Dr. M. admitted Ms. S. for a debilitating headache and kidney failure. Workup revealed blood pressure over 180/90 and advanced renal disease. Dr. M. started anti-hypertensive therapy and Ms. S’s headache improved. Dr. M. also consulted a nephrologist for concern for intrinsic kidney disease.

Ms. S’s outside records showed that she had been seen for headaches several times over the past few years. She was tested for sexually transmitted illnesses (STIs) multiple times when presenting with a headache. Her BP was always over 160s/80s. Her basic metabolic panel (BMP) showed that her creatinine was steadily rising during that time, and if using the non-Black estimated glomerular filtration rate (eGFR), it would have flagged as abnormal one year ago ... but her eGFR “if Black” was normal.

Ms. S. is Black. Dr. M. wondered, was Ms. S’s prior provider falsely reassured by a race-adjusted eGFR? Could Ms. S’s headaches have been treated differently? Would an intervention have prevented Ms. S’s kidneys from worsening?

It is challenging for physicians to learn that what we have been taught and the tools that we have been using for years have perpetuated racial inequities in healthcare. The dogma of race as a legitimate proxy for genetic differences has been debunked through several studies, including the Human Genome Project, as exemplified by the series of publications in the supplementary Nature Genetics issue “Genetics for the human race” in 2004. In the introduction, Ari Patrinos, PhD, a former leader of the Human Genome Project, states that the use of the “oversimplified concept of race” is “bad medicine, and it’s bad science.” The now-recognized truth is that racial differences in healthcare primarily reflect dose exposure to racism and other social determinants of health linked to racism. To promote equity, decrease harm to patients and practice evidence-based medicine, we must evaluate when and how we use race in the delivery of healthcare.

In June 2020, a team of physicians at M Health Fairview established a task force to evaluate the use of race in calculating estimated glomerular filtration rate (eGFR). Since 1999, the most commonly used equations for calculating eGFR have used Black race as one of the variables in these equations. In July 2021, race will be removed as a variable from M Health Fairview’s eGFR calculations.

The impetus to examine our use of race in renal function started when a small group of physicians learned that leading institutions, such as Massachusetts General Hospital, removed race from their eGFRs in an effort to reduce the harms of race-based medicine. Black nephrologists nationwide, such as Vanessa Grubbs, MD, and Amaka Eneanya, MD, MPH, led the charge advocating for removing race from eGFR calculations, associat-
Forming the task force

Task force members included medical subject matter experts and experts on racism in medicine. As University of Minnesota Medical School students wrote a call-to-action letter asking the medical school to remove race-based medicine, several student and resident advocates also joined the task force.

Understanding eGFR

Reporting a normal reference range for creatinine is problematic, given that the same creatinine number may represent healthy kidney function in a very muscular young person and severe kidney disease in a frail elderly person. Previously, kidney function was estimated using the creatinine clearance formula by Cockcroft-Gault, which typically overestimates the GFR by 10-20 percent. While the formula adjusts for age, gender and weight, many issues with accuracy, bias and precision have emerged, demanding the need for more accuracy, which led to the development of eGFR formulas. The current eGFR calculations widely in use (the MDRD and CKD-EPI equations) were developed to improve upon the use of creatinine clearance formulas. Yet these formulas, while improved, are not free of limitations. Both the MDRD and CKD-EPI equations include large confidence intervals (+/-30 percent) and a race adjustment where the eGFR calculation is multiplied by 21 percent or 16 percent respectively for patients identified as Black. The final eGFR appears as two numbers, one with and one without the race adjustment. It is up to the clinician to apply the appropriate number to individual patients—meaning a provider chooses which number to use based upon their understanding of a patient’s race. This effectively assigns a higher eGFR value for the same creatinine for anyone the provider thinks is Black.

The race adjustment exists because, in the original two studies, researchers noted that self-identified African Americans had higher true GFRs for the same creatinine level when using more expensive and time-consuming measurements such as nuclear medicine measurements. Researchers developed the race adjustments to mimic this outcome. These studies included White and Black patients, with few patients from other racial groups. Patients self-identified their race, and biracial was not an option. The task force was unable to find a biologic explanation for this difference. Studies in other countries have not consistently demonstrated racial differences, including studies in Asia (Japan), South America (Brazil), United Kingdom and Africa (South Africa). Furthermore, the task force was unable to determine how a biracial individual should be treated. By convention, in the United States all biracial individuals receive the “if Black” number, while in the United Kingdom, anyone who is biracial receives the “non-Black” eGFR.

Additional studies in the United States since the original MDRD and CKD-EPI studies have continued to demonstrate a higher true GFR for a similar creatinine for Black Americans. Combining this information with the inconsistencies worldwide, the question becomes: what is causing the difference in the United States? In their Anti-Racist Clinical Skills course at Icahn School of Medicine/Mt. Sinai, Lynch and Palermo and their team
encourage doctors to assess the applicability of race by asking a series of questions, including, "Are there significant biological, social, political, or economic drivers of health that may be obscured by the use of race?" In looking at the participants in the original MDRD study in 1999, the African American participants were more likely to make less than $25,000 annually; be unmarried; and/or have hypertension, hypertensive nephrosclerosis or diabetic nephropathy. In other words, race itself may not drive the difference in eGFR; rather, race may function as a marker for ongoing structural, institutional and interpersonal racism in our country.

Importantly, alternatives to creatinine-based estimates of GFR exist. The gold standard is to measure renal function through nuclear medicine imaging or measuring the plasma clearance of iohexol or iothalamate, both time-consuming and expensive tests. Physicians can estimate GFR using cystatin C, which is less expensive than imaging but more expensive than the creatinine-based eGFR and may not be widely available. Similar to creatinine, cystatin C can also be affected by factors other than kidney function. When clinicians are unsure if a creatinine-based eGFR is an accurate assessment of a patient's true GFR, these additional tests can and should be considered to help guide decision-making.

In considering removing race from eGFR calculations, the task force reviewed how this change would impact patients. Continuing to adjust eGFR upwards for Black patients may under-diagnose chronic kidney disease (CKD), lead to lower referrals to specialists or not meeting kidney transplant waitlisting threshold, play a role in why Black Americans dialyze more often initially through central lines rather than fistulas and continue the use of medications such as contrast dyes.

On the other hand, removing the race modifier could potentially over-diagnose renal failure in this population. Almost 1 million Black Americans may be newly diagnosed with CKD by removing racial adjustment. Additionally, Black Americans may lose the benefit of medications such as metformin or SGLT2 agents, as these medications should be discontinued as eGFR drops.

**Task force recommendations**

The task force unanimously agreed that using race in calculating eGFR is, at best, problematic. We considered the national conversation and indications that future adjustments may be needed. A national task force, formed by the American Society of Nephrology (ASN) and the National Kidney Foundation (NKF), is currently evaluating this issue and is expected to make recommendations some time this year. Leading institutions such as Vanderbilt, Zuckerberg San Francisco General Hospital, Beth Israel Deaconess Medical Center, University of Washington, University of Wisconsin, Mass General/Brighten and others have already removed race from their eGFR reporting. Several local systems are also making progress toward change.

Due to the upcoming M Health Fairview Epic integration in July 2021, the medical informatics team needed a recommendation for eGFR reporting by February. If not adjusted with the integration, the next opportunity to modify how eGFR is represented will likely be delayed until winter 2021, after this large data and process migration is optimized. Knowing that the national task force is investigating removing race from eGFR calculations, and that Hennepin Healthcare is in the process of changing its eGFR reporting, the task force recommended removing race from our eGFR with our Epic integration.

All task force members were comfortable recommending presenting a single number calculated using the CKD-EPI equation without the race correction. All members support reassessment after the national recommendation and making recommended changes, especially if those include nationally applied alternatives to current equations. There are plans to adjust and implement such additional changes as soon as possible. The M Health Fairview task force additionally encourages further research to improve the accuracy of eGFR for all patients, including better understanding the impacts of genetics, socioeconomic factors and racism.
Next steps
An important part of removing race from eGFR is education about the use of race in medical algorithms. As such, this change was discussed with the University of Minnesota Medical School and M Health Fairview leadership and approved by all M Health Fairview medical executive committees. Educating our providers about this change includes assessing the national task force’s recommendation, preparing our health system for further changes in the months and years to come and engaging in conversations with providers around Minnesota to move forward together.

This process, which will take just over one year to complete, prompted better understanding of the structural racism involved in our practice and encouraged us to combine science and social justice to create a path forward. We hope that the course we learned to navigate as displayed in the flow diagram is one that others can chart as they continue additional efforts, such as those with pulmonary function tests. While this work is assuredly only the beginning, it allowed us to show how bringing the right stakeholders together, particularly those left out of conventional working groups, can lead to meaningful change for our patients and ourselves.

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