Perspective

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Precision in GFR Reporting

Let's Stop Playing the Race Card

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When I was in medical school, a surgery resident jokingly told me about the triple point, the spot just below the sternum where one could place their stethoscope to get the surgeon's physical exam done in 5 seconds or less. It was at this point that one could verify breath sounds, a regular heartbeat, and bowel sounds. Precision was for the operating room where it mattered.

Precision, on the other hand, is paramount to nephrology. There are equations to calculate solute deficit, excess, and fractional excretions; dialysis adequacy; appropriate acute and chronic respiratory responses for metabolic acid-base disturbances; likelihood of advancing to ESKD; and likelihood of dying within 6 months of starting dialysis—often to two decimal points. Basic scientists have elucidated channels and dozens upon dozens of genetic mutations responsible for disease throughout the nephron. A veritable alphabet soup of acronyms.

Even when it comes to race, we try to inject biologic meaning into the sociopolitical groupings manufactured to categorize, hierarchize, and segregate in society and in medicine. A prime example is in our equations for estimating GFR. However, here, no matter if one is 51%, 78%, or 22.56% of a race—a simple yes or no for "if black" appears to be all the precision we need. The purpose of this perspective is to explore how we came to racialize kidney function and challenge its continuation.

The 1999 publication of the Modification of Diet in Renal Disease Study (MDRD) serum creatinine-based equation revealed that researchers considered numerous *biologic* variables—and self-reported black or white race—in their regression model as potential factors that might affect GFR (1). There was no rationale offered for the inclusion of race in the first place, but the practice is rooted in a history of work from the fields of anthropometry and eugenics that set out to scientifically prove blacks are biologically distinct and separate from whites. Work like that of well-known and respected (at the time) physician Samuel Cartwright's 1851 *Report on the Disease and Physical Peculiarities of the Negro Race*, in which he claimed, "The darkness of the Negro's skin pervaded his membranes, muscles, tendons, fluids and secretions, including his blood and bile. . .." (2).

When the researchers found inclusion of race in the eGFR better approximated the GFR measured by the kidney iothalamate clearance gold standard, and that blacks had slightly higher creatinine on average at a given GFR, they attributed the finding to "on average, black persons have higher muscle mass than white persons." Although muscle mass was not actually measured, the assertion was justified by three cited studies: one small study finding black children had less body fat than white children (3); one smaller study finding blacks had higher total-body potassium than sex- and age-matched whites (4); and one even smaller study finding racial variation in creatine kinase was independent of lean body mass (5). In other words, neither the MDRD researchers nor any of the cited studies provided any evidence that blacks indeed have higher muscle mass than whites. But the lack of evidence aside, the continued use of race as a proxy for muscle mass 20 years later is at best akin to finding that "carrying a lighter or matches" is associated with lung cancer and never considering cigarettes, or more precisely, identifying the specific carcinogens within cigarettes, as the true independent predictors of lung cancer. At worst, it reinforced the notion that black bodies are biologically different than white ones.

As such, the incorporation of race as a variable continued in development of the subsequent CKD Epidemiology Collaboration equation published in 2009 (6). It also went one step further: In a study population including 5% Asian and Hispanic participants, researchers decided to include a race variable defined as black versus other at the start of equation development, effectively implying that blacks are biologically distinct from all other humans (6). And in the cystatin C equation development, researchers considered race as a candidate variable without offering a rationale for why a biomarker found in all nucleated cells might be higher in blacks and only blacks. Nor was an explanation offered for why race did not predict GFR (7).

A growing national debate spearheaded by medical students balking a curriculum that teaches them to make medical decisions on the basis of race demands our attention (8). The suggestion to replace "if black" in creatinine-based GFR reporting with language to trigger the clinician to consider a patient's muscle mass rather than just their race in determining appropriate GFR estimate on which to base clinical decisions like when to refer to nephrology, when to refer for kidney transplant evaluation, and medication prescribing has,

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ironically, met resistance because of a perceived lack of precision in measuring muscle mass (9). Others argue that because inclusion of "if black race" improved data-fitting in equation development, self-reported race is a meaningful variable and reporting should remain the same (10). This stance suggests that only a mathematical response can justify ending the legacy created by physicians like Cartwright.

We should replace current GFR reporting with the race-free cystatin C–based equation now. Going forward, we must question our decisions to center biologic science around constructs that, instead of having a biologic basis beyond superficial classifications around skin color and hair texture, are muddled with complicated and unmeasurable societal factors. Let's stop playing the race card like it's a genetic marker. It simply is not.

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