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**Abstract:**

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How the University of Washington implemented a change in Estimated Glomerular Filtration Rate (eGFR) reporting

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Background

Chronic kidney disease (CKD) disproportionately affects those of minoritized race and ethnicity. Lack of access to care and social determinants of health are most likely the largest drivers of increased risk.¹ To improve and simplify the way we calculate kidney function, estimates of glomerular filtration rate (eGFR)² were developed based on data provided from large cohort studies where relatively few Black individuals were enrolled in earlier studies. This article provides a brief history of race and racism in medicine and describes the transition from the clinical use of eGFR with the race variable to reporting eGFR without race at the University of Washington (UW), the steps involved, and actions taken.

History of Race and Racism in Medicine

As has been well documented³-⁵, race has been used as a scientific foundation for institutional racism in medicine. In 1684, Dr. Francis Bernier created racial classifications that included American, Asian, African, and European. Carl Linnaeus, the father of modern taxonomy, socially constructed hierarchal groupings with specific attributes that established the foundation for racism,⁶ which included Americanus, regulated by customs; Asiaticus, ruled by opinions, Africanus, governed by caprice, and European, governed by laws. But what is race really? Race is a sociopolitical construct that has its legal underpinnings in chattel slavery, which dominated the new world colonies and was written into the US constitution. Although slavery was eventually overturned by the 13th amendment,⁷ the sociopolitical construct of race has been used to maintain advantages for White people. More recently in the 20th century, laws enacted by our government such as "redlining" or restrictive covenants in neighborhoods that prohibited selling homes to Black families in White or higher income communities or urban renewal sanctioned destruction of Black neighborhoods, reduced resources and opportunities for Black communities to build wealth. The consequences of these practices led to lower quality education, under-employment, and inequitable access to health care for marginalized communities, which ultimately limited the ability to acquire wealth and to pass wealth along to successive generations.

In the 21st century, racialization of medicine has a new facade. It includes use of race correction for many guidelines including pulmonary function tests, cardiac risk scores, and other guideline-associated algorithms for measurement.⁸ Estimated GFR is one of the more recent equations to use race, and was used initially to simplify kidney function evaluation; however, use of the race variable in eGFR calculations has been associated with lack of eligibility for kidney transplants.
for Black patients. In our institution, student advocacy questioned the use of race in eGFR, which started our institution’s discourse on whether or not to remove race from eGFR calculations in clinical laboratory reporting.

**Student Perspective**

The practice of medicine and medical education today are hierarchical by design; students learn from highly trained seniors as part of academic pedagogy. Rarely are students actively encouraged to question the material being taught in the learning environment. The rigidity of this learning environment and resistance to change are some of many reasons why practices such as “race-norming” continue to persist. For students, the looming threat of professionalism violations and the inherently biased nature of clinical grades discourages students from pointing out fallacies in practice that can be seen more clearly from the viewpoint of someone relatively new to the field. As a Black medical student, this fear is further amplified by the notion that any misstep becomes the misstep of an entire community; a credit to those who view efforts to diversify medical schools as akin to lowering the standards for admission. It is within this context that I chose to speak up about the harms of race correcting eGFR. At this point in medical school, I had seen numerous examples of how racism taints clinical practice and reached an impasse where not speaking up felt like a betrayal of the community I had entered medicine to treat.

My concerns about eGFR race-norming began prior to a lecture on renal physiology. It was during my pre-lecture reading and independent studying that I first came across the notion that eGFR values for Black patients “needed” to be adjusted. This came as a surprise, because the implications of this adjustment were that race can be determined by physicians simply by looking at patients, the physiology of Black people was somehow different than other groups, Black people inherently had more muscle mass than other groups, and lastly, White people were the accepted norm to which all other racial groups were to be compared. My concerns were only heightened when it became clear that a nuanced discussion on the matter would not be facilitated in lecture and my questions were met with hostility. It appeared we were being taught that Black race was biologically associated with a greater burden of CKD that independently warranted further clinical investigation.

I elected to involve faculty and student allies in bringing more attention to my concerns. As there is power in numbers and safety in advocating for change as a group, speaking with faculty allies
allowed for further discussions with their clinician peers without the barriers of academic hierarchy that are faced by students. Additionally, partnering student efforts with faculty allowed students to voice our perspective and share the information we had gathered with a shield of protection in the form of those who are more established and respected in their field. Though it was the partnership of students, faculty, and staff that led to changes being made at the UW, the fact that students were the ones to lead a movement that has now fundamentally changed the way we will practice medicine in the future should serve as an example of the power of a single voice and the dangers of a culture of silence.

**Response to students**

As a part of the renal class response to the students, I as a Black faculty member, was asked to help facilitate the response regarding eGFR. During that initial encounter, I reiterated that the models incorporating the race correction factor were standard epidemiologic and statistical models, where we (as researchers) were trying to mathematically account for many variables that we didn’t have access to, such as social and structural determinants of health that are extremely difficult to model accurately due to lack of sufficient data. The students challenged my stance with their own questions (Figure), which led to further discussions.

Based on my interaction with the student class, I felt we were not adequately capturing other potential causes of kidney disease, such as social determinants of health. Epidemiologic models of eGFR were developed from large cohort studies that represented population assessment of kidney function, which were being translated into clinical care with potential adverse clinical outcomes for select individuals by race. During a divisional renal grand rounds, I presented a summation of pertinent data on how race was incorporated into eGFR studies, a brief explanation of race, racism and medicine, and ended with a panel of Black physicians, a Black kidney transplant patient, and a Latino MD/PhD clinical researcher. From that session, many questions were generated, which led to additional questions and concerns, additional meetings, and finally to specific outcomes for our institution.

**Timeline of response**

A meeting between laboratory medicine leadership, nephrology, student-facing faculty, and a critical race theory expert resulted in considering removing the race variable from the eGFR calculation, which, at the time, was also being considered at other large academic institutions.
That discussion resulted in analyses of UW laboratory data, which eventually led to the removal of the race coefficient from UW Medicine laboratory testing on May 2020 (Table).\(^9\)

Other outcomes that resulted from those efforts included a paper that evaluated removal of the race coefficient and African American/Black patients access to preemptive transplantation using current eGFR cutoffs.\(^10\) Nationally, the ASN and NKF formed a joint task force to evaluate removing the race variable from eGFR calculation.\(^11\) Literature from other non-nephrology journals recognized the use of race correction in other clinical algorithms, including kidney stones, the Heart Failure Risk Score, the Vaginal Birth after Cesarean (VBAC) algorithm, among others.\(^8\)

Institutionally, our medical students continue to advocate and challenge the current paradigm of medical education and clinical evaluation where social determinants of health, structural racism and institutional racism are prominent and associated with adverse clinical outcomes. This has led to acknowledgment of other methods for consideration in medical education, including critical race theory and Public Health Critical Race Praxis (PHCRP)\(^12\) and consideration of co-development of medical education classes specifically on social justice and medicine, as well as the development of new clinical pathways for students that focus on the underserved.

Partnering with student activists, Black, Indigenous, and persons of color faculty, and current leadership resulted in UW Medicine transitioning to removal of the Black race coefficient from eGFR calculations by our clinical laboratory, which predated the ASN-NKF task force’s finalization of their recommendations to remove race from eGFR.\(^13\) Removal of the race variable may show we have been overestimating GFR in the early stages of CKD, which has led to under treatment of CKD among Black patients. Many Black patients may not have been considered for preemptive kidney transplant as well.\(^10\) Although difficult for more senior faculty to acknowledge, it is important to nurture student and trainee voices, questions, and advocacy as we navigate this new era of social justice and anti-racism. We must strive to rid ourselves of all aspects of racialization of medicine, as well as structural and institutional racism, particularly as it pertains to CKD. Race is not a biologic variable and is not directly related to any health outcome or condition. It is only indirectly related through racism (structural, institutional, individual) as a risk factor for health or by ancestry, manifested as gene polymorphisms, through a myriad of pathways that are different for each individual and population.
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Table 1. Timeline of Change at University of Washington

| Date               | Event                                                                 |
|--------------------|----------------------------------------------------------------------|
| January 24, 2019   | Naomi Shike, MD presented at Medicine Grand Rounds: Race in Medicine: What you see isn’t what you get. |
| February 21, 2019  | Naomi Nkinsi and other students: Questioned eGFR use and called for Black race coefficient to be removed. |
| February 21, 2019  | Cardio, Pulmonary, Renal (CPR) student lecture on renal physiology   |
| March 1, 2019      | Naomi Nkinsi meets with CPR block director about the use of race in eGFR and how race has been discussed in lectures. Dr. Bessie Young attends CPR lecture to address student concerns about race-based eGFR |
| March 2, 2019      | Email sent to students addressing concerns about race-based eGFR detailing meetings between faculty and administration about student concerns |
| March 3, 2019      | Students meet off campus to discuss strategies to push for removal of race and begin drafting a paper on in the use of race in medical education |
| March 15, 2019     | Bessie Young, MD: Renal Ground Rounds: Estimating GFR and Race: Is it time for a new perspective? |
| March 21, 2019     | Students hold meeting with faculty and administration to discuss racism within the school curriculum, interpersonal racism, and race-based clinical measurements |
| November 19, 2019  | UW Associate Dean for Curriculum sends student-wide email response, which resulted in meeting with other academic institutions, consulting with laboratory medicine, and planned follow-up meetings. |
| 2019-2020          | Lab Medicine meeting to discuss eGFR equation and possibility of removing race variable, which resulted in evaluation of UW Medicine clinical data |
| May 25, 2020       | UW Medicine memo from UW Lab Medicine that race variable will be removed from eGFR starting June 1, 2020 |
| July 1, 2020       | NKF-ASN Task Force on eGFR and Race established                      |
| June 19, 2020      | Medical students Naomi Nkinsi and Liz Stein appear on NBC news to discuss race modification in eGFR at UW¹⁴ |
| December 2020      | Students published manuscript on the use of race in medical education published in Academic Medicine¹⁵ |
| Papers Published, 2021 | Lab medicine⁹ and Transplant evaluation¹⁰ publications               |
| September 2021     | NKF/ASN Publish final recommendations to remove race from eGFR calculations |

Figure: Exemplar quotes from medical students regarding eGFR
So far in medical school we have been taught that precision matters. How is it that we are basing so many clinical decisions on a test that uses race, an imprecise proxy, as part of its measurement.

“It does not make sense to assume that Black people have more muscle mass.”

“How does this work with transplant patients? If a white person gets a kidney from someone who is Black, is that kidney now considered white and no longer needing race adjustment to measure functioning?”

“What this essentially means is that Black people have to get sicker in order to even qualify for some treatments. That doesn’t really make sense.”

“So far in medical school we have been taught that precision matters. How is it that we are basing so many clinical decisions on a test that uses race, an imprecise proxy, as part of its measurement.

“How does this apply to people who are mixed race? How Black is Black enough to have race correction be applied?”