Kidney failure experts recommend new tool that eliminates race as a determining factor for diagnosis

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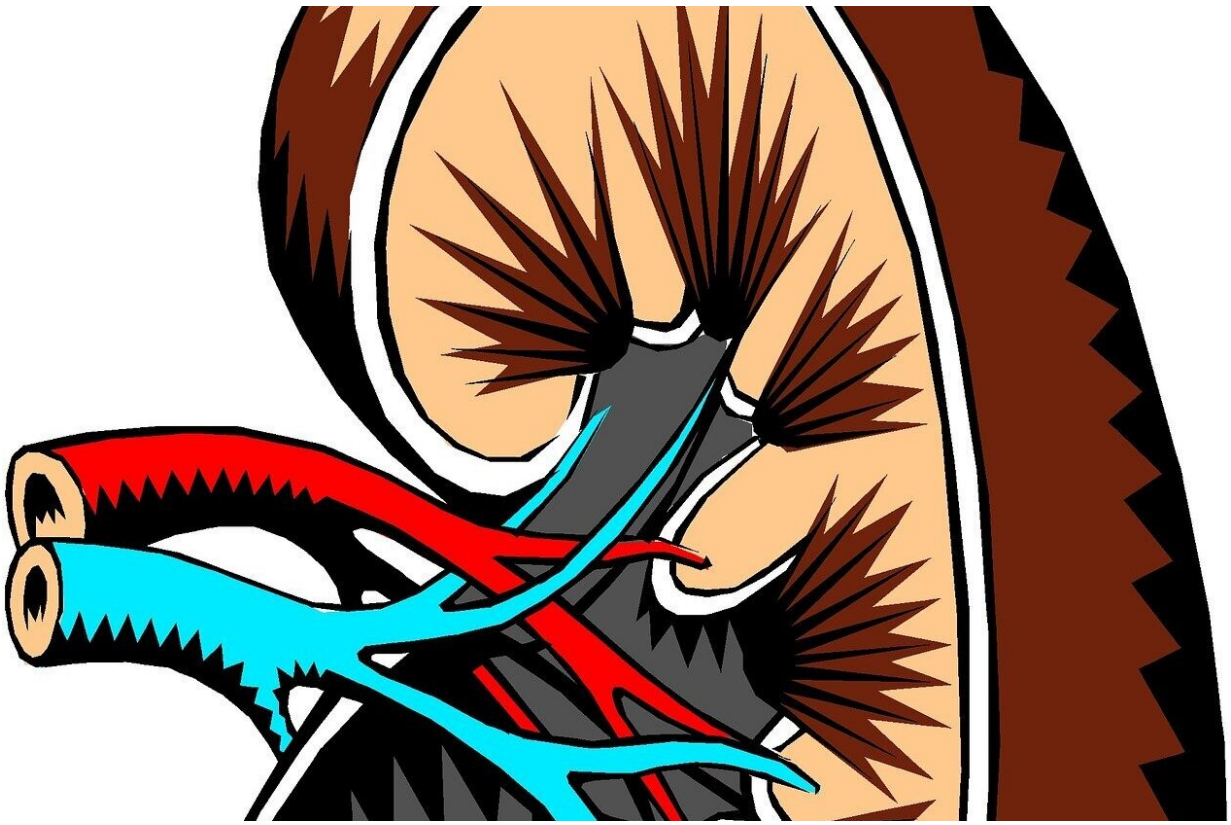

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Since 2009, the most commonly used blood test to evaluate kidney function has used equations that include race as a determining factor.

The equations estimate glomerular filtration rate from blood creatinine concentrations. Experts and researchers have recently challenged the inclusion of race in the equations since race is a social construct, not a biological one.

There have been concerns raised that the creatinine-based eGFR equations that include race may over-estimate true kidney function in Black patients, resulting in delays in needed treatment, dialysis and transplant listing based on health criteria.

Last year, a consortium from the Chronic Kidney Disease Epidemiology Collaboration published in the *New England Journal of Medicine* a new 2021 creatinine-based eGFR equation that excluded race. A National Kidney Foundation-American Society of Nephrology committee recommended providers use the new equations as well as consider adding cystatin C, a newer marker that is not biased by race, to improve estimates of glomerular filtration rate.

Results from a study led by investigators from the University of Alabama at Birmingham and the Johns Hopkins Bloomberg School of Public Health published in the *Journal of the American Medical Association* show that, while the new eGFR equation was useful and increased earlier recognition of kidney disease among Black participants, it limits researchers' ability to track racial differences in risk when evaluating health disparities.

Orlando Gutierrez, M.D., director of the UAB Marnix E. Heersink School of Medicine Division of Nephrology, and collaborators with the Chronic Kidney Disease Epidemiology Collaboration assessed whether an eGFR equation that excluded race and measured both creatine and cystatin C reduced the bias in estimating glomerular filtration rate while preserving racial differences in risk of kidney failure. Their findings showed this race-free two-marker equation using creatinine and cystatin

C provided the most accurate estimate of eGFR and still demonstrated racial differences in the risk of kidney failure requiring dialysis, unlike the race-free eGFR using only creatine.

"On average, people who self-report as Black individuals are three to four times more likely to develop kidney failure that requires dialysis," said Gutierrez, a professor of epidemiology in the UAB School of Public Health and first author of the paper. "It is important that we evaluate how we conduct research to ensure racial biases do not affect results and patient treatment. However, tracking health disparities between racial classes is also crucial so we can take steps to eliminate potential health barriers."

eGFR tests are the preferred method to evaluate kidney function and diagnose patients with kidney problems because they are non-invasive, cost-effective and more accessible compared to older diagnostic options.

"Racial disparities in kidney disease and mortality are profound and important to address," said Josef Coresh, M.D., Ph.D., professor in the Johns Hopkins Bloomberg School of Public Health and senior study author. "We expect the implementation of new eGFR equations will be rapid, and our study supports the additional recommendations to increase use and availability of cystatin C. We showed cystatin C is needed when estimating risk differences between racial groups. Earlier research showed adding cystatin C to creatinine results in more accurate estimates of glomerular filtration rate, particularly in patients with muscle loss, which makes creatinine less accurate."

Following the study results, Gutierrez says UAB physicians will begin transitioning to a hybrid approach that uses both new race-free eGFR equations, creatinine alone and adding cystatin C, when diagnosing and treating kidney failure patients.

"The implementation of both new eGFR equations is a step toward reducing racial biases in our field without eliminating vital information regarding health disparities in kidney disease, especially for our Black patients," Gutierrez said.

The retrospective study used data from more than 62,000 Black and non-Black participants from cohorts who had direct measurement of creatine and cystatin C, which allowed the research team to directly compare different eGFR equations to risk. Data from the UAB Reasons for Geographic and Racial Differences in Stroke, or REGARDS, was also used. The study was largely funded by the National Institutes of Health.

More information: Orlando M. Gutiérrez et al, Association of Estimated GFR Calculated Using Race-Free Equations With Kidney Failure and Mortality by Black vs Non-Black Race, *JAMA* (2022). DOI: 10.1001/jama.2022.8801

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