Substantial discrepancies found between estimated and measured GFR

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A cross sectional study found that substantial discrepancies exist between individual estimated glomerular filtration rate (eGFR) and directly measured GFR (mGFR). Laboratory reports that provide eGFR calculations should consider including the distribution of this uncertainty. According to the authors, renaming the eGFR as a population average GFR (or paGFR) merits further discussion. The findings are published in *Annals of Internal Medicine*.

GFR is the standard metric used to assess and monitor kidney function. Directly measured GFR, or mGFR, requires injecting a filtration marker and measuring plasma or urinary clearance by serial blood and urine sampling under standardized conditions is not possible for every patient. So eGFR calculated from serum creatinine is often used by clinicians to predict an mGFR. Population-level discrepancies between eGFR and mGFR are low, but individual discrepancies are much higher. It is important to understand the magnitude of these individual-level differences for clinical decision making.

Researchers from the University of Mississippi Medical Center calculated eGFR from serum creatinine alone and cystatin C and creatinine using the Chronic Kidney Disease Epidemiology Collaboration equations for 3,223 participants and compared their eGFR to their mGFR to quantify the magnitude and consequences of the individual-level differences between the two. The authors found substantial discrepancies between directly measured GFR and estimated GFR and report that these differences resulted in only approximately

50% agreement between CKD stages. Individual-level differences between the mGFR and the eGFR did not improve substantially using cystatin C. The authors estimate that several factors contribute to these discrepancies: creatinine and cystatin C have non-GFR factors influencing their serum concentration; variability in the mGFR can result from normal physiology and measurement error from mGFR markers and technique; and as GFR estimation models the ratio of mGFR–body surface area as a function of serum markers, it incorporates errors in mGFR and errors in body surface area calculated from height and weight. According to the authors, their findings highlight the need to make direct GFR measurements available to patients who need them. They note that implementation studies are needed in this area, and research is needed to assess how the availability and use of mGFRs change clinical management.

More information: Quantifying Individual-Level Inaccuracy in Glomerular Filtration Rate Estimation, *Annals of Internal Medicine* (2022). DOI: 10.7326/M22-0610

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