



# **Estimated Glomerular Filtration Rate (eGFR) Guidelines March 2008**

## **Prepared by**

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## **The Use of Estimated Glomerular Filtration Rate (eGFR)**

The use of serum creatinine to estimate GFR relies on the individual being in a steady state. Since the HRSRH is an acute care facility, the reporting of eGFR with every serum creatinine ordered does not offer added value to the patient report. Therefore, the eGFR test will be available only as an orderable test.

### **Background**

Chronic kidney disease (CKD) has been on the rise in Canada and globally. The most common cause of kidney disease in Canada is type II diabetes. Early diagnosis and treatment are the key to mitigating the need for dialysis and kidney transplantation. The Canadian Society of Nephrologists (CSN) and the Canadian Society of Clinical Chemists (CSCC) have both endorsed the use of eGFR as a tool for early diagnosis and staging of CKD.

The eGFR offers a more accurate measure of kidney status than the 24h creatinine clearance ratio and therefore the use of this latter test is discouraged.

A number of organizations have agreed that the Modification of Diet in Renal Disease (MDRD) equation offers the best estimate of GFR. The calculation uses readily available information (age, sex and serum creatinine) to estimate the GFR. *The HRSRH has adopted the MDRD calculation along with a serum creatinine method that is calibrated to a traceable isotopic dilution mass spectrometry (IDMS) method.*

### **Target**

The greatest clinical utility of using eGFR is in high risk patients who have traditional vascular factors and/or overt vascular target organ damage. First Nation's people, a family history of renal failure, and unexplained anemia also constitute risk. A reduction in GFR itself is a well defined risk for cardiovascular disease and death.

### **Clinical Interpretation**

Clinical circumstances and patient history should always be considered in addition to laboratory findings. The value reported in mL/min/1.73m<sup>2</sup> represents the approximate percentage of kidney function remaining. *Note that the MDRD prediction equation becomes imprecise for values >60 mL/min/1.73m<sup>2</sup>.*



### Analytical Interpretation

The following interpretation comment is provided in either the Meditech or EMR reports:

eGFR (mL/min/1.73m <sup>2</sup> )	Comment
> 60	Normal or Near-Normal kidney function
30 – 59	Moderate CKD is confirmed over 3 months. Consider referral if deterioration is progressive.
15 - 29	Severe CKD. Consider nephrology referral.
< 15	Kidney failure. Consider urgent nephrology referral.

### Response

A reduction in eGFR (<60) demands serial measurements and urine sediment assessment. A progressive reduction in eGFR and/or significant sediment abnormalities (protein/creatinine ratio (PCR) >100 mg/mmol or microalbumin/creatinine ratio (ACR) >60 mg/mmol) should be considered for referral to a nephrologist. Patients with eGFR <30 should be referred to a nephrologist and all physicians should focus upon vascular risk factor reduction.

### Caveats of eGFR<sup>1, 2</sup>

<b>Age:</b> The MDRD equation is not valid for children <18 years of age. Use the Schwartz equation (manual calculation).	<b>Race:</b> Patients of African descent, the eGFR results must be manually multiplied by 1.21
<b>Body Mass:</b> The MDRD equation is normalized to average height and weight. Extreme obesity, amputation will not yield an accurate estimate. Also, results are not valid for pregnant women.	<b>Diet or habits:</b> eGFR requires an individual to be at a steady state. Creatinine values deviate significantly eg. acute kidney injury, athletes with large muscle mass, malnourished individuals or patients taking vitamin supplements or vegetarians.
<b>Drug Dosing:</b> The eGFR-MDRD has not been validated for drug dosing. Use the Cockcroft-Gault equation.	<b>Analytical Interference:</b> Avoid ordering when patient is jaundiced or taking cephalosporin, cimetidine, trimethoprim, ciprofloxacin, venobibrate.

### References

1. Ontario Society of Clinical Chemist (OSCC): Estimating GFR, 2006-02. <http://www.clinicalchemistry.on.ca/eGFR.htm>
2. Canadian Society of Nephrology: Care and referral of adult patients with reduced kidney function, 2006-09. <http://csnscn.ca>

### Contacts

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