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TECHNICAL

February, 2022

eGFR equation change

Effective February 22, 2022, based on a September 2021 recommendation by the National Kidney Foundation (NKF) and the American Society of Nephrology (ASN), Methodist Health System laboratories will implement the CKD-EPI (2021) eGFR (estimated glomerular filtration rate) creatinine equation. The new equation does not utilize the race variable.

Glomerular filtration rate (GFR) is usually accepted as the best overall index of kidney function. The level of GFR and its magnitude of change over time is vital to the detection of kidney disease and its severity. eGFR is estimated GFR using endogenous filtration marker creatinine. Decreased eGFR (<60 mL/min/1.73 m^2) is one of the criteria for the diagnosis of chronic kidney disease (CKD).

The eGFR will continue to be reported when a serum/plasma creatinine is ordered either as an individual test or within a panel (i.e. BMP, CMP)

Changes:
The new eGFR equation:

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

eGFR (estimated glomerular filtration rate) = mL/min/1.73 m^2
S_{cr} (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 S_{cr}/K or 1
max = indicates the maximum of S_{cr}/K or 1

Normal range eGFR will continue to be ≥ 60 mL/min/1.73 $m^{2.}$

The following updated interpretive data will be reported with the eGFR result:

eGFR between 60 and 90 mL/min may be abnormal if risk factors for chronic kidney disease also exist.
eGFR is calculated using the CKD-EPI 2021 equation which has not been validated for: ages less than 18, the elderly, pregnancy, and extremes of body size. True GFR may differ from estimated GFR (eGFR).
Use of cystatin C to confirm eGFR in adults with or at risk for CKD may be considered.

Order: Creatinine (eGFR) (121225)

Specimen Requirements: 5 mL SST. (Heparinized plasma is acceptable) Refrigerate 2-8°C for up to 4 days. Freeze for extended storage after separation from cells and gel.

Test Performed: 24/7

Please direct any questions to Dr. George Bedrnicek at 402 955-5528 or to Dr. Deborah Perry at 402 354-4559.

References:

A Unifying Approach for GFR Estimation: Recommendations of the NKF-ASN Task Force on Reassessing the Inclusion of Race in Diagnosing Kidney Disease.
Delgado C, Baweja M, Crews DC, Eneanya ND, Gadegbeku CA, Inker LA, Mendu ML, Miller WG, Moxey-Mims MM, Roberts GV, St Peter WL, Warfield C, Powe NR.
Am J Kidney Dis. 2021 Sep 22:S0272-6386(21)00828-3. doi: 10.1053/j.ajkd.2021.08.003.