# DISMANTLING RACE-BASED eGFR

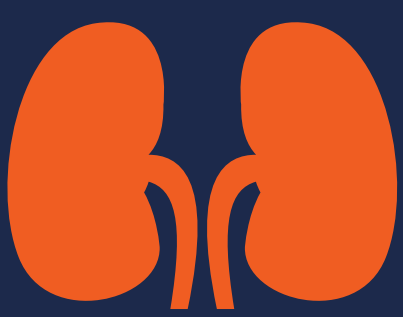
UCSD ANTI-RACIST COALITION

## THE HISTORY OF RACE-BASED eGFR

-In the 1999 Modification of Diet in Renal Disease (MDRD) study, researchers observed Black study participants (n=197) had, on average, higher glomerular filtration rates (GFR) when compared to White participants with the same creatinine level.

-The researchers assumed that Black participants had higher muscle mass to explain the higher creatinine and GFR levels. Levey et al. then incorporated a race correlation factor as a proxy for the muscle mass in the eGFR equation. This clinical segregation is not only exclusive by perpetuating the idea of Black "otherhood" while simultaneously assuming that all other races and ethnicities are equivalent to those of white patients.

-Race is a social construct rooted in oppression. The assumption that races are biologically different, as assumed in race-based equations such as MDRD and CDK-EPI (2009) reflects a flawed science that results in inequitable health outcomes. These include racial and ethnic disparities seen in lower referrals to nephrologists, longer waiting times for transplantation, and overall lower rates of transplantation in historically minoritized groups



## New 2021 Recommendations for Calculating GFR

The National Kidney Foundation (NKF) and the American Society of Nephrology teamed up to create a Task Force on Reassessing the Inclusion of Race in Diagnosing Kidney Diseases that has been devoted to create an "unbiased and most reasonably accurate estimation of GFR." **In this report, the Task Force urges all healthcare systems to adopt a new eGFR 2021 CKD EPI creatinine equation that does not include race. They also recommended institutions to increase the use of cystatin C in addition to serum creatinine to confirm the assessment of kidney function.**

## New eGFR 2021 CKD EPI Creatinine Equation

**eGFR = 142* min(standardized Scr/K, 1)α *max(standardized Scr/K, 1)-1.200 *0.9938Age *1.012 [if female]**

eGFR (estimated glomerular filtration rate) = mL/min/ 1.73 m2
Scr (serum creatinine) = mg/dL
K = 0.7 (females) or 0.9 (males)
α = -0.241 (females) or -0.302 (males)
min = indicates the minimum of Scr/K or 1
max = indicates the maximum of Scr/K or 1

## Cystatin C and its use in estimating kidney function

Cystatin C is a **low-molecular weight protease inhibitor**, produced by all nucleated cells at a constant rate and freely filtered and fully catabolized in the proximal tubule, making it a useful marker of GFR. Cystatin C has also been shown to **better predict adverse cardiovascular outcomes and mortality in comparison to creatinine**. While serum creatinine concentrations depend on a variety of factors, **cystatin C is less variable**, thus making it a better marker for GFR.

| | Creatinine | Cystatin C |
|---|---|---|
| Less affected by patient's muscle mass | ✗ | ✓ |
| Less affected by patient's dietary protein | ✗ | ✓ |

| | 2009 Creatinine | 2021 Cystatin C | 2021 Creatinine | 2021 Creatinine-Cystatin C |
|---|---|---|---|---|
| Includes Race | ✓ | ✗ | ✗ | ✗ |
| Includes Age and Sex | ✓ | ✓ | ✓ | ✓ |
| Smallest different eGFR between races | ✗ | ✗ | ✗ | ✓ |
| Effect on estimated CKD within the Black population compared to 2009 Creatinine | REFERENCE | ↔ | ↑ | ↓* |

*The 2021 creatinine-cystatin c equation has less of an effect on CKD prevalence than the 2021 creatinine equation

**Updated eGFR calculator for patients and healthcare providers**

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## What Does This Mean for UCSD Health, Providers and Patients?

- **UCSD Health** along with the San Diego VA is working to adopt the use of cystatin c as well as the new eGFR equations. This will allow us to ensure more accurate and equitable care to our patients and their families that are facing kidney disease. Cystatin c is now an in-house lab, and results will be reported the same day.
- **Patients:** the use of the new eGFR equations could change patients' eGFR and even their stage of chronic kidney disease. Check out the paper below on the new equation regarding details about changes in estimates. The NFK-ASN Task Force projects that this change will ultimately reflect a more accurate estimate of kidney function in the patient population as a whole and move towards eradicating the discrepancy of care between races.
  - Inker, Lesley A., et al. "New creatinine-and cystatin C–based equations to estimate GFR without race." New England Journal of Medicine (2021).
- Providers: Talk to your patients about what this change means and why the medical field is making the change. Please check out our flier for patients and The National Kidney Foundation for more resources.
  - https://www.kidney.org/sites/default/files/docs/12-10-4004_abe_faqs_aboutgfrrev1b_singleb.pdf
  - https://www.kidney.org/newsletter/changes-to-egfr-calculation-and-what-means-people-living-kidney-disease

## References


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