



# Technical Memorandum

**To:** Physicians, Clinical Staff, and Clients  
**From:** Dr. Wesley Kim, M.D., Medical Director  
**Date:** December 26, 2018  
**Subject:** CKD-EPI eGFR

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Glomerular filtration rate (GFR) is a measure of how well the kidneys are functioning. In the lab, one way to determine GFR is to calculate it using a formula that incorporates measured creatinine in the blood, age, sex, and race (i.e African-American, non-African American). This value is known as “estimated GFR” or “eGFR”, and is reported on all creatinine results as recommended by The National Kidney Disease Education Program, American Society of Nephrology, and the National Kidney Foundation.

The two most common formulas in adults are the MDRD Study (Modification of Diet in Renal Disease) and the CKD-EPI (Chronic Kidney Disease Epidemiology Collaboration). At present, the lab is using the MDRD Study formula to determine eGFR. However, beginning Jan 7, 2019 we will be switching to the CKD-EPI formula for determination of eGFR on all creatinine results.

The CKD-EPI formula is thought to be more accurate than the MDRD Study equation, particularly in people with higher levels of GFR, such as populations without kidney disease, young patients with type 1 diabetes without microalbuminuria, or people selected for evaluation of kidney donation. This increase in accuracy allows the lab to report eGFR values above 60 mL/min/1.73m<sup>2</sup>, something the lab could not do with the current MDRD Study formula. In addition, the CKD-EPI formula appears as accurate as the MDRD Study equation in people with lower levels of GFR and who have kidney disease. However, the CKD-EPI equation has not been validated in children (age < 18 years), pregnant women, or in some racial or ethnic subgroups.

Chronic kidney disease (CKD) is associated with a decrease in kidney function that is often progressive. It can be seen with a variety of conditions, including diabetes and high blood pressure. Because symptoms of kidney disease may not be noticeable until a significant percentage of kidney function is lost, early detection of kidney dysfunction is important to help to minimize the damage. While measuring GFR directly is considered to be the most accurate way to detect changes in kidney status, direct measurement is complicated, requires experienced personnel, and is typically performed only in research settings. Because of this, the eGFR is usually used.

The following table shows the current classification of CKD according to GFR:

GFR Stages	GFR (mL/Min/1.73m <sup>2</sup> )	Interpretation
G1	> = 90	Normal or high
G2	60 to 89	Mildly decreased
G3a	45 to 59	Mildly to moderately decreased
G3b	30 to 44	Moderately to severely decreased
G4	15 to 29	Severely decreased
G5	< 15	Kidney failure

1. KDIGO. Summary of recommendation statements. Kidney Int 2013; 3 (Suppl): 5.

2. National Kidney Foundation. K/DOQI clinical practice guidelines for chronic kidney disease: evaluation, classification, and stratification. Am J Kidney Dis 2002; 39 (Suppl 1): S1.

3. <https://labtestsonline.org/tests/estimated-glomerular-filtration-rate-egfr>

4. [https://www.kidney.org/sites/default/files/docs/12-10-4004\\_abe\\_faqs\\_aboutgfrrev1b\\_singleb.pdf](https://www.kidney.org/sites/default/files/docs/12-10-4004_abe_faqs_aboutgfrrev1b_singleb.pdf)

If you have any questions or concerns, please call DLS Client Services at 589-5101.