
**eGFR Frequently Asked Questions** **March 2015**

*1. What is the eGFR?*

The GFR (glomerular filtration rate) is the volume of fluid filtered from the renal glomeruli per unit of time and it is the most accurate indicator of glomerular function. The "eGFR" is an estimated value derived from a measured serum creatinine, age, and gender, and is reported in mL/min/1.73 $m^2$.

Ontario community laboratories have been reporting the eGFR on all patients 18 years of age or older, since 2006 using the Modification of Diet in Renal Disease (MDRD) equation.

*2. Why report the eGFR?*

The eGFR is the best routinely available measurement of kidney function and is the recommended "starting point" for diagnosis of kidney disease in guidelines published by the Kidney Disease Improving Global Outcomes (KDIGO) 2012 and the Canadian Society of Nephrology (CNS).

*3. What is changing in eGFR reporting?*

In May 2015, the Ontario community laboratories will implement use of the chronic kidney disease epidemiology collaboration equation (CKD-EPI) for calculation of the eGFR. The CKD-EPI calculation has been endorsed internationally in the KDIGO 2012 guidelines and by the Canadian Society of Nephrology. CKD-EPI eGFR is considered to be a more accurate estimation of clinical status when compared to the MDRD based eGFR.

The KDIGO 2012 guidelines highlight the importance of urine albumin in diagnosis and monitoring of CKD and stress that eGFR results should be interpreted in concert with the urine albumin result. A "heat chart" for risk assessment describing the KDIGO

modified classification scheme for CKD based on eGFR and urine albumin is included in the OAML guideline on this topic.

*4. How will the CKD-EPI eGFR change my practice?*

Minor changes in the interpretation of eGFR and urine albumin/creatinine ratio (ACR) have been included in the KDIGO 2012 guidelines. The KDIGO 2012 guidelines highlight the importance of interpreting eGFR results in concert with the patient's urine albumin in the diagnosis and monitoring of CKD.

*5. What is a normal eGFR?*

A normal eGFR is greater than or equal to 90 mL/min/1.73 $m^2$.

**Note:** While an eGFR from 60-89 mL/min/1.73 $m^2$ is consistent with mildly decreased kidney function, in the absence of other evidence of kidney disease, eGFR values in this range do not fulfill the KDIGO criteria for chronic kidney disease. Interpret results in concert with the Urine Albumin/Creatinine Ratio (ACR) measurement.

*6. What is an abnormal eGFR and what do I do with a patient who has one?*

A value of less than 60 mL/min/1.73 $m^2$ should be confirmed by repeat testing with parallel measurement of Urine Albumin/Creatinine Ratio (ACR) and consideration given to the factors that may cause false eGFR results (see lists below). The patient should be classified using the staging system of the KDIGO and CSN. A "heat chart" for risk assessment describing the KDIGO modified classification scheme for CKD based on measured serum creatinine and urine albumin is included in the OAML guideline on this topic.

A diagnosis of CKD is confirmed when:

- eGFR is less than 60 mL/min/1.73 $m^2$, if duration exceeds 3 months
- ACR equal to or greater than 3 mg/mmol creatinine determined on 2 of 3 samples collected at least
  3 months apart

### *7. Is the eGFR the same in different laboratories?*

All laboratories in Ontario are standardized to the Isotope Dilution Mass Spectrometry (IDMS) reference technique for creatinine and reported values for this analyte and eGFR should therefore be comparable. All community laboratories will implement the CKD-EPI equation to calculate the eGFR in May 2015.

**Note:** Each analytical equipment manufacturer uses unique methods for quantitation of serum creatinine values, so values may differ slightly between laboratories most likely due to interference from structurally related compounds or differences in calibration processes.

### *8. Are there factors that can cause false eGFR results?*

Yes; there are some general and specific limitations, as follows:

**General Limitations (calculation not necessarily valid)**

- Children under the age of 18 years (alternative calculation required)
- Racial groups (not yet defined)
- Rapidly changing renal function
- Rapidly changing body fluid distribution
- Extremes of muscle mass
- Extremes of protein intake
- Medications that affect creatinine excretion (e.g. cimetidine, trimethoprim etc.)
- Pregnancy

**Specific limitations (measurement of serum creatinine)**

- The presence of chromogens causing an analytical interference (e.g. ascorbic acid, bilirubin, ketoacids (picric acid method), non-specific chromogens (some methods), sarcosine).
- The presence of heterophilic antibodies or elevated concentrations of immunoglobulins may result in inaccurate creatinine measurements and this inaccurate eGFR.
- Medications causing analytical interferences that varies with different creatinine methods.

**Note:** Analytical interferences are method specific. Please contact your laboratory provider for information on the method in use.

9. ***How can I learn more on identification, evaluation and monitoring my patients for CKD using eGFR and urine albumin?***

To learn more on this subject, please refer to the "Canadian Society of Nephrology Commentary on the KDIGO Clinical Practice Guidelines for CKD Evaluation and Management" available on the Canadian Society of Nephrology web page at https://www.csnscn.ca/ or the OAML's "Guideline for the Transition from the MDRD to the CKD-EPI equation for the calculation of an Estimated Glomerular Filtration Rate (eGFR) and its Interpretation in Concert with an Urine Albumin/Creatinine Ratio (ACR)." at http://www.oaml.com/prog_guide.html.