

AMERICAN DIABETES ASSOCIATION RECOMMENDATIONS

TESTING CRITERIA FOR DIAGNOSIS OF DIABETES MELLITUS

The Expert Committee on the Diagnosis and Classification of Diabetes Mellitus of the American Diabetes Association (*Diabetes Care 28:S4-S36, 2005*) stated that diabetes can be provisionally diagnosed with any one of the three criteria listed below. In the absence of unequivocal hyperglycemia with acute metabolic decompensation the diagnosis should be confirmed, on a subsequent day, by any one of the same three criteria.

1. A fasting plasma glucose of ≥ 126 mg/dl (after no caloric intake for at least 8 hours) or,
2. A casual plasma glucose ≥ 200 mg/dl (taken at any time of day without regard to time of last meal) with classic diabetes symptoms: increased urination, increased thirst and unexplained weight loss or,
3. An oral glucose tolerance test (OGTT) (75 gram dose) of ≥ 200 mg/dl for the two hour sample. Oral glucose tolerance testing is not necessary if patient has a fasting plasma glucose level of ≥ 126 mg/dl.

The Committee states that the fasting plasma glucose is the preferred test and recommends moving toward its universal use for testing and diagnosis because of its ease of administration, convenience, acceptability to patients, and lower cost in comparison to the OGTT.

Impaired Glucose Metabolism (pre-diabetes)

The Committee defined a fasting plasma glucose value of 99 mg/dl as the upper limit of normal blood glucose. The Committee also recognized two categories of impaired glucose metabolism that are considered risk factors for future diabetes and cardiovascular disease.

1. Impaired Fasting Glucose (IFG), a new category, when fasting plasma glucose is between 100 and 125 mg/dl.
2. Impaired Glucose Tolerance (IGT) is when 2-hour sample results of the oral glucose tolerance test are between 140 and 199 mg/dl.

Summarized Interpretation of Oral Glucose Tolerance Test (OGTT)

2 hour postload glucose of < 140 mg/dl = NORMAL GLUCOSE TOLERANCE

2 hour postload glucose between 140 mg/dl and 199 mg/dl = IMPAIRED GLUCOSE TOLERANCE

2 hour postload glucose ≥ 200 mg/dl = PROVISIONAL DIAGNOSIS OF DIABETES (Must be confirmed on a subsequent day by any of the above criteria for diagnosis of Diabetes Mellitus.)

AMERICAN DIABETES ASSOCIATION RECOMMENDATIONS (continued)

TABLE 1: Criteria for testing for diabetes in asymptomatic adult individuals
1. Testing for diabetes should be considered in all individuals at age 45 years and above, particularly in those with a BMI ≥ 25 kg/m ² * and, if normal, should be repeated at 3-year intervals.
2. Testing should be considered at a younger age or be carried out more frequently in individuals who are overweight (BMI ≥ 25 kg/m ² *) and have additional risk factors, as follows: <ul style="list-style-type: none"> • are habitually physically inactive • have a first-degree relative with diabetes • are members of a high-risk ethnic population (e.g., African American, Latino, Native American, Asian American, Pacific Islander) • have delivered a baby weighing >9 lb or have been diagnosed with GDM • are hypertensive ($\geq 140/90$ mmHg) • have an HDL cholesterol level <35 mg/dl (0.90 mmol/l and/or a triglyceride level >250 mg/dl (2.82 mmol/l) • have PCOS • on previous testing, had IGT or IFG • have other clinical conditions associated with insulin resistance (acanthosis nigricans) • have a history of vascular disease

*May not be correct for all ethnic groups.
PCOS (polycystic ovary syndrome).

TABLE 2: Testing for Type 2 diabetes in children
<p>Criteria:</p> <ul style="list-style-type: none"> • overweight (BMI >85th percentile for age and sex, weight for height >85th percentile, or weight >120% of ideal for height <p align="center">plus</p> <ul style="list-style-type: none"> • any two of the following risk factors: • family history of type 2 diabetes in first-or second-degree relative • race/ethnicity (Native American, African American, Latino, Asian American, Pacific Islander) • signs of insulin resistance or conditions associated with insulin resistance (acanthosis nigricans, hypertension, dyslipidemia, or PCOS) <p>Age of initiation: age 10 years or at onset of puberty, if puberty occurs at a younger age</p> <p>Frequency: every 2 years</p> <p>Test: FPG preferred</p>

Clinical judgment should be used to test for diabetes in high-risk patients who do not meet these criteria.
PCOS (polycystic ovary syndrome).

TESTING CRITERIA FOR DIAGNOSIS OF GESTATIONAL DIABETES MELLITUS (GDM)

The American Diabetes Association's Position Statement on Gestational Diabetes Mellitus (*Diabetes Care* 28:S37-S42, 2005) recommends:

Who Should be Tested

HIGH RISK pregnancy should be tested at the first antipartum visit and if negative, again at 24-28 weeks.

AVERAGE RISK pregnancy should be tested at 24-28 weeks.

LOW RISK pregnancy does not require glucose testing. (Low risk criteria include age<25 years, normal pre-pregnancy weight, low ethnic prevalence of GDM, no history of poor obstetric outcome and no history of abnormal glucose tolerance or first-degree relatives with diabetes)

What Testing Approach

A fasting plasma glucose level >126 mg/dl or a casual plasma glucose >200 mg/dl meets the criteria for diagnosis of diabetes mellitus, if confirmed on a subsequent day, and precludes the need for a glucose challenge test. In the absence of this degree of hyperglycemia, evaluation for GDM in women with average or high-risk characteristics should follow one of the following approaches

One-Step Approach: Perform a diagnostic oral glucose tolerance test (OGTT). 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 (≥ 150 gram carbohydrate per day) and unlimited physical activity. The subject should remain seated and not smoke throughout the test. Two or more of the following venous plasma concentrations must be met or exceeded for a positive diagnosis:

Fasting	95 mg/dl
One Hour	180 mg/dl
Two Hour	155 mg/dl
Three Hour	140 mg/dl

Fasting	95 mg/dl
One Hour	180 mg/dl
Two Hour	155 mg/dl

Diagnostic criteria for the 100g OGTT are derived from the work of O'Sullivan and Mahan, modified by Carpenter and Coustan, and shown in TABLE 3. Alternatively, the diagnosis can be made using a 75g glucose load and the glucose threshold values for fasting, 1 Hour, and 2 Hour can be seen in TABLE 4. However, this test is not as well validated for detection of at risk infants or mothers as the 100 g OGTT.

Two-Step Approach: Perform an initial screening for GDM by measuring plasma or serum glucose concentration 1 hour after a 50 gram oral glucose load. The patient need not be fasting. A diagnostic oral glucose tolerance test (see one step approach above) should be performed on the women that exceeded the glucose threshold value on the 1 hour screening test. A glucose threshold of >139 mg/dl on the 1 hour screening test identifies approximately 80% of women with GDM, and the yield is further increased to 90% by using a screening threshold of >129 mg/dl.