

Laboratory News

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NEW EQUATION FOR ESTIMATING GLOMERULAR FILTRATION RATE (eGFR)

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Effective November 1st, 2022, all labs across the Marshfield Clinic Health System will move to a new equation for estimating Glomerular Filtration Rate (eGFR).

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New Chronic Kidney Disease Epidemiology Collaboration (CKD-EPI 2021) Equation

Effective November 1st, 2022, all labs across the Marshfield Clinic Health System will transition from the Modification of Diet in Renal Disease (MDRD) Study equation for calculation of estimated glomerular filtration rate (eGFR) to the new Chronic Kidney Disease Epidemiology Collaboration (CKD-EPI 2021) equation that does not include a race coefficient.

This change is in line with recommendations put forth by the National Kidney Foundation and the American Society of Nephrology Task Force on Reassessing the Inclusion of Race in Diagnosing Kidney Disease¹.

Widespread adoption of this equation will provide uniform reporting of **eGFR_{cr}** values across all clinical labs and eliminate the race variable from the calculation.

CKD-EPI 2021 equation

$$eGFR_{cr} = 142 \times \min(S_{cr}/\kappa, 1)^a \times \max(S_{cr}/\kappa, 1)^{-1.200} \times 0.9938^{Age} \times 1.012 \text{ [if female]}$$

where κ = 0.7 (females) or 0.9 (males)

a = - 0.241 (female) or - 0.302 (male)

S_{cr} = serum creatinine in mg/dL

Age (years)

The CKD-EPI 2021 equation estimates GFR from serum creatinine, age and sex, and is intended only for adults 18 years and older. It has similar overall performance characteristics to the older MDRD equation and has been assessed to not have potential consequences that disproportionately affect any one group of individuals.

For most patients the CKD-EPI $eGFR_{cr}$ result will be similar to the MDRD result, however for some, the values may differ by more than 10% particularly at higher values of $eGFR_{cr}$ and for younger adult ages. When evaluating a patient's GFR, it is important to remember that $eGFR_{cr}$ is an estimate of the patient's GFR.

Cystatin C or clearance methods may be considered for use as confirmatory tests for $eGFR_{cr}$ in situations when $eGFR_{cr}$ is less reliable or when $eGFR_{cr}$ is near a clinical decision point.

Changes in reporting of results

- The naming convention for eGFR results will be **eGFR_{cr}**.
- $eGFR_{cr}$ results will not trend with results calculated using the older MDRD equation.
- Creatinine results will report to 2 decimal places in units of mg/dL.
- $eGFR_{cr}$ values will report as whole numbers (no decimals) and be indexed to 1.73 m² of body surface area with units of mL/min/1.73m².
- $eGFR_{cr}$ reference range will be ≥ 60 mL/min/1.73m².
- Lab results will be reported out with this comment: *Reported eGFR_{cr} is based on the CKD-EPI 2021 equation that does not use a race coefficient.*

Questions:

Clinical and technical questions or concerns can be directed to:
Laura Schulz, Technical Specialist,
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They can be reached through Customer Support at 800-222-5835.

References

1. Delgado C, Baweja M, Crews DC, et al. 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 DOI: 10.1053/j.ajkd.2021.08.003