

# Lab Focus

September 2003—monthly insert to 'Scope from Fairview Clinical Laboratories

## Sound bites. . . .

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### GLUCOSE TESTING AND DIAGNOSIS OF DIABETES: REVISED AMERICAN DIABETES ASSOCIATION CRITERIA

For more information, see the American Diabetes Association (ADA) Web site at [www.diabetes.org](http://www.diabetes.org).

#### Fasting Glucose

Code: GLU

Patient Prep: Fast of 10-16 hours

Reference Range:

0-1 d:	33-110 mg/dL
1-2 d:	46-110 mg/dL
2 d – 6 mo:	55-110 mg/dL
6 mo & up:	60-110 mg/dL

Impaired Fasting Glucose: 111-125 mg/dL

Diagnosis of Diabetes:  $\geq 126$  mg/dL

#### Two-Hour Postprandial

The ADA does not use this as a diagnostic test.

#### Standard Two-Hour Glucose Tolerance

Code: GTT

Patient Prep: Fast of 10-16 hours followed by 75 g glucose load

Reference Range:

Fasting	<126 mg/dL
2-Hour	<200 mg/dL

#### Gestational Glucose Screen

Code: GLU1

Patient Prep: None; followed by 50 g glucose load

Reference Range: 1-Hour <140 mg/dL

#### Gestational Three-Hour Glucose Tolerance

Code: GTTG

Patient Prep: Fast of 10-16 hours followed by 100 g glucose load

Reference Range:

Fasting:	<95 mg/dL
1-Hour:	<180 mg/dL
2-Hour:	<155 mg/dL
3-Hour:	<140 mg/dL

#### Testing for Hypoglycemia

There is no need for a 3 or 5 hour glucose tolerance test. If there is an issue of hypoglycemia, the extended glucose tolerance test is not the test to use. This diagnosis is made with an extended fast. For hypoglycemia, see FJ Service, Hypoglycemic Disorders, NEJM 332:1144-52,1995.

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#### NEW/MODIFIED ALLERGEN TESTS

- AF7 Oats
- AF49 Apples
- AE1 Cat Dander/Epithelium
- AE5 Dog Dander/Epithelium

## Estimated Glomerular Filtration Rate Reporting Coming this Fall

Fairview Laboratories will begin reporting estimated glomerular filtration rate (GFR) with plasma creatinine to promote early detection of chronic kidney disease and improve patient outcomes. The estimated GFR is calculated from the plasma creatinine and will be reported on all patients greater than 16 years of age. Reporting of the GFR is projected to begin in October. This ties to an NIH pilot education program to increase awareness about kidney disease and promote early testing which was launched in June 2003.

Glomerular filtration rate (GFR) is considered the best overall index of renal function in health and disease. A low or decreasing GFR is a good index of chronic kidney disease (CKD). Until recently, GFR has been estimated from creatinine clearance which is computed from measured creatinine in plasma and a timed urine collection. However, timed urine collections are difficult to obtain in clinical practice so formulas have been developed to estimate creatinine clearance from plasma creatinine alone. The Cockcroft and Gault formula<sup>1</sup> has been widely used; however, more recently, equations have been developed from the Modification of Diet in Renal Disease (MDRD) study's data that improve the prediction of GFR from serum creatinine concentration.<sup>2-4</sup> The "abbreviated" or four-variable MDRD Study Equation is a rigorous tool for estimating GFR based on a patient's plasma

creatinine, age, sex and whether or not they are African-American.<sup>3,4</sup>

Two Internet resources include:

- National Kidney Disease Education Program at [www.nkdep.nih.gov/getkid.htm](http://www.nkdep.nih.gov/getkid.htm).
- National Kidney Foundation at [www.kidney.org](http://www.kidney.org).

References:

1. Cockcroft DW, Gault MH. Prediction of creatinine clearance from serum creatinine. Nephron 16:31-41 (1976).
2. Levey AS, Bosch JP, Lewis JB, Greene T. A more accurate method to estimate glomerular filtration rate from serum creatinine: a new prediction equation. Ann Intern Med 130:461-70 (1999).
3. Levey AS, Greene T, Kusek JW, Beck GJ. A simplified equation to predict glomerular filtration rate from serum creatinine (Abstract). J Am Soc Nephrol 11:A0828 (2000).
4. National Kidney Foundation DOQI. Part 5. Evaluation of laboratory measurements for clinical assessment of kidney disease. Am J Kidney Dis 39:S76-92 Suppl (2002).

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## Beta-2 Microglobulin Method Change

Effective Aug. 1, Beta-2 Microglobulin is reported using a new chemiluminescent immunoassay method. Results are now reported in mg/L rather than mg/dL. The new reference range is <2.3 mg/L.

Although the new method correlated well with the old method ( $r=0.99$ ), patient values may be higher using the new method. Any patient result obtained between Feb. 1, 2003 and July. 15, 2003 for which the sample is still available will be re-analyzed using the new method to re-establish a patient baseline.

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# Primary Care Provider Fact Sheet and Targets for Chronic Kidney Disease from the National Kidney Disease Education Program (NKDEP)

**Note: The following information is taken from the NKDEP website at [www.nkdep.nih.gov](http://www.nkdep.nih.gov).**

*Chronic kidney disease (CKD) is the persistent and usually progressive reduction in glomerular filtration rate (GFR less than 60 ml/min/1.73m<sup>2</sup>) and/or albuminuria (more than 30mg of urinary albumin per gram of urinary creatinine).*

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## CKD IS A LARGE AND GROWING PROBLEM

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- Ten to 20 million people in the US have CKD.
- More than 100,000 people now are developing chronic kidney failure annually in the U.S. This number has doubled each decade since 1980.
- Diabetes and hypertension together account for about 75 percent of all new cases of chronic kidney failure, with African Americans and Native Americans at especially high risk.
- More people in the U.S. develop chronic kidney failure than die of any single cancer, except lung cancer.
- Premature cardiovascular death is an even more common outcome of CKD than chronic kidney failure.

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## SIMPLE TESTING IS NEEDED TO DETECT EARLY CHRONIC KIDNEY DISEASE

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### Test patients with:

- Diabetes once per year.
- Hypertension at diagnosis and initiation of therapy—then, if normal, every 3 years.\*
- A family history of kidney disease every 3 years as long as the tests remain normal.\*

\*This testing interval is opinion based. Use your discretion.

### Use these tests to detect CKD:

- Serum creatinine applied to a prediction equation to estimate GFR is preferable to a 24-hour urine collection (see GFR Calculator),

- A spot urine albumin to urine creatinine ratio is preferable to 24-hour urine collection for albumin excretion.

**Use or download the GFR Calculator at [www.nkdep.nih.gov](http://www.nkdep.nih.gov).**

You will need to provide the plasma creatinine (mg/dL) age, race, and gender.

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## PREVENTION IS POSSIBLE; EARLY TREATMENT CAN SLOW PROGRESSION; REDUCE CARDIOVASCULAR RISK

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### For patients with a family history of CKD:

- Advise patients to take action to prevent hypertension and diabetes.

### For patients with diabetes or hypertension and CKD:

- Prescribe angiotensin converting enzyme inhibitor or angiotensin receptor blocker to protect kidney function.
- Keep blood pressure below 130/80 mmHg. Even lower pressures may be beneficial for patients with a urinary albumin to creatinine ratio greater than 500 milligrams of albumin per gram of creatinine.

### It is also important to:

- Provide referral for dietary counseling. (Medicare will pay for nutrition counseling for CKD.)
- Advise tight glycemic control for patients with diabetes.
- Monitor and treat traditional cardiovascular risk factors, particularly smoking and hypercholesterolemia.
- Refer patients to a nephrologist for an early opinion.
- Provide ongoing care.
- Team with a nephrologist once the GFR is 30 mL/min/1.73 m<sup>2</sup> or less.

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