Advancing Health Equity for Veterans:

A Call to Stop Using Race-Based Algorithms in Kidney Function Calculations

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eGFR

Background

- Race is a sociopolitical construct, not a biologic one; race/ethnicity cannot be used as a surrogate for genetic ancestry. The practice of race-based medicine is wrong and exacerbates healthcare disparities.
- Black patients make up a disproportionate percent of the 37 million people with Chronic Kidney Disease (CKD) in the U.S. They are younger at disease onset, have faster decline in kidney function, and are 3X more likely to progress to renal failure. Blacks make up 13% of the U.S. population yet make up more than one third of those with End Stage Renal Disease (ESRD) and those on dialysis.
- Current, kidney function estimation equations (eGFR) employ a race correction factor of 1.21 (MDRD study equation) or 1.16 (CKD-EPI equation) that assign a higher eGFR value to Black patients for the same creatinine.
- As a result, Black patients are more likely to have a delay in diagnosis of CKD, less likely to receive aggressive treatment and preventative care, less likely to receive timely nephrology specialty referrals, and less likely to be referred for kidney transplantation.
- Universal "one size fits all" race coefficient fails to account for the differences observed between geographical groups within the entire Black diaspora and between persons of multiracial heritage with complex genetic ancestries.
- eGFR equations are biased, imprecise, and inaccurate when compared to measured GFR (mGFR). Numerous studies have shown better correlation between eGFR and mGFR when eGFR is calculated *without* the race coefficient.

Objective

- Establish a JB4BL eGFR Sub-Committee to examine the current evidence justifying the use of a race-coefficient in current eGFR calculations.
  - *Established on August 19, 2020*
- Perform extensive literature review, collaborate with local experts, and seek out current national guidance (NKF, ASN) to develop evidence-based recommendations with the goal of promoting kidney health equity.
  - *Performed from August 2020 to March 2021*
- Write a white paper advocating the removal of the race coefficient from kidney function estimation equations and make recommendations for an alternate method of calculating eGFR.
  - *Completed April 2021*
- Establish local and national VA and affiliate institutions' support for our initiative through widespread dissemination of the white paper, promotion via educational conferences, and engaging key stakeholders responsible for instituting change.
  - *White paper disseminated locally*
  - *Grand rounds lecture at JBVAMC and at academic affiliate April 2021*

JB4BL eGFR Subcommittee Project

Methods

- Members of the eGFR work group collaborated with physicians and trainees at other academic institutions to learn about their experience and methods. The sub-committee also reached out to physicians at other VAs to discuss the issue and to educate them on the topic.
- Completed an exhaustive search of the data to verify inaccuracies with the use of race in eGFR calculations.
- Participated on a national level to advocate for the removal of race from eGFR calculations.
- Wrote a white paper, educate the staff, obtain signatures from the staff in support of the white paper advocating removal of the race-coefficient from eGFR equations.
- Undergoing process to institute lab changes on a local level and a goal to influence change at other Veteran Health Systems.
- Encourage VA facilities within VISN 12 and other VISNs to make the same changes.

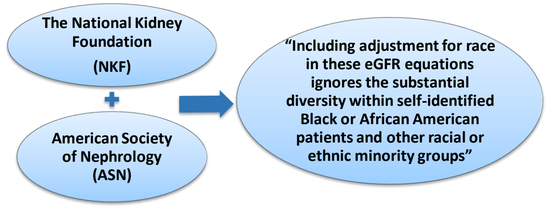
Results

- Current widely employed kidney estimation equations, MDRD study equation and CKD-EPI equation, are inherently biased and lack in accuracy and precision. Thus, it is inappropriate to make clinical decisions based on small changes in eGFR resulting from the race correction factor in these equations. For Black patients, such overestimation not only delays the identification of CKD, but can have profound clinical impact at critical junctures such as nephrology referral (eGFR <30ml/min/1.73m^2) and transplant candidacy (eGFR <20ml/min/1.73m^2).
- Regardless of the calculator used, the use of race is problematic. The authors of both the MDRD and CKD-EPI studies have stated that the previous assumption that Black patients have higher muscle mass is inaccurate.[1] Moreover, international studies in African countries have found that using the race coefficient to calculate eGFR correlates poorly with measured GFR and consistently overestimates kidney function. Finally, using race as a surrogate for genetic ancestry fails to account for the growing multiracial population in the U.S.
- A white paper advocating the case for removal of race in eGFR calculations was completed, submitted to chief of staff and will be shared with all staff to educate, obtain signatures in support of the race coefficient removal, and change laboratory eGFR reporting.

Supporting Data

	White Woman	Black Woman
Serum creatinine in mmol/L (mg/dL)	250 (2.8)	250 (2.8)
Age	55	55
Sex	F	F
Body Surface Area (m^2)	1.89	1.89
eGFR as estimated by MDRD (mL/min/1.73m^2)	18	22
eGFR as estimated by CKD-EPI (mL/min/1.73m^2)	18	21

Table 1. Illustrates the impact of utilizing a race coefficient in MDRD and CKD-EPI on kidney transplant eligibility (i.e., eGFR less than or equal to 20 mL/min). For identical 55-year-old women with a serum creatinine of 2.8 mg/dL, a white woman would be referred for a kidney transplant, but a Black woman would not



Benefits
• No longer discriminating against Black veterans based on limited and poor-quality data.
• Appropriate use of iodinated and gadolinium contrast dye radiologic studies. Appropriate dosing of antibiotics, chemotherapy, and other potentially nephrotoxic medications.
• With appropriate identification and treatment of early CKD, expect a decrease in healthcare costs associated with progression to ESRD.
• Increasing the number of Black veterans who are placed on the kidney transplant list.
• As the largest healthcare system in the country, the VA will influence other systems to pursue a race-neutral eGFR strategy, affirming that race should not be used as a valid biological marker.

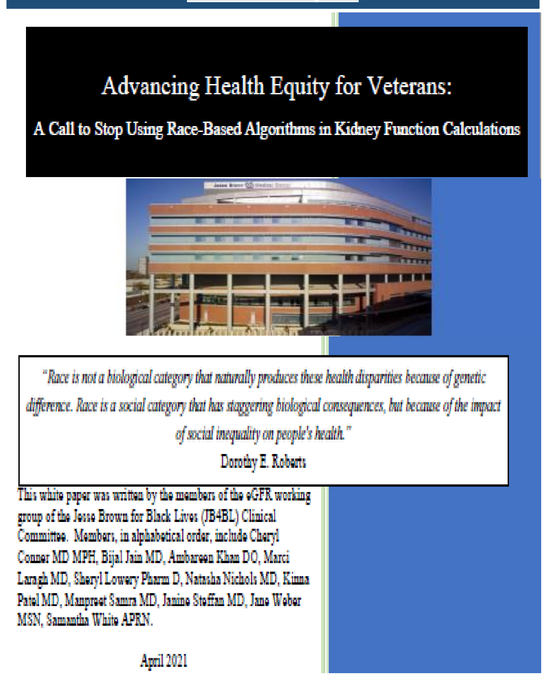
Risks
• Increasing the number of Black veterans whose eGFR will now fall below the cutoff where certain medications and contrast-based radiologic studies will be contraindicated.
• Increasing referrals to nephrology leading to increased wait times and veteran dissatisfaction.

Table 2. Risks and Benefits of Adopting a Race-Neutral eGFR Calculation

Conclusion

- In summary, the benefits of removing the race coefficient from the calculation of eGFR within the JBVAMC far outweigh any potential risks (Table 2). We must practice the highest quality, unbiased medicine when caring for our veterans. By removing the race coefficient from the eGFR equation, we will have an opportunity to establish the VA as a national leader in kidney health equity.

White Paper



Acknowledgement and Contacts

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