

Evaluating the Elimination of Race from eGFR Equations

Prepared by: Salman Ahmed MD MPH

Edited by: Rohan Khazanchi MPH, Adriana Joseph MPH, Nwamaka Eneanya, MD MPH, Duncan Maru MD PhD, Michelle Morse MD MPH

Objective: To describe and evaluate an approach for healthcare systems the removal of the race multiplier from estimated glomerular filtration rate (eGFR) equations.

Background

Most existing equations for estimation of glomerular filtration rate 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 are no evidence in support of 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 our study published in the *Journal of General Internal Medicine*,⁸ in which 0 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 & Evaluation Plan

Here, we adapt our 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, DOHMH 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

References

1. Levey AS, Bosch JP, Lewis JB, Greene T, Rogers N, Roth D. A more accurate method to estimate glomerular filtration rate from serum creatinine: a new prediction equation. Modification of Diet in Renal Disease Study Group. *Ann Intern Med.* 1999 Mar 16;130(6):461-70. doi: 10.7326/0003-4819-130-6-199903160-00002.
2. Levey AS, Stevens LA, Schmid CH, Zhang YL, Castro AF 3rd, Feldman HI, Kusek JW, Eggers P, Van Lente F, Greene T, Coresh J; CKD-EPI (Chronic Kidney Disease Epidemiology Collaboration). A new equation to estimate glomerular filtration rate. *Ann Intern Med.* 2009 May 5;150(9):604-12. doi: 10.7326/0003-4819-150-9-200905050-00006.
3. Vyas DA, Eisenstein LG, Jones DS. Hidden in Plain Sight - Reconsidering the Use of Race Correction in Clinical Algorithms. *N Engl J Med.* 2020 Aug 27;383(9):874-882. doi: 10.1056/NEJMms2004740. Epub 2020 Jun 17.
4. Eneanya ND, Yang W, Reese PP. Reconsidering the Consequences of Using Race to Estimate Kidney Function. *JAMA.* 2019 Jul 9;322(2):113-114. doi: 10.1001/jama.2019.5774.
5. Norris KC, Eneanya ND, Boulware LE. Removal of Race From Estimates of Kidney Function: First, Do No Harm. *JAMA.* 2021 Jan 12;325(2):135-137. doi: 10.1001/jama.2020.23373.
6. Diao JA, Wu GJ, Taylor HA, Tucker JK, Powe NR, Kohane IS, Manrai AK. Clinical Implications of Removing Race From Estimates of Kidney Function. *JAMA.* 2021 Jan 12;325(2):184-186. doi: 10.1001/jama.2020.22124.
7. Eneanya ND, Boulware LE, Tsai J, Bruce MA, Ford CL, Harris C, Morales LS, Ryan MJ, Reese PP, Thorpe RJ Jr, Morse M, Walker V, Arogundade FA, Lopes AA, Norris KC. Health inequities and the inappropriate use of race in nephrology. *Nat Rev Nephrol.* 2021 Nov 8:1-11. doi: 10.1038/s41581-021-00501-8.
8. Ahmed S, Nutt CT, Eneanya ND, Reese PP, Sivashanker K, Morse M, Sequist T, Mendu ML. Examining the Potential Impact of Race Multiplier Utilization in Estimated Glomerular Filtration Rate Calculation on African-American Care Outcomes. *J Gen Intern Med.* 2021 Feb;36(2):464-471. doi: 10.1007/s11606-020-06280-5.
9. Inker LA, Eneanya ND, Coresh J, Tighiouart H, Wang D, Sang Y, Crews DC, Doria A, Estrella MM, Froissart M, Grams ME, Greene T, Grubb A, Gudnason V, Gutiérrez OM, Kalil R, Karger AB, Mauer M, Navis G, Nelson RG, Poggio ED, Rodby R, Rossing P, Rule AD, Selvin E, Seegmiller JC, Shlipak MG, Torres VE, Yang W, Ballew SH, Couture SJ, Powe NR, Levey AS; Chronic Kidney Disease Epidemiology Collaboration. New Creatinine- and Cystatin C-Based Equations to Estimate GFR without Race. *N Engl J Med.* 2021 Nov 4;385(19):1737-1749. doi: 10.1056/NEJMoa2102953.
10. Delgado C, Baweja M, Crews DC, Eneanya ND, Gadegbeku CA, Inker LA, Mendu ML, Miller WG, Moxey-Mims MM, Roberts GV, St Peter WL, Warfield C, Powe NR. A Unifying Approach for GFR Estimation: Recommendations of the NKF-ASN Task Force on Reassessing the Inclusion of Race in Diagnosing Kidney Disease. *Am J Kidney Dis.* 2021 Sep 23:S0272-6386(21)00828-3. doi: 10.1053/j.ajkd.2021.08.003.
11. Caddock Lee SJ, Grobe JE, Tiro JA. Assessing race and ethnicity data quality across cancer registries and EMRs in two hospitals. *J Am Med Inform Assoc.* 2016;23(3):627-34. doi:10.1093/jamia/ocv156.

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 free from 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>