

## Guide to the Diagnosis of Diabetes Mellitus

The following information is provided as a quick guide to the interpretation of laboratory tests for diabetes. Please refer to the January issue of *Diabetes Care* published by the American Diabetes Association (ADA) for complete information on clinical practice recommendations including risk factors for diabetes, testing patients for diabetes, and management of patients with diabetes including laboratory tests to monitor progression and risk for concomitant diseases such as cardiovascular and kidney diseases.

The following information is summarized from the recommendations in the January 2009 issue of *Diabetes Care* and available on the web site: [http://professional.diabetes.org/CPR\\_search.aspx](http://professional.diabetes.org/CPR_search.aspx).

### **Impaired fasting glucose (IFG) and impaired glucose tolerance (IGT)**

The ADA Expert Committee recognized an intermediate group of subjects whose glucose levels, although not meeting criteria for diabetes, are nevertheless too high to be considered normal. This group has impaired glucose tolerance and is considered to be at increased risk to develop overt diabetes (i.e. “pre-diabetic”).

- Normal fasting glucose is less than 100 mg/dL
- Impaired fasting glucose is 100–125 mg/dL

The corresponding categories when the oral glucose tolerance test (OGTT) is used are the following:

- Normal glucose tolerance is a 2 hour postload glucose less than 140 mg/dL
- Impaired glucose tolerance is a 2 hour postload glucose 140–199 mg/dL

**ADA criteria for the diagnosis of diabetes**

1. Fasting plasma glucose  $\geq 126$  mg/dL. Fasting is defined as no caloric intake for at least 8 hours. \*

OR

2. Symptoms of hyperglycemia and a non-fasting plasma glucose  $\geq 200$  mg/dL. The classic symptoms of hyperglycemia include polyuria, polydipsia, and unexplained weight loss. \*

OR

3. 2 hour plasma glucose  $\geq 200$  mg/dL during an oral glucose tolerance test (OGTT). The test should be performed as described by the World Health Organization, using a glucose load containing the equivalent of 75 g anhydrous glucose dissolved in water. \*

\* In the absence of unequivocal hyperglycemia, these criteria should be confirmed by repeat testing on a different day.

Note that venous blood must be collected in a grey top tube containing fluoride and oxalate to minimize glycolysis before the sample is processed in the laboratory.

**ADA criteria for diagnosis of Gestational Diabetes Mellitus (GDM) with a 100 gram or 75 gram glucose load.**

Venous plasma glucose following:

100 gram glucose load

- Fasting            ≥95 mg/dL
- 1 hour             ≥180 mg/dL
- 2 hour             ≥155 mg/dL
- 3 hour             ≥140 mg/dL

75 gram glucose load

- Fasting            ≥95 mg/dL
- 1 hour             ≥180 mg/dL
- 2 hour             ≥155 mg/dL

Two or more of the venous plasma concentrations must be met or exceeded for a positive diagnosis. The test should be done in the morning after an overnight fast of between 8 and 14 hours and after at least 3 days of unrestricted diet (at least 150 grams of carbohydrate per day) and unlimited physical activity. The subject should remain seated and should not smoke throughout the test.

Note that venous blood must be collected in a grey top tube containing fluoride and oxalate to minimize glycolysis before the sample is processed in the laboratory