TEST UPDATE

FROM YOUR LABORATORY SERVICES PROVIDER

Calculated Glomerular Filtration Rate Now Available with Serum Creatinine Orders

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The National Institutes of Health has recently established the National Kidney Disease Education Program (NKDEP). The primary goal of the program is to improve the detection and treatment of early kidney disease through physician education and awareness. The ultimate goal is to prevent progression of chronic kidney disease to kidney failure.

The program's first initiative is to encourage reporting of the estimated glomerular filtration rate (GFR) along with conventional serum creatinine results. The estimated GFR can be calculated using the well-established MDRD equation, which factors in the serum creatinine value, age, sex, and race. The MDRD calculations can provide a clinically useful estimate of GFR that may not be apparent from the serum creatinine value alone.

Beginning immediately, the calculated GFR is available as an orderable test along with serum creatinine orders for patients 20 years or older. The calculated GFR must be ordered separately, along with the creatinine, but there is no additional charge for this calculation.

An example of what the report looks like for a 55 year-old man follows:

Creatinine 1.1 mg/dL
Estimated GFR > 60 mL/min/1.73 m^2

GFR < 60: chronic kidney disease, if found over a 3 month period
GFR < 15: kidney failure
For African Americans, multiply the calculated GFR by 1.21.

Some notes on reporting and interpreting the calculated GFR

- GFR results above 60 mL/min/1.73 m^2 are reported as > 60, rather than as an exact number because the MDRD equation is most valid in patients with some degree of renal insufficiency.
- The estimated GFR must be multiplied by 1.21 for African American patients, but because the laboratory does not usually have race data, a comment will be included to remind the physician of that factor.
- A calculated GFR of < 60 suggests chronic kidney disease, but only if found consistently over a period of at least 3 months. A single determination is not diagnostic.
- A calculated GFR of < 15 indicates renal failure.
- The MDRD equation is not valid for patients under 20 years of age.

Limitations of the MDRD equation

In some clinical situations, the assumptions underlying the MDRD Equation begin to break down. These include:

- Extremes of age and body size
- Severe malnutrition or obesity
- Disease of skeletal muscle

Continued

Fast Facts

- **The National Kidney Disease Education Program of the NIH recommends calculating glomerular filtration rate from serum creatinine values, using the MDRD equation.**
- **The MDRD equation used in the GFR calculation is:**

  GFR (mL/min/1.73m^2) = 186 × $(P_{cr})^{-1.154}$ × $(Age)^{-0.203}$ × (0.742 if female)
- **For African Americans, the calculated result must be multiplied by 1.21.**
- **The MDRD equation is most valid for patients with some degree of renal impairment.**
- **A calculated GFR of < 60 suggests chronic kidney disease, if found over a 3 month period.**
- **A calculated GFR of < 15 indicates renal failure.**
- **The MDRD equation is not valid for patients under 20 years of age.**
- **The calculated GFR must be ordered separately, along with a serum creatinine order, but there is no charge for the calculation.**

For more information, please contact Client Services or see us on the Web at

www.paml.com

- Paraplegia or quadriplegia
- Vegetarian diet
- Rapidly changing kidney function
- Prior to dosing with nephrotoxic drugs

Selected References and Resources

Levey AS, et al. A more accurate method to estimate glomerular filtration rate from serum creatinine: a new prediction equation. Modification of Diet in Renal Disease Study Group. Ann Intern Med 1999;130:461-70.

Levey AS, et al. National Kidney Foundation practice guidelines for chronic kidney disease: evaluation, classification, and stratification. Ann Intern Med 2003;139:137-47.

Manjunath G, et al. Prediction equations to estimate glomerular filtration rate: an update. Curr Opin Nephrol Hypertens 2001;10:785-92

Larson, TS. Lab Estimation of GFR. Clinical Laboratory News 2004;30:8-10.

Lusky K. Creatinine results one step closer to the mark. CAP Today 2004;18:5,8,11.

National Kidney Disease Education Program. http://www.nkdep.nih.gov

A MDRD calculator can be found on the web at http://www.nkdep.nih.gov/healthprofessionals/tools/gfr_adults.htm

Test Information

DESCRIPTION **GLOMERULAR FILTRATION RATE, ESTIMATED**

METHOD Calculation

ORDER CODE GFR

COMMENTS Use this workpar to have the GFR calculated from a creatinine result. This workpar can only be used along with a serum creatinine order or with any panel that includes serum creatinine. Age and gender must be included in the test request for the calculation to be performed. There is no charge for the calculation.

SCHEDULE Sunday – Friday

TURNAROUND 48 hours

RANGES

LT 60 mL/min/1.73m^2	Chronic kidney disease if found over a 3-month period
LT 15 mL/min/1.73m^2	Kidney failure

For African Americans, multiply the calculated GFR by 1.21.

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For more information, please contact your local representative.