groupings (for example, "Black" versus "non-Black"). Moreover, these racial groupings neglect to offer guidance for multiracial individuals, who now comprise one in seven babies born in the United States.[11,15,16] Race-based clinical algorithms have long been "hidden in plain sight," pervasively impacting care for many common diseases.[11] Amidst renewed national attention and the creation of the Health Department's Chief Medical Officer role to lead the agency's work to bridge public health and health care,[17] the Coalition to End Racism in Clinical Algorithms (CERCA) was launched in November 2021.[18] The objective of CERCA is to promote a healthier and more just health care landscape in NYC by convening stakeholders across public health, health systems, clinical research, health informatics, and social sciences to end race adjustment, monitor the impact on racial health inequities, and engage patients whose care was negatively impacted by it. By joining CERCA, NYC's largest health systems committed to these goals.

In this inaugural report, we provide an update on the first nine months of CERCA's activities. To raise awareness about CERCA's vision, we outline theoretical frameworks and background research related to race modifiers in clinical algorithms, analytic approaches for prospective assessment and redress of race-adjusted algorithms, early feedback on barriers and facilitators from our health systems stakeholders, and future directions for ending racism in clinical algorithms in New York City and beyond.

Background

"Race" is a socially and politically defined construct which categorizes humans largely based on observable physical features and ancestral origin.[19–21] While racial groupings are not indicators of biological differences,[22,23] race has remained among the strongest predictors of health care access, quality and outcomes for generations due to its direct correlation with impacts of all levels of racism.[24]

Race is not synonymous with genetic or continental ancestry, yet it is often inaccurately described as a proxy measure in research literature.[25,26] Human genetic and phenotypic variation, including physical differences which are often the basis of racial categorization like skin color and hair texture, do not map neatly onto races or continents.[22,27] Yet, terms like "African descent" or "European ancestry" are often used to describe sweeping continental associations with disease alleles; these problematic generalizations are inaccurate and easily misconstrued as racial groupings.[28,29] For example, although clinicians frequently conflate Black race — or "African ancestry" — with sickle cell disease risk, the genetic mutation causing this disease confers resistance to malaria and is thus concentrated in specific areas across the African continent, Middle East, Mediterranean, Southeast Asia, and Latin America.[30,31] Variants in the APOL1 gene, which contribute to increased risk of kidney disease, have been described by some as "found only in individuals with recent African ancestry."[32] Yet, these disease-exacerbating alleles have variable prevalence within the African continent and are also found within European, Pakistani, and Latin American populations due to admixture.[33(p1)] In short, ambiguity in how "ancestry" is defined (continental versus genetic), its conflation with race, and broader ignorance of racism as the fundamental cause of racial disparities contributes to imprecision and inequity in disease risk assessment.

Even though race is a social construct, exposure to racism has devastating biological and health consequences.[34] This intertwined relationship between race, racism, and health has been exemplified throughout the COVID-19 pandemic, during which Black, Latino, and Indigenous (BIPOC) communities have faced disproportionate rates of infection, hospitalization, and death while overcoming limited access to life-saving treatment and vaccination.[34–40] In New York City, we saw these patterns firsthand across our neighborhoods as one of the early epicenters of COVID-19 in the United States.[41] And, even after multiple waves passed through our city, racism has continued to shape the impact of the pandemic during the recent surges. A citywide analysis during the Omicron wave revealed that Black New Yorkers were two times more likely to be hospitalized than White New Yorkers.[42]

Racial Essentialism in Medical Education

Racism operates at multiple levels — internalized, interpersonal, institutional, and structural — and can influence one's health.[43,44] As such, racism — not race — is the primary driver of racial health disparities in disease burden, access to care, and clinical outcomes in NYC and the United States.[34,36,38,45–47] Yet, misinterpretations of what race does and does not represent have long persisted in medical education and clinical practice.

"Racial essentialism" is a belief in innate biological differences between racial groups. This wrong ideology has been foundational to science since the Enlightenment era and has persisted in medical education.[48–50] COVID-19, hypertension, tuberculosis, lung disease, kidney disease and countless other common conditions have stark racial inequities in incidence and impact. Yet, while these diseases have clear environmental and structural etiologies, their racialized outcomes have frequently been misattributed to intrinsic genetic or biological susceptibility.[36,50,51] For example, a landmark 2016 study of medical students and residents demonstrated a significant proportion of trainees believed in fundamental racial differences in pain perception, including that Black nerve endings are less sensitive and Black skin is thicker.[52] The perpetuation of these inaccuracies likely contributes to the undertreatment of pain in Black patients — even among Black children.[53]

To move beyond individualistic and essentialist conceptualizations of health inequality, Jonathan Metzl and Helena Hansen proposed a landmark shift towards building structural competency (an expansion of cultural competency) in medical education.[54] Clinicians learn to be skeptical of racial essentialist logic and look upstream to the social and economic forces which shape disease burden and outcomes.[49,55] By doing so, clinicians develop an extra-clinical lens that can imagine structural interventions to address fundamental causes of disease. Structural competency also requires for alignment with perspectives outside the biomedical model, promoting a broader and community-centered understanding of stigma and health inequalities.[56]

The Misuse of Race in Clinical Algorithms

In 2020, landmark articles in the *New England Journal of Medicine* and *The Lancet* called renewed attention to a troubling, longstanding issue in clinical care: the presence of "race modifiers" in algorithms and equations used to guide clinical decisions.[11,15] Despite decades of scientific advances demonstrating that human genetic variation cannot be divided by race to represent biologically distinct categories,[22,23,27] numerous diagnostic algorithms and practice guidelines have continued to "adjust" their outputs based on a patient's race or ethnicity. In this section, we highlight three examples: estimated glomerular filtration rate (eGFR) equations, pulmonary function testing (PFT), and the vaginal birth after caesarean section (VBAC) risk calculator.

Estimated Glomerular Filtration Rate (eGFR)

The kidney is an organ which filters out waste and excess fluid from the body. Measuring kidney function is important for clinicians, not just to diagnose and stage conditions like chronic kidney disease (CKD), but also to guide medical decisions like choosing chemotherapy agents, determining the safety of radiology contrast agents and medications, and referring patients for specialized nephrology care or organ transplantation.

However, kidney function is difficult to measure directly. To approximate a patient's glomerular filtration rate (GFR) — the filtration capacity of someone's kidneys — clinicians rely upon estimates based on the amount of creatinine, a normal byproduct of muscle breakdown, in someone's blood. Creatinine is almost completely removed from the body through the kidneys, making it an easily accessible proxy for kidney health.

Since 1999, GFR has most widely been estimated using two equations derived from the Modification of Diet in Renal Disease (MDRD) and Chronic Kidney Disease Epidemiology (CKD-EPI) studies.[57,58] These population-level studies identified significant predictors of creatinine to derive the following equations:

MDRD: GFR (mL/min/1.73 m^2) = $175 \times (S_{cr})^{-1.154} \times (Age)^{-0.203} \times 0.742$ [if female] × **1.212 [if Black]**

CKD-EPI 2009: GFR = $141 \times \min(S_{cr}/\kappa, 1)^{\alpha} \times \max(S_{cr}/\kappa, 1)^{-1.209} \times 0.993^{Age} \times 1.018$ [if female] × **1.159 [if Black],** *where:*
S_{cr} is serum creatinine in mg/dL,
κ is 0.7 for females and 0.9 for males,
α is -0.329 for females and -0.411 for males,
min indicates the minimum of S_{cr}/κ or 1, and
max indicates the maximum of S_{cr}/κ or 1.

Table 1. Chronic Kidney Disease (CKD) stages by eGFR

Stage	1	2	3a	3b	4	5
Description	Possible kidney damage with normal kidney function	Kidney damage with mild loss of kidney function	Mild to moderate loss of kidney function	Moderate to severe loss of kidney function	Severe loss of kidney function	Kidney failure
eGFR	90 or above	60-89	45-59	30-44	15-29	Less than 15

Table 2. Resulting eGFR and CKD staging using a race-modified eGFR equation between Black and non-Black identified males, age 27 with serum creatine levels of 1.2mg/dL

Race	Serum Creatinine	eGFR using MDRD equation	CKD Stage
African American / Black	1.2 mg/dL	93 mL/min/1.73 m^2	Normal or Stage 1
Non-African American / non-Black	1.2 mg/dL	77 mL/min/1.73 m^2	Stage 2

As shown on the previous page, the MDRD and CKD-EPI 2009 equations incorporated a Black race multiplier of 1.21 and 1.16, respectively. In other words, a Black person with the same age, weight, and serum creatinine level as a non-Black person would have a higher, or less severe, reported eGFR (**see Table 2**).

In the years since the creation and near-universal implementation of these equations, the logic and evidence supporting the use of race-based eGFR have been called into question. The authors of the 1999 MDRD study assigned race rather than allowing patients to self-identify and then justified including race by stating that "Black ethnicity was an independent predictor of higher GFR" and noting that "previous studies [which] have shown that on average, Black persons have greater muscle mass than white persons."[58] Yet the notion that Black-White differences in GFR are due to differential muscle mass or nutrition status, or even generally that Black race is a suitable proxy for intrinsic biological traits, have been soundly debunked.[12,59,60]

Kidney health outcomes in the United States are racially inequitable. According to the U.S. Centers for Disease Control and Prevention (CDC), CKD is the ninth-leading cause of death in America, impacting an estimated 37 million adults who are largely undiagnosed.[61] Black people have higher rates of CKD and faster disease progression than their White counterparts.[62,63] Yet, Black patients also face inequitable access to preventive care, early diagnostic testing, timely referral to subspecialty care, chronic disease treatment, dialysis services, and transplantation.[62,63]

Worse yet, the use of Black race modifiers in eGFR calculation has adverse impacts on kidney health equity. Nationally representative analyses have demonstrated that eliminating the MDRD and CKD-EPI 2009 race modifiers would allow for earlier CKD diagnosis, referral to nephrology specialists, Medicare coverage of patient education and nutrition services, and referral and listing for kidney transplantation.[64–67] Each of these evidence-based interventions could help reduce kidney disease progression and mortality for hundreds of thousands more Black Americans.[68–71] A 2021 national study estimated that removing race adjustment from the MDRD eGFR equation could result in an additional 3.3 million Black Americans receiving a stage 3 CKD diagnosis, 300,000 more qualifying for a nephrologist referral and 31,000 becoming eligible for transplant evaluation and inclusion on a waitlist.

Since 2021, alternatives to race-based eGFR estimates have been recommended by the National Kidney Foundation and the American Society of Nephrology.[72,73] Notably, recent work has shown that among the newly recommended CKD-EPI 2021 equations without race, the equation including both creatinine and cystatin C, but not the equation including creatinine without cystatin C, demonstrated racial differences in the risk of kidney failure requiring replacement therapy and mortality.[74] However, laboratory availability, cost, lack of institutional guidance and lack of clinician education regarding the use of cystatin C remain key barriers to broader implementation.[75,76]

Pulmonary Function Tests (PFTs)

Pulmonary function testing, also known as spirometry, is routinely used in screening, diagnosing, and monitoring of lung disease, preemployment physicals, and disability estimation.[77] In the United States, spirometry machines employ race-adjusted equations which assume a 10-15% and 4-6% smaller lung capacity for Black and Asian patients compared to White patients, respectively.[78–80] And, similar to eGFR, this assumption that Black and Asian patients have lower lung capacity than White patients may lead to underdiagnosis and undertreatment of respiratory issues. Frighteningly, the spirometer was used by plantation physicians in the antebellum South to justify slavery. Dr. Samuel Cartwright posited that lower lung volume and vital capacity in Black slaves compared to White citizens made them unfit for freedom and likely to "benefit" from forced labor.[14]

Like the racialized measurement of kidney health, racialized lung function tests have problematic downstream implications. The removal of PFT race modifiers in a cohort of 14,080 patients resulted in diagnosis of obstructive lung disease for an additional 414 patients (1.7% increase [22.1% to 23.9%]), diagnosis of restrictive lung disease for an additional 665 patients (4.7% increase [8.8% to 13.5%]) and a 20.8% increase (59.5% to 81.7%) in identification of any pulmonary disease.[81] Race modifiers could contribute to underdiagnosis of acute and chronic COVID-19 complications, like pulmonary fibrosis, which often are evaluated and monitored using spirometry.[82] Race-based spirometry reference equations — and all other race-based algorithms — are demonstrably inadequate for mixed race individuals.[83] And, the misuse of race in PFTs can be a barrier to accessing needed disability resources for Black workers. In the late 1990s, a massive workers' compensation complaint was filed against an asbestos manufacturing company in Baltimore. The company's lawyers argued that several Black workers should be excluded from the complaint based on their normal race-adjusted PFT results, while the workers countered that the race-based cutoff was unjust.[84] Upon hearing the testimony of medical experts citing American Medical Association and American Thoracic Society guidelines, the presiding judge ruled against the workers. McClure and colleagues have statistically modeled this example of "racial capitalism," demonstrating in a nationally representative simulated cohort that the Black race modifier in PFTs reduces the proportion of Black workers qualifying for compensation by 13%.[85]

Similarly, in a 2017 class-action lawsuit against the National Football League (NFL), race-modified cognitive tests were used to determine compensation for plaintiffs suffering from chronic traumatic encephalopathy (CTE) — a neurological condition leading to permanent brain damage and, in some cases, death. The NFL used "race norming" cognitive tests to determine extent of brain damage due to CTE, settlement amounts for plaintiffs, and timeframe of payouts. This led to Black players receiving decreased, denied, or delayed payments from the NFL. After public outcry, the NFL apologized for using such tests and has since ended its use in their settlement determinations.[86]

Vaginal Birth After Cesarean (VBAC) Risk Calculator

On average, Black pregnant people in NYC are 9.4 times more likely to die of a pregnancy-related complication than White pregnant people.[87] Clinical decision support tools, like the vaginal birth after cesarean (VBAC) risk calculator, may exacerbate these inequities.

To achieve a safe vaginal birth after a previous cesarean delivery, many pregnant people are offered a trial of labor after cesarean section (TOLAC) to attempt a VBAC. Pregnant people with two or more prior cesarean deliveries, certain types of prior incisions, or certain prior uterine wall surgeries are considered ineligible for a TOLAC. Though TOLACs can be risky, the health benefits of a successful VBAC compared to a repeat cesarean section are clear: avoidance of potential surgical complications, lower risk of postpartum hemorrhage and infection, faster recovery time, and lower risk of future pregnancy complications.[88] However, Black and Hispanic pregnant people continue to have higher rates of primary cesarean deliveries and lower rates of VBAC than White pregnant people,[89] making the reduction of unnecessary cesarean sections an important target to mitigate maternal health inequities.

In 2007, the VBAC calculator was developed by the Maternal-Fetal Medicine Units (MFMU) Network to help clinicians counsel patients on the risk of a VBAC by evaluating patient-level risk factors (age, body mass index, prior delivery history, and race/ethnicity).[90] Like PFTs and eGFR, the equation was derived from a population-level study and includes race/ethnicity adjustment factors for Black and Hispanic pregnant people:

> Predicted probability of successful VBAC = exp (w) / [1 + exp(w)] where w = 3.766 – 0.039 (age) – 0.060 (pre-pregnancy body mass index) **– 0.671 (if African American) – 0.680 (if Hispanic)** + 0.888 (if any prior vaginal delivery) +1.003 (if vaginal delivery after prior cesarean) – 0.632 (if recurring indication for cesarean).

Table 3. Resulting VBAC scores using race modified VBAC calculator among pregnant people with the same age, BMI and obstetrics history.

	Black	Hispanic	White
VBAC Score	78.75%	78.60%	87.88%

As shown on the previous page, the VBAC calculator systematically predicts a lower probability of successful VBAC for Black and Hispanic pregnant people than White pregnant people. These race modifiers were justified after the original validation study identified that being White was associated with greater chance of a successful VBAC.[91] Yet, although the original authors cited another large observational study which concluded that "Women who achieved successful VBAC were more likely to be Caucasian, married, privately insured, tobacco non-users, and to have a BMI less than 30 when compared with those failing a trial of labor,"[92] social characteristics (for example, insurance type, marital status, and tobacco use) were not included in the calculator — only race/ethnicity. This systematic overprediction of risk pushes clinicians to counsel against TOLAC for Black and Hispanic pregnant people who may otherwise have a successful VBAC.[93,94]

Another proposed justification for racial inequities (and, consequently, inclusion of the race modifier) in VBAC is purported "ethnic variation in pelvic architecture," with non-White women more likely to have "non-gynecoid" pelvic anatomy.[95] As Vyas and colleagues thoroughly reviewed, pelvic anthropometry has longstanding racist antecedents in obstetrical textbooks, classifications, and training.[13] The lineage of obstetric racism from slavery to the present day has been exemplified by numerous examples of pathologizing entire racial groups, particularly Black pregnant people. This includes the infamous "father of modern gynecology," Dr. J. Marion Sims, who developed surgical treatments for vesicovaginal fistulas by experimenting on three enslaved Black women based on essentialist beliefs that they were "more insensible to pain."[96] The VBAC calculator reinforces this disturbing history by claiming race and ethnicity are risk factors for an intrinsic difference in pregnancy outcomes and health.[97] While race/ethnicity and VBAC success are certainly correlated, this association is more likely explained by driving forces related to racism like inequities in income, wealth, educational level, access to care, and other aforementioned factors—not biological differences in pelvic anatomy by race.[98,99] In 2021, researchers from the Eunice Kennedy Shriver National Institute of Child Health and Human Development Maternal-Fetal Medicine Units Network found that a VBAC calculator excluding race/ethnicity and including current treatment of chronic hypertension accurately predicted successful VBAC among pregnant people choosing to have a TOLAC.[90] The American College of Obstetricians and Gynecologists (ACOG) issued a Practice Advisory in December 2021 endorsing the non-race modified VBAC calculator.[100]

Recent National Developments to Replace Race-Based Clinical Algorithms

Race-based equations like the eGFR, PFT, and VBAC were built upon now debunked race-as-biology theories, define White bodies as inherently "normal" and minoritized bodies as "other," depend upon harmful and incorrect blanket racial groupings (such as "Black" versus "non-Black") and neglect to offer guidance for multiracial individuals, who now comprise one in seven babies born in the United States.[11,15,16] As such, policymakers and national medical organizations alike have begun to chart a new, racially just course for clinical decision support tools.

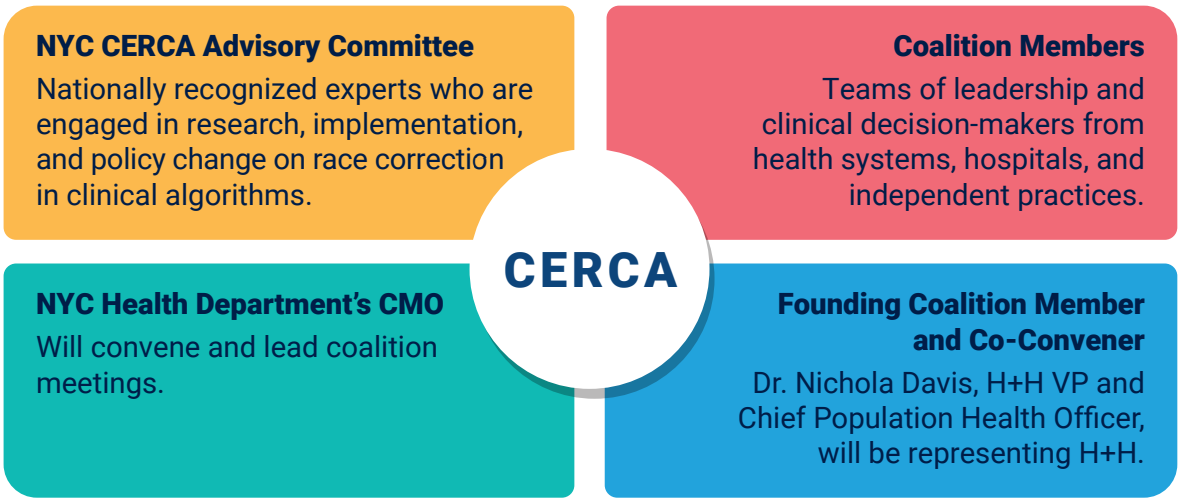
At a federal level, regulatory agencies and policymaking bodies have already demonstrated interest in addressing the misuse of race in clinical algorithms. Most notably, from 2020-2021, the U.S. House of Representatives Ways and Means Committee and the Agency for Healthcare Research and Quality published Requests for Information (RFIs) to inform reports and regulatory action, with the Ways and Means Committee reaching out specifically to medical specialty societies that have published race-based clinical guidelines.[101,102] The Ways and Means Committee majority staff report summarized key next steps from this inquiry, including diversifying the health professions workforce, educating patients and clinicians about the limitations of race-based algorithms, remedying harms caused by race-based algorithms, and advancing broader policies (for example, measurement of health equity quality metrics) to promote health equity.[103]

In addition to federal inquiries, a number of race-based clinical guidelines have been replaced by alternatives without race over the last several years. After years of trainee and patient advocacy,[76,104] prominent peer-reviewed publications documenting the accuracy and inequity-reducing potential of race-free eGFR equations,[72] and extensive public comment and testimony, a task force convened by the National Kidney Foundation and American Society of Nephrology recommended a unified approach for eGFR estimation without use of a race modifier.[72,73] The race-based VBAC calculator was replaced by the Maternal-Fetal Medicine Units (MFMU) Network with a newly validated algorithm, which removed the Black race and Hispanic ethnicity fields while adding a field for history of chronic hypertension.[90,100,105] Other race-based equations used to predict the risk of urinary tract infections in children and determine anemia in pregnant people have also de-implemented race modifiers.[106,107] And, while PFT race modifiers have not yet been removed from American Thoracic Society guidelines, several publications in flagship pulmonology journals have outlined empirical shortcomings and possible paths forward to rethink the race-based algorithm for spirometry.[108–110]

Creation, Composition, and Strategic Priorities of CERCA

Given the many recent changes to national clinical guidelines, the implementation of new algorithms remains a significant challenge to ending race-based medicine. In this broader context of medicine's reckoning with racism in health care delivery, and amidst the Health Department's own racial justice commitment, CERCA was launched in November 2021 by the agency's inaugural Chief Medical Officer (CMO).[18] As described in the Health Department's CMO Strategic Plan, bridging public health and health care while centering anti-racism and equity is one of the three priority domains. Leveraging the agency's convening ability, CERCA sought to bring together health systems and organizations sharing a commitment to eliminating the use of race modifiers with evidence-informed approaches.

Figure 1.



CERCA Member Institutions

Eleven health systems and organizations, including New York City's largest health systems, are currently participating in CERCA: NYC Health + Hospitals, Maimonides Medical Center, Mount Sinai Health System, Montefiore Medical Center, New York Presbyterian (NYP), Northwell Health, NYU Langone Health, One Brooklyn Health (OBH), SBH Health System, SUNY Downstate, and Wyckoff Heights Medical Center. CERCA institutions pledged to meet bimonthly for two years and achieve three deliverables : 1) end race modifier use in at least one of the three priority clinical algorithms (eGFR, PFT, or VBAC); 2) evaluate the impact of using algorithms without race on health inequities in patient outcomes; and 3) create and implement initiatives for patient engagement among patients whose care may have been impacted by race modifiers. Health systems and organizations joining CERCA also committed to:

1. Raising awareness among health system partners on how race correction contributes to racial health inequities
2. Elevating and communicating the coalition's commitment to health equity
3. Measuring institutional impacts of eliminating race correction on racial health inequities
4. Mitigating the potential impact race correction may have on the provision of timely care and referrals

Figure 2. Clinical Algorithms of Focus by CERCA Member

Maimonides Medical Center (VBAC)
Montefiore Medical Center (PFT)
Mt. Sinai Health System (VBAC, PFT)
NYU Langone Hospitals (eGFR)
SBH System (PFT)
NewYork-Presbyterian (VBAC)
Northwell Health (eGFR)
NYC Health + Hospitals (VBAC, PFT)
One Brooklyn Health (eGFR, VBAC)
SUNY Downstate (eGFR)
Wyckoff Heights Medical Center

Each member institution designated a CERCA lead to serve as a point person for Health Department outreach and was encouraged to include leadership from multiple departments within their organization. This distributed model allowed for clear delineation of roles and responsibilities, merging boots-on-the-ground knowledge from site leads with democratized content expertise from the Health Department and Advisory Council.

Nearly half of CERCA teams are led by a clinical or executive leader from their institution. About one-quarter are led by equity leaders (such as directors of institutional centers dedicated to health equity initiatives or research) or clinical departmental subject experts. Many CERCA teams are multi-disciplinary in composition, with some including IT staff, nurses, laboratory staff, respiratory therapists, and social workers. Notably, some health systems also plan to invite physician residents and patients to assist with implementation and evaluation planning.

CERCA Advisory Council

CERCA has greatly benefitted from the contributions of an Advisory Council with significant content expertise in racial health inequities research, clinical applications and limitations of specific algorithms, and critical race theory (see Appendix D). The Advisory Council met regularly prior to the launch, reviewed CERCA materials prior to dissemination or publication, and helped sites troubleshoot barriers and identify facilitators to advance their chosen missions.

NYC Health Department Office of the Chief Medical Officer

The NYC Health Department Office of the Chief Medical Officer (CMO) coordinates CERCA convenings and operations. NYC Health + Hospitals was a founding member of CERCA because of their extensive existing work on this topic. The Health Department coordinates CERCA meetings, conducts and updates literature reviews on relevant algorithms and concepts, solicits institutional feedback to understand barriers and facilitators, and drafts background resources and evaluation approaches for dissemination to CERCA members.

Since launching in November 2021, the CMO has convened virtually CERCA members bimonthly. Each meeting is structured in two parts — the first half is dedicated to grand round-style presentations from subject matter experts sharing recent publications and research. The first half of the meeting intends to keep members informed about current research and share any changes in guidelines and recommendations. Members are encouraged to engage with subject matter experts and provide real-world clinical perspectives on how research can be translated to practice.

The second half of the meeting is spent in three breakout groups by clinical algorithm of focus (eGFR, VBAC or PFT). Each participant chooses a breakout group based on the clinical algorithm(s) their institution has chosen as part of their CERCA pledge. Each breakout group is facilitated by members of the Advisory Council or subject matter experts from the Health Department. These smaller and specified groups engender a learning collaborative environment by providing opportunities for members focusing on the same algorithm to share successes and challenges, feedback, and resources related to implementing the non-race modified algorithm of focus and evaluating subsequent impacts on patient outcomes.

To facilitate CERCA members in achieving deliverables, the Health Department and Advisory Council developed evaluation recommendations for each of the three priority algorithms with proposed metrics and evaluation methodologies able to be adapted to each institution's unique structure and resources (see Appendix A). A work plan template was also developed to assist members in delineating project management of their CERCA activities (see Appendix C).

In short, the organizational structure of CERCA has required collaboration across clinical experts, operational and technical support staff (for example, data extraction from electronic health records), data analysts, and public health communication experts. The multi-disciplinary, multi-institutional nature of the coalition is its foremost strength.

CERCA Year 1 Activities

Coalition Meetings

To date, CERCA has held four virtual 90-minute bimonthly meetings. Topics that have been discussed include: the historical and legal implications of race adjustment in clinical algorithms; review of current publications on the CKD-EPI 2021 equation; overview of current debate on use of race/ethnic spirometry reference equations; and history and impact of race-based VBAC calculator.

In breakout groups organized by algorithm, CERCA members share a status update and troubleshoot ongoing challenges with the Advisory Council and Health Department facilitators. The following are key topics and issue areas that have been discussed within each algorithm breakout group to date.

eGFR

- Need for provider education and acceptance from nephrology and other specialty teams before transitioning to non-race modified eGFR
- Updating electronic health record (EHR) and laboratory interfaces to reflect changes in eGFR reporting
- Identifying appropriate and accessible metrics to measure impact on referrals to nephrology, dialysis, and transplant evaluations
- Need for patient engagement and education to explain changes in eGFR reporting and resulting changes in care

VBAC

- Require better understanding of current VBAC calculator use among OB/GYN providers. Calculator use is currently left to the discretion of the provider
- Benefits to TOLAC/VBAC counseling without use of VBAC calculator and using other factors, such as hypertension, as part of counseling
- BMI is another factor that was negatively weighted in VBAC calculator and may contribute to higher rate of Caesarean sections
- Incorporating shared decision-making tools that center a pregnant person's priorities

PFT

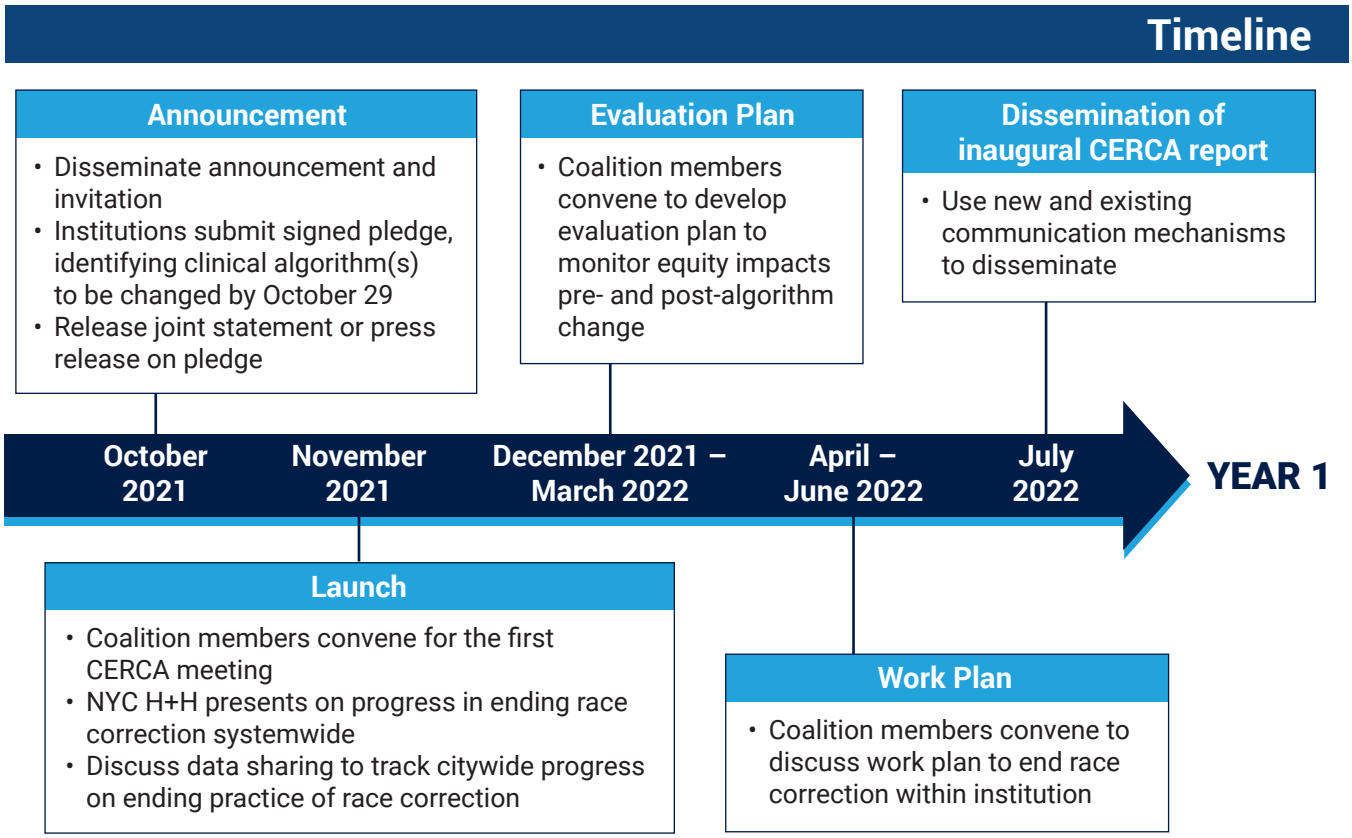
- Limited by pre-programming of spirometry machines
- Current reference equations are based on datasets that do not reflect NYC communities
- Ongoing debate around use of race/ethnicity-based reference equations and role of genetic ancestry in equation precision, as well as what determines "normal" versus "abnormal" lung function
- Consistent and persistent engagement with the American Thoracic Society and other pulmonary professional organizations is needed to advocate for non-race modified PFT

- Patient advocacy groups can play critical role in advancing movement towards PFT without inclusion of race/ethnicity

CERCA Deliverables

In March and May of 2022, CERCA members presented and submitted their draft evaluation and work plans (deliverables 1 and 2) to their algorithm breakout groups. Members received feedback on their plans and shared challenges and solutions to issues around provider education, updating EHR systems, patient engagement, and improved support from professional societies and medical schools. Finalized evaluation and work plans will be due in summer and fall of 2022.

Figure 3. Activity Timeline for Year 1 of CERCA



External Engagement

On November 24, 2021, the Health Department issued a press release announcing the launch of CERCA. Since then, Dr. Morse and Dr. Nichola Davis have been interviewed by several news outlets to discuss the issues of race-based medicine, race adjustment in clinical algorithms and how CERCA is attempting to address the inequities resulting from these longstanding medical practices in NYC. News outlets that have featured this work include PIX 11, WNYC, Black News Channel, CBS, and *The New York Times*.

Since launching, CERCA leadership has met with several stakeholders to discuss alignment and potential collaborations around implementation strategies for eliminating race-based clinical algorithms in health systems, racially representative datasets used for algorithm development and expanded utility of EHR systems to facilitate the evaluation and monitoring of clinical metrics related to algorithms. These organizations include the Center for Evidence and Practice Improvement at the Agency for Healthcare Research and Quality (AHRQ) and the Center for Devices and Radiological Health at the Food and Drug Administration (FDA). CERCA leadership continues to engage with these and other stakeholders to broaden and diversify its impact on eliminating race-based medicine in New York City and beyond.

Barriers and Facilitators Reported by CERCA Members

During check-in interviews conducted in January 2022, CERCA members were asked to describe the status of their health system's implementation plan for their selected algorithm, shown in **Table 4** (and see Appendix B). While three health systems had already implemented changes to their eGFR algorithm at the time of the check-in interview, most health systems were in the planning stages of their initiative. Generally, systems in the planning phase were engaging internal stakeholders, assessing their organization's use of race-adjusted algorithms, or developing strategic plans for rollout. No systems had evaluated implementation at the time of the interviews.

Table 4. Implementation Status by Algorithm of Focus*

VBAC	eGFR	PFT†
Maimonides → Planning	Northwell → Implemented	H+H → Planning
Mt. Sinai → Planning	NYU Langone → Implemented	Montefiore → Planning
NYP → Planning	OBH → Implemented	Mt. Sinai → Planning
OBH → Planning	SUNY Downstate → Planning	SBH → Planning
H+H/Woodhull → Planning		H+H/Elmhurst → Planning

* Some institutions have already stopped using race-adjusted eGFR and/or VBAC prior to participation in CERCA.

† The American Thoracic Society and other pulmonary professional organizations have not officially endorsed a non-race modified PFT. CERCA members that have chosen PFT are actively discussing various advocacy routes to encourage pulmonary professional societies to extensively consider alternatives to race/ethnicity-based reference equations used in PFT.

Members also discussed potential barriers and facilitators to achieving the strategic goals of CERCA at their institution, outlined in **Table 5**. Most health systems described significant institutional and team support for the work, but anticipated challenges around later career physician buy-in, staff discomfort with discussing race and ethnicity, competing priorities, and staff burnout. Strategically messaging later career doctors may be a necessary consideration. Medical resident and medical student advocacy, assessment of physicians' educational needs, and creative, multi-channel communication strategies that anticipate potential questions from physicians could help counteract barriers.

Table 5. Implementation Barriers and Facilitators

Barriers	Facilitators
Behavioral and Emotional • Difficulty changing habits of later career providers • Staff discomfort with talking about race or implicit bias **Competing Priorities and Staffing** • Competing priorities due to COVID-19, leading to staff burnout and exhaustion • Competing priorities within IT • Limited staffing **Algorithm-Specific Challenges** • Inability to propose specific changes to pulmonary team • Barriers will depend on the algorithm • "When we do spirometry and PFT, we use a different dataset than other systems. Dataset does not reflect our health system's population." **Scope of Problem and Solution** • "Biggest barrier is the problem itself." • Changing the algorithm within a large, complex heath system requires buy-in, engagement and support of various stakeholders, including IT, quality improvement, standards, clinicians and more	**Institutional-Level Support** • Enterprise-level health equity initiative • Institutional goals and philosophy (for example, desire to be a leader, social justice orientation, pride in caring for diverse population) • Strong senior leadership support • Directive from and accountability to senior leadership • Advocacy from residents and early career physicians • IT and EHR support **Resident/medical student advocacy** • "If residents implement, the whole hospital will follow" • Strong push from medical students **Provider Education and Communications** • Multi-channel education (lectures, journal clubs, videos, story-telling and grand rounds) • Assessment of clinicians' educational needs and anticipated questions • Messaging later career physicians without making them feel uncomfortable • Communicating with staff before changes are implemented • Implicit bias training **Team-Level Support** • Multi-disciplinary CERCA teams • Engaged nurses and non-clinical staff **Patient Input** • Patient input on preferences (VBAC)

Preliminary Implementation Plan and Evaluation Approach

The Health Department is planning an evaluation of CERCA to assess the effectiveness of the coalition's structure and activities, to identify how the member health systems implemented anti-racist policies and processes, and to measure the citywide impacts of the initiative. Additionally, each member health system is responsible for planning and executing a work plan and an internal evaluation. The Health Department and CERCA Advisory Council will continue to provide evaluation guidance to the health systems throughout the duration of the coalition's work.

For each of the three chosen algorithms, a one-page evaluation recommendations was created by CERCA Advisory Council members and Office of the CMO. These guides outlined algorithm-specific literature demonstrating the problematic nature of race modifier, key process and outcome measures to monitor, and an evaluation approach to align CERCA members working on the same algorithm. Notably, the Health Department also recommended enhanced collection of self-identified race/ethnicity for these analyses, as EHR race/ethnicity data may be inaccurate, incomplete, or based on provider-selected information.[111,112] Potential outcomes of interest for each algorithm are listed in **Table 6**.

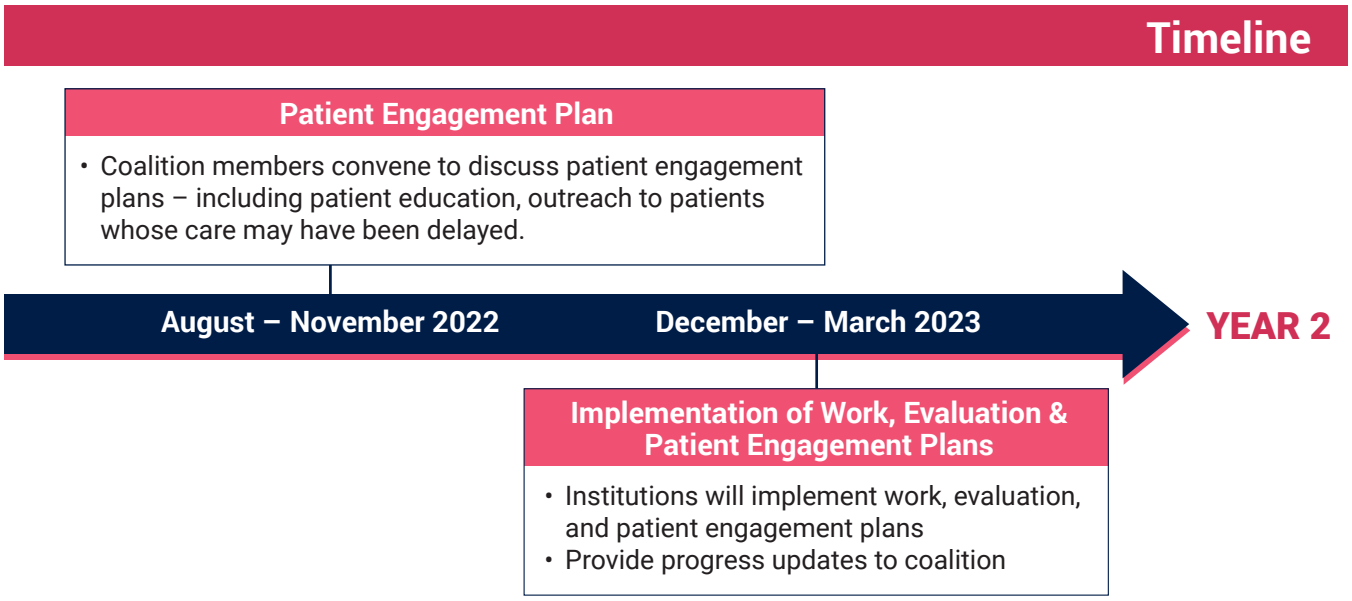
Table 6. Preliminary Algorithm-Specific Process and Outcome Measures Stratified by Race and Ethnicity

	eGFR	PFT	VBAC
Measures of Interest (all stratified by race and ethnicity)	**Primary measures:** • Prevalence of CKD by stage and age • Referral or current care provided by nephrologist • Referral or waitlist status for kidney transplantation **Secondary measures, if available:** • Referral for placement of arteriovenous fistula for preparation for renal replacement therapy • Acceptability as a potential candidate for kidney donation • Use of potentially nephrotoxic medications, including but not limited to: NSAID's (ibuprofen, naproxen, etc.), ACE inhibitors, warfarin, metformin, SGLT2 inhibitors, cisplatin	**Primary measures:** • Diagnosis of restrictive or obstructive lung disease • Referral to or current care provided by pulmonologist • Referral to pulmonary rehabilitation **Secondary measures, if available:** • Prescription of medications for lung diseases as recommended by COPD and asthma guidelines • Hospital 30-day cause-specific and all-cause readmission rates • All-cause mortality rates for COPD and hospitalizations • Access to disability services or workers' compensation	**Primary measures:** • Number of providers using race-modified VBAC calculator • VBAC rates • Trial of labor after cesarean section rates **Secondary measures, if available:** • Use of shared decision-making tools during TOLAC counseling • Patient-reported birth experience outcomes

Future Activities and Areas for Exploration

By the end of Year 1, CERCA members will have submitted their final work and evaluation plans. In Year 2, members will submit their draft and final patient engagement plans addressing and redressing past or present harms caused by race modifier use. These plans will be informed by discussions with patient stakeholder and advocacy groups and will include the historical and now debunked explanations for race adjustment. CERCA members are encouraged to develop their patient engagement plans in coordination with their institution's community engagement offices and entities. Finally, CERCA members will continue to implement their work, evaluation, and patient engagement plans and report out to the coalition on their progress.

Figure 4. Activity Timeline for Year 2 of CERCA



CERCA's second year report will include more robust information on early outcomes and lessons learned. This will ideally include summaries of final work, evaluation, and patient engagement plans; clinician and patient education materials; initial reporting of process measures and institutional outcomes; and measurement of citywide population health outcomes.

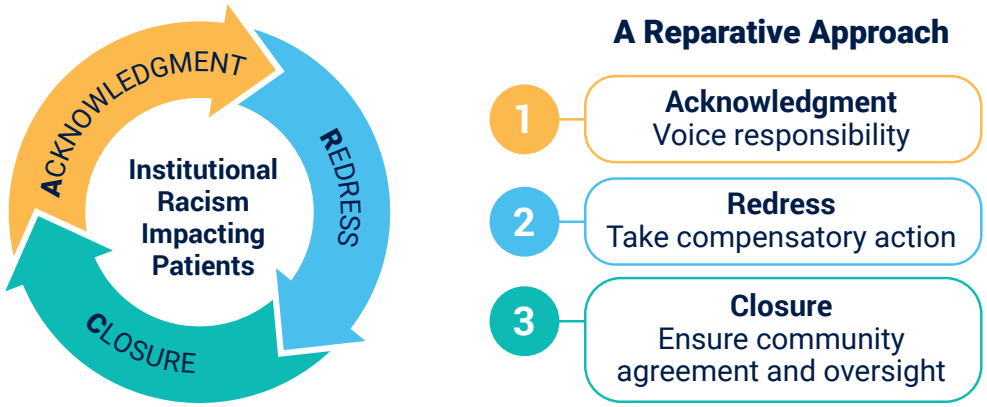
For the duration of CERCA, Health Department staff plans to engage with key stakeholders committed to ending race-based medicine on multiple fronts, including:

- ***Educating a new generation of doctors:*** The Health Department aims to engage directly with medical schools across NYC and national level accreditation bodies with a goal to create a more inclusive and dynamic conversation concerning ending racism in clinical algorithms. The Health Department aims to engage with the Accreditation Council of Graduate Medical Education (ACGME) and the Association of American Medical Colleges (AAMC) to address and ultimately remove race-based clinical algorithms from teaching materials in medical schools. Health Department staff will connect directly with medical student bodies in schools across NYC to bring awareness to the issues at hand and start a more inclusive and active conversation about ending racism in clinical algorithms from the bottom up. Through this work, we will continue to engage with other student-led groups, such as the Institute for Healing & Justice in Medicine. Furthermore, in partnership with

CERCA members, Health Department staff will advocate for correcting medical textbooks and literature that continues to teach medicine through a race-based lens.

- ***Policy and advocacy to change current medical standards and guidelines:*** Health Department staff aims to engage with professional societies to move toward implementing new guidelines for health providers to stop using race-based clinical algorithms. The Department aims to collaborate with the National Kidney Foundation (NKF), the American Thoracic Society (ATS) and the American College of Obstetricians and Gynecologists (ACOG) to continue the push for new guidelines and standards of practice that end the three racial algorithms. In this work, the Health Department and CERCA members will address implementation of new guidelines and evaluation through patient engagement.
- ***Patient advocacy and support:*** The Health Department and CERCA members will engage with patient advocacy and support groups to ensure a participatory role for those who are directly affected by race-based clinical algorithms. This work will involve the professional societies mentioned above, as well as new connections with groups, including the American Association of Kidney Patients (AAKP), or the International Cesarian Awareness Network (ICAN). Some issues Health Department staff plans to discuss with these groups include the use of gender in algorithms and implications for trans and non-binary patients. Health Department staff and CERCA members will evaluate the need to engage with other patient advocacy and support groups to create awareness and engage patients who have been affected by race-based algorithms, leading them to being underdiagnosed and not receiving adequate treatment.
- ***Exploring reparative paradigms:*** The Health Department will explore health justice opportunities using reparative paradigms such as the *Healing ARC*[113] (see Figure 5), in which ARC stands for acknowledgment, redress, and closure. Such a framework can guide institutional racial equity initiatives to ensure harms resulting from structural racism are remedied and that patients experience equitable improvement in care and outcomes. The Health Department will explore the use of *Healing ARC* with CERCA members and patient advocacy groups as part of continued work around ending racism in clinical algorithms. We would like to share our gratitude to Henry Ashworth, MD, MPH, for developing this diagram and to William Darity, PhD, and Kirsten Mullen for their leadership in this work.

Figure 5. Description of the *Healing ARC* approach



Acknowledgments

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CERCA's Advisory Council includes national experts in racial inequities research, representing a wide range of disciplines and specialties. The CERCA Advisory Council includes:

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Appendices

Appendix A: Evaluation Recommendations for Eliminating Race Modifier in: 1) eGFR, 2) VBAC, and 3) PFT

Appendix B: CERCA Work Plan Template

Appendix C: Check-in Interview Guide

Appendix D: CERCA Advisory Council Biographies

Appendix A: Evaluation Recommendations for Eliminating Race Modifier in: 1) eGFR, 2) VBAC, and 3) PFT

1. Evaluating the Elimination of Race From eGFR Equations

Prepared by: *Salman Ahmed, MD, MPH*
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Objective: To describe and evaluate an approach for health care systems the removal of the race multiplier from estimated glomerular filtration rate (eGFR) equations.

Background

Most existing equations for estimation of eGFR include a multiplier term for Black individuals.[1,2] The historical reason for inclusion of this term is based on the false notion that Black individuals have increased muscle mass relative to non-Black individuals. This concept originates from the racialized practice of science and medicine that has ongoing repercussions. There is no evidence to support this notion. On the contrary, race is a social construct, not a biological designation.[3,4] The result of Black race adjustment leads to falsely elevated eGFR estimations among Black patients with chronic kidney disease. This has led to delays in clinically important care, such as timely access to nephrology specialists and evaluation for kidney transplantation.[3-7] We demonstrated the potential impacts of this in a study published in the *Journal of General Internal Medicine*,[8] in which zero of 64 Black patients (whose eGFR was 23 mL/min based on the existing eGFR equations, but would have been under 20 mL/min if the race multiplier were removed) were referred for renal transplantation evaluation because ostensibly their eGFR was not below the traditional threshold for referral of ≤ 20 mL/min.

Proposed Research and Evaluation Plan

Here, we adapt the original methodology (see reference 8) to include additional metrics. We expect all members of CERCA are prepared to proceed with de-implementation of race-adjusted eGFR, thus we recommend a prospective evaluation. Notably, the Health Department recommends and supports improved collection by CERCA members of self-identified race/ethnicity as EHR race/ethnicity data may be inaccurate.[11]

1. Primary measures (stratify by race/ethnicity):
    a. Prevalence of CKD by stage
    b. Referral or current care provided by nephrologist
    c. Referral or waitlist status for kidney transplantation

2. Additional metrics if available (stratify by race/ethnicity):
    a. Referral for placement of arteriovenous fistula for preparation for renal replacement therapy
    b. Acceptability as a potential candidate for kidney donation
    c. Use of potentially nephrotoxic medications, including but not limited to: NSAID's (ibuprofen, naproxen, etc.), ACE inhibitors, warfarin, cisplatin, metformin, SGLT2 Immediately implement the new CKD-EPI 2021 creatinine or cystatin C-based equation,[9] as recommended by the American Society of Nephrology-National Kidney Foundation Task Force on Reassessing the Inclusion of Race in Diagnosis Kidney Disease.[10]

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Additional Resources

National Kidney Foundation CKD-EPI 2021 eGFR Implementation Tools

- **eGFR calculator website version:** https://www.kidney.org/professionals/KDOQI/gfr_calculator
- **eGFR app, available for free in Apple and Google stores:** https://www.kidney.org/apps/professionals/egfr-calculator
- **NKF Laboratory Engagement Initiative:** https://www.kidney.org/content/laboratory-implementation-nkf-asn-task-force-reassessing-inclusion-race-diagnosing-kidney

NKF Patient Educational Resources

- **Changes to eGFR Calculation and What that Means for People Living with Kidney Disease:** https://www.kidney.org/newsletter/changes-to-egfr-calculation-and-what-means-people-living-kidney-disease
- **Social Determinants of Kidney Disease:** https://www.kidney.org/atoz/content/kidneydiscause
- **Family History and Kidney Diseases:** https://www.kidney.org/atoz/content/kidney-disease-family-history
- **Genetics and Kidney Disease:** https://www.kidney.org/atoz/content/genetics-kidney-disease

NKF Professional Educational Resources (CME and CE)

- **Not by Muscle, Race or Ethnicity: Practical use of Cystatin C to estimate GFR:** https://casehippo.com/spa/courses/resource/not-by-muscle-race-or-ethnicity-practical-use-of-cystatin-c-to-estimate-gfr/mooc/home/default

Chronic Kidney Disease Epidemiology (CKD-EPI) Collaboration website on implementation of the 2021 CKD-EPI eGFR equations

- https://www.tuftsmedicalcenter.org/-/media/Brochures/TuftsMC/Research-Clinical-Trials/Implementation-of-2021-CKD-EPI-Equations-15-Oct-2021-b.ashx?la=en&hash=747F5F741555F2A8FC04720D32AC97C1B55CF240

2. Evaluating the Elimination of Race From VBAC Calculators

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Edited by: *Rohan Khazanchi, MD, MPH, Adriana Joseph, MPH, Duncan Maru, MD, PhD, Tara Stein, MD MPH, Michelle Morse, MD, MPH*

Objective: To describe an approach for clinicians and health care systems to evaluate the removal of the race term from clinical decision support tools to predict vaginal birth after cesarean section (VBAC) success.

Background

In the United States, 13.8% of pregnant people have VBACs instead of an Elective Repeat Cesarean Delivery (ERCD).[1] This falls short of the Healthy People 2020 goal of an 18% national VBAC rate and reflects increasing cesarean rates across the country.[2,3] Estimating the likelihood of VBAC success is useful for clinical decision-making when counseling patients on risks/benefits of trial of labor after cesarean section (TOLAC), due to increased morbidity when repeat cesareans are unplanned or emergent. In theory, being mindful of those with the highest probability of VBAC success allows providers to increase overall VBAC rates.[4,5] Additionally, by maintaining patient-centered mode-of-birth discussions, maternal and fetal risks are minimized.[5,6] However, the incorporation of race/ethnicity in VBAC probability calculations can result in a self-fulfilling prophecy,[7] in other words while VBAC tools intend to optimize patient outcomes, the racial/ethnic penalty may paradoxically exacerbate existing maternal health disparities.[8]

In the most commonly used VBAC calculator, the Maternal Fetal Medicine Units Network (MFMU) VBAC Success Calculator, the probability of a successful VBAC was modeled with a multivariable logistic regression.[9] This prominent algorithm, which has been studied extensively and validated externally in diverse populations, calculates a score from the following parameters: patient's birth and clinical history, maternal age, body mass index (itself computed in racialized ways)[10], vaginal delivery history, reason for previous C-section, and race/ethnicity defined as either White, Hispanic, or Black. Patients who are identify as Black or Hispanic were calculated as having 5-15% lower success rate of VBAC than others, thereby encouraging clinicians to recommend fewer TOLACs to Black and Hispanic patients.[8,9] The inclusion of race/ethnicity thus presents numerous concerns.[8,11-16] As such, MFMU has since released a VBAC calculator which no longer includes race adjustments.[17]

Recent medical consensus established the need to eliminate race-based corrections in medical care and instead evaluate clinical adjustments in a race-conscious manner.[16,18] In 2020, a retrospective chart review of 302 women electing TOLAC compared actual VBAC rates to predicted VBAC rates using both a race-based and race-neutral calculator. Faulkner et al. found that 44.6% of Hispanic women and 43.9% of non-Hispanic Black women who had a successful VBAC would have been given an unfavorable score in a race-based calculation compared to only 9.5% and 12.1% respectively when using a race-neutral calculation.[19] Several other race-free VBAC algorithms also exist, though most have not yet been validated.[8] Thus, it is essential to evaluate

how the de-implementation of race adjustments in favor of either race-free MFMU or other algorithms impacts TOLAC likelihood and outcomes.

Proposed Research and Evaluation Plan

Once CERCA members have implemented a race/ethnicity-free VBAC calculator we recommend a **pre-post prospective** study examining key birth metrics by race/ethnicity and insurance status. We recommend use of self-identified race rather than only EHR-collected race, as well as collection of social identities, socioeconomic status, education status, geographic indicators for mapping to ZIP or tract-level disadvantage indices, etc. for a more complete picture of a patient's risk conditions.

1. Primary measures (stratify by race/ethnicity):
    a. Vaginal birth after cesarean section rates
    b. Trial of labor after cesarean section rates
    c. Birth experience on standardized measures

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3. Evaluating the Elimination of Race From PFT Equations

Prepared by: *Leo Eisenstein MD, Arielle Elmaleh-Sachs MD*
Edited by: *Rohan Khazanchi MD MPH, Adriana Joseph MPH, Duncan Maru MD PhD, Michelle Morse MD MPH*

Objective: To describe an approach for clinicians and health care systems to evaluate the removal of the race multiplier from pulmonary function testing (PFT) estimation equations.

Background

Pulmonary function tests measure lung volume and the rate of flow through airways to aid in diagnosis and monitoring of lung disease.[1] To interpret PFTs, current guidelines recommend comparing a patient's results to predicted values derived from healthy populations of the same age, sex, height, and race/ethnicity.[2] The recommendation to adjust for race/ethnicity comes from a body of research dating back to the 19th century,[3] which suggested Black people have a lower lung capacity than White people, after adjustment for age, sex, and height. In addition to reifying White bodies as inherently "normal" and Black bodies as "other," these differences, interpreted as biological inferiority of Black people, were notably also used to defend slavery.[3,4]

The American Thoracic Society currently recommends the use of the Global Lung Function Initiative (GLI) and previously recommended the Third National Health and Nutrition Examination Survey (NHANES III) reference equations.[5] The NHANES III spirometry reference equations provide separate values for White, African American, and Mexican Americans living in the United States,[6] and later added a correction factor for Asian Americans.[7] The GLI equations merged lung data sets, including NHANES III, of 74,187 individuals from 26 countries and provides separate coefficients for White, African American, North East Asians and South East Asian race/ethnicities.[8] For those not represented by those race/ethnic groups, a composite equation that averages the four groups is provided.[8] When using either the NHANES III or GLI reference equation, with the race-specific equations, a Black individual will have a higher percent-predicted lung function value relative to that of a White individual, when holding all else constant, including absolute lung function values.[9]

Adverse Implications of Race Adjustment

Race, a socially constructed category, is not a reliable proxy for biological differences. Many of the studies supporting the finding of a racial/ethnic difference in lung capacity failed to define race/ethnicity among their participants. And, few of these studies adjusted for potential confounders such as social, environmental, and occupational exposures.[9,10] Based on these limitations, the finding of a racial/ethnic difference in lung capacity — and the associated race/ethnicity adjustment of PFTs — has been called into question.[3,9,11] Further, since the race/ethnicity adjustment for PFT results in a Black individual appearing healthier, concerns have been raised that this practice may contribute to delays in care for Black people and potentially other racial/ethnic groups.[4,12]

The use of race/ethnicity in prediction for spirometry reference equations may lead to underestimation of COPD severity in Black individuals,[10] and has also not been shown to improve the prediction of chronic lung disease events compared to equations without race adjustment.[13] For example, removal of Black race correction in an analysis of 14,080 PFTs in Black patients led to an additional 1.7% and 4.7% of patients being diagnosed with obstructive and restrictive lung disease, respectively.[14] For those participants already diagnosed with obstructive, restrictive or mixed lung disease, the removal of the Black race correction led to a higher severity of disease for 48.6 percent of those patients.[14] These findings suggest that the Black race correction may contribute to delays in treatment of pulmonary disease, as well as in access to referrals for rehabilitation programs, disability support, and even lung transplantation.[9,12] Additionally, several studies have found that after adjusting for age, sex, and height, Black and White individuals with the same forced vital capacity (a core PFT measure) have similar mortality rates, which raises the concern that predicted values from current race-adjusted reference equations underestimate the risk of mortality in Black patients.[15-17]

Proposed Research and Evaluation Plan

Once CERCA members align on the revised algorithm and implement it, we recommend conducting a pre-post analysis of its impact on the following measures.

1. Primary measures (stratify by race/ethnicity):
   a. Diagnosis of lung disease
   b. Referral to pulmonologists
   c. referral to pulmonary rehabilitation

2. Secondary measures pending data availability (stratify by race/ethnicity):
   a. Prescription of medications for lung diseases as recommended by COPD and asthma guidelines
   b. Hospital 30-day and all-cause readmission rates
   c. All-cause mortality rates for COPD hospitalizations
   d. Access to disability services

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Appendix B: CERCA Work Plan Template

CERCA Organizational Work Plan 2022 - 2023							
Goal	**Key Tasks**	**Timeframe**	**Status**	**Lead(s)**	**Partners**	**Collaborators**	**Expected Outcomes**
CERCA Deliverables	*Steps and activities required to achieve goal. Tasks below are suggestions. Please identify key tasks based needs of your organization*	*Expected timeframe to complete this task* Example: August 2022 to October 2022	*Complete, In Progress, or Delayed*	*Who is leading this task? Does our leadership reflect all concerned groups, including patient and community stakeholders?*	*Who are our internal (other departments / divisions in organization) and external (community and patient advocacy stakeholder groups) partners in this task?*	*Which groups are we seeking feedback from and keeping abreast of our progress of this task?*	*What are the outcomes you hope to see after completion of task?*
1. Eliminating race adjustment from algorithm of focus	Develop provider-facing materials and educational opportunities to inform staff on history and harms of race correction.						
2. Developing and implementing an evaluation to monitor algorithm-related equity metrics							
3. Developing and implementing a patient engagement plan	Co-development of patient-facing materials with community stakeholders to educate and inform on potential changes in care due to removal of race adjustment in algorithm. Develop redress plan to identify and engage patients who may have been harmed by race adjustment in past clinical care.						

Appendix C: Check-in Interview Guide

1. Why is ending race modifiers important to you and your institution?
2. Why did you choose to focus on the algorithms you chose?
3. What is your CERCA team structure? How did you design your team? Is anyone missing?
4. At your institution, who has the power to change the algorithm you chose?
5. What electronic medical records (EMR) do you use? Have you engaged your EMR team in CERCA yet?
6. What is the biggest barrier to your team's success in achieving the goals of CERCA?
7. What changes to clinical algorithms has your institution already made? If any, have you evaluated the impact of these changed algorithms on patient outcomes? Have you engaged patients who may have been negatively affected by race-adjusted algorithms?
8. How do you collect race/ethnicity data? How complete is this data?
9. What do you perceive as the value of proactively engaging patients whose care was delayed by race modifiers?
10. What do you perceive as the value of evaluating the impact on related racial health inequities?
11. How can the Health Department best support you in achieving your CERCA goals?

Appendix D: CERCA Advisory Council Biographies

Arielle Elmaleh-Sachs, MD
Department of General Internal Medicine, Columbia University Medical Center

Dr. Arielle Elmaleh-Sachs is a primary care physician and post-doctoral clinical fellow in the Department of General Internal Medicine at Columbia. Her research focuses on understanding how the use of current guideline-recommended race/ethnic-specific spirometry reference equations influence the prediction of chronic lung disease outcomes, with findings that support the reconsideration of the recommendation to use race/ethnicity in interpreting spirometry results, as they may exacerbate racial disparities and misclassify risk of lung disease.

Ayrenne Adams, MD, MPH
Primary Care Physician and Clinical Director on Social Determinants of Health at NYC Health + Hospitals

Dr. Ayrenne Adams is a primary care physician at NYC Health + Hospitals/Gotham Health, Tremont in the South Bronx who is passionate about creating and evaluating system-level interventions to achieve health equity. She is a Clinical Lead of the Medical Racism initiative at NYC Health + Hospitals, tasked with identifying and removing race-based clinical algorithms throughout the enterprise. She is also a Clinical Director on the Social Determinants of Health team in the Office of Ambulatory Care and Population Health at NYC Health + Hospitals, leading the implementation of quality social needs screening and referrals.

Duncan Maru, MD, PhD
Assistant Commissioner for the Bureau of Equitable Health Systems (BEHS) in the Center for Health Equity and Community Wellness (CHECW)

Dr. Duncan Maru, MD, PhD, is Assistant Commissioner for the Bureau of Equitable Health Systems (BEHS) in the Center for Health Equity and Community Wellness (CHECW). BEHS works with primary care providers, hospitals, payors, and other health care systems to address structural racism and implement evidence-based strategies. Dr. Maru is an epidemiologist and physician trained in internal medicine and pediatrics and an Associate Professor in the Department of Global Health at Mount Sinai. He also continues to teach and practice clinically at NYC Health + Hospitals/Elmhurst.

Jennifer Tsai, MD, M.Ed
Department of Emergency Medicine, Yale School of Medicine

Dr. Jennifer Tsai is an Emergency Medicine physician, writer, and educator in New Haven, Connecticut. She received a Master's in Education from the Harvard Graduate School of Education, and her academic work centers on the intersection between race, medicine, inequity, and trauma-informed care. Her essays and research on race-based medical algorithms have been published in the New England Journal of Medicine, The Lancet, Scientific American, STATnews, American Journal of Bioethics, and the Journal of the American Medical Association, among other outlets.

Leo Eisenstein, MD
Resident Physician Internal Medicine at New York University and Bellevue Hospital

Dr. Leo Eisenstein is a resident physician in Internal Medicine at NYU Langone and NYC Health + Hospitals/Bellevue. As a medical student at Harvard Medical School, he co-led a successful advocacy effort to end the use of race-adjustment for estimates of kidney function at a hospital in Boston. In 2020, he co-authored a paper in the New England Journal of Medicine called "Hidden in Plain Sight: Reconsidering the use of race correction in clinical algorithms."

Marie Plaisime, PhD, MPH
FXB Center for Health & Human Rights, Harvard University

Dr. Marie Plaisime is a medical sociologist and a joint FXB Health and Human Rights Fellow and National Science Foundation post-doctoral fellow at Harvard University. Her research investigates the mechanisms through which health is racialized by examining racial bias, race-based medicine, algorithmic bias, social movements, and health policy. She applies critical quantitative, computational, and mixed methodological tools to detect, examine and quantify how structural racism in medicine jeopardizes health care delivery, access, and quality. This includes (1) assessing medical providers' understanding of structural competency pedagogy and structural racism in medical education, (2) exploring how race, as a social and power construct, is used in diagnostic tools and algorithms, and (3) investigating how social media and social justice movements influence trust in health care systems. In addition, her work assesses the complex interactions between race, health, and the roles that physicians, nurses, and patients play in shaping health equity.

Nwamaka D. Eneanya, MD, MPH, FASN
Head of Strategy and Operations, Global Medical Office at Fresenius Medical Care

Dr. Nwamaka Eneanya is the head of strategy and operations for Fresenius Medical Care's Global Medical Office. She was previously an attending nephrologist, assistant professor at the University of Pennsylvania, and the Director of Health Equity, Anti-Racism and Community Engagement in the Nephrology Division. She has led scientific advocacy efforts to end the misuse of race in the diagnosis and management of kidney disease.

Salman Ahmed, MD, MPH
Nephrologist and Assistant Professor at Baylor College of Medicine

Dr. Salman Ahmed has completed a clinical and research fellowship in Nephrology and Master's in Public Health from Harvard Medical School and the Harvard T.H. Chan School of Public Health. In the Brigham and Women's Hospital Health Equity Improvement Program, Dr. Ahmed and his co-authors showed that the race multiplier in estimated glomerular filtration rate equations may exacerbate disparities in kidney disease care delivery to African-Americans.

Sophia Kostelanetz, MD, MPH
Team Lead and Associate Program Director for Health Equity, One Brooklyn Health

Dr. Sophia Kostelanetz is an Internal Medicine and Pediatrics physician currently serving as the Team Lead of Health Equity in the Department of Medicine at One Brooklyn Health and Associate Program Director of Health Equity for the Interfaith Internal Medicine Residency Program. Her research and advocacy have focused on eliminating race-based eGFR. She helps co-lead the Nashville Chapter for the Campaign Against Racism, which aims to implement structural change to advance health equity nationally.

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