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Office Guide to Diagnosis and Classification of Diabetes Mellitus and Other Categories of Glucose Intolerance

Diabetes mellitus is a heterogeneous syndrome. Its primary manifestation, hyperglycemia, can arise from various causes. The outline below is intended to aid the practicing physician in diagnosing and classifying disease states characterized by elevated plasma glucose.

I. Diagnoses associated with glucose intolerance
   A. Diabetes mellitus (DM)
      1. Type I. Insulin-dependent type (IDDM), ketosis prone. Insulin deficient due to islet cell loss. Often associated with specific HLA types, with predisposition to viral insulitis or autoimmune (islet cell antibody) phenomena. Occurs at any age, common in youth.
      2. Type II. Non-insulin-dependent type (NIDDM), ketosis resistant. More frequent in adults but occurs at any age. Majority are overweight. May be seen in family aggregates as an autosomal dominant genetic trait. May require insulin for control of either chronic or acute hyperglycemia during stress.
      3. Diabetes associated with certain conditions or syndromes. Hyperglycemia occurring in relation to other disease states. Pancreatic diseases, drug or chemical-induced diabetes, endocrinopathies, insulin-receptor disorders, certain genetic syndromes.
   B. Impaired glucose tolerance (IGT). Abnormality in glucose levels intermediate between normal and overt diabetes. May "worsen to diabetes," improve toward normal, or remain unchanged on serial testing.
   C. Gestational diabetes mellitus (GDM). If the diet is inadequate for control, the patient must be treated with insulin.

II. Criteria for diagnosis
   A. Diabetes mellitus—adult
      1. Unequivocal elevation of plasma glucose (PG; ≥200 mg/dl) and classic symptoms of diabetes, including polydipsia, polyuria, polyphagia, and weight loss.
      2. Fasting plasma glucose (FPG) ≥140 mg/dl on two occasions.
      3. FPG <140 mg/dl and two oral glucose tolerance tests (OGTTs) with the 2-h PG ≥200 mg/dl and one intervening value ≥200 mg/dl after a 75-g OGTT.
   B. IGT
      FPG <140 mg/dl and 2-h PG ≥140 and <200 mg/dl with one intervening value ≥200 mg/dl after a 75-g glucose load.
   C. GDM
      When a diagnosis of diabetes mellitus is established by either of the above criteria, no additional tests are needed. In certain circumstances, when neither of the above criteria have been met, an OGTT may be used for diagnosis. The criteria for a positive diagnosis are: FPG 105 mg/dl; 1-h 190 mg/dl; 2-h PG 165 mg/dl; 3-h PG 145 mg/dl.
   D. Diabetes mellitus—children
      1. Classic symptoms (see adult) with random PG ≥200 mg/dl.
      2. FPG ≥140 mg/dl on two occasions and two OGTTs with the 2-h PG and one intervening value ≥200 mg/dl (use 1.75 g/kg to maximum of 75-g glucose load).

III. Normal glucose values—nonpregnant adults FPG ≤ 115 mg/dl; 2-h PG < 140 mg/dl. OGTT values between time-zero and 2-h PG <200 mg/dl. Plasma glucose concentrations above these values but below those listed for diabetes or IGT are not diagnostic for these conditions. The following terms have been eliminated: latent, subclinical, and chemical diabetes mellitus; prediabetes; potential diabetes; adult-onset, maturity-onset, and juvenile-onset diabetes.

IV. Instructions for glucose tolerance testing.
No glucose tolerance test is needed in the following circumstances: *1)* fasting hyperglycemia; *2)* hospitalized, acutely ill, or inactive patients. Interpretation of the GTT can be confounded by certain medications such as diuretics, nicotinic acid, β-adrenergic blocking agents, and high doses of some hormones. The GTT should be performed only on patients who have been on unrestricted diet and physical activity 3 days before testing. A 75-g glucose load should be administered in the morning after a 10-h fast. The patient should remain seated and not smoke during the test.

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