

## **SCREENING FOR IMPAIRED GLUCOSE AND DIABETES MELLITUS And CONTRACEPTIVE MANAGEMENT OF WOMAN WITH DIABETES**

### **I. INTRODUCTION**

Diabetes is a metabolic disorder characterized by hyperglycemia caused by defects in insulin action, defects in insulin secretion or both.

Diabetes mellitus occurs in two general forms in non-pregnant adults.

1. Type 1 diabetes (insulin-dependent diabetes; IDDM), which is an autoimmune disorder affecting pancreatic B cells. This autoimmune B cell destruction leads to a complete lack of endogenous insulin production. Thus, affected individuals are “dependent” on exogenous insulin for day-to-day survival; they will develop ketoacidosis if they are not treated with insulin.
2. Type 2 diabetes (non-insulin-dependent diabetes; NIDDM) encompasses all other forms of chronic hyperglycemia severe enough to meet current diagnostic criteria for diabetes. Individuals with NIDDM have some degree of endogenous insulin production, so that they rarely develop ketoacidosis. They develop hyperglycemia because of an imbalance between the amount of insulin the pancreas can produce and the amount of insulin required to keep blood glucose levels normal.

Many people with diabetes are unaware that they have the disease. During the lag between disease onset of disease and diagnosis, (estimated to be 7 years on average) the hyperglycemia can cause microvascular and macrovascular damage. Screening those most at risk for diabetes can help to reduce this lag and improve health outcomes.

Diabetes screening should be offered to clients with symptoms of diabetes (frequent urination, unusual thirst, extreme hunger, and frequent infections including UTI's and candidiasis) and those with historical or clinical risk factors for diabetes mellitus:

- All adults who are overweight (BMI  $\geq 25$  kg/m<sup>2</sup>) and have additional risk factors
- Physical inactivity
- First-degree relative with diabetes
- High-risk race/ethnicity (African-American, Latino, Native American, Asian American, Pacific Islander)
- Women who delivered a baby weighing >9 lb or were diagnosed with GDM
- Hypertension ( $\geq 140/90$  mmHg or on therapy for hypertension)
- HDL cholesterol level <35 mg/dL (0.90 mmol/L) and/or a triglyceride level >250 mg/dL (2.82mmol/L)
- Women with polycystic ovary syndrome
- A1C  $\geq 5.7\%$ , IGT, or IFG on previous testing
- Other clinical conditions associated with insulin resistance (e.g. severe obesity, acanthosis nigricans)

- History of CVD

In the absence of the above criteria, testing for diabetes should begin at age 45 years.

If results are normal, testing should be repeated at least at 3-year intervals, with consideration of more frequent testing depending on initial results and risk status (e.g., those with prediabetes) should be tested yearly.

Screening can be done using any of the following:

- Hemoglobin A1C test
- Fasting plasma glucose test (FPG)
- Oral glucose tolerance test (OGTT)
  - Using glucose loading dose containing 75 grams anhydrous glucose dissolved in water

Criteria for the diagnosis of diabetes:

- Hemoglobin A1C  $\geq 6.5$  *OR*
- Fasting plasma glucose (FPG)  $\geq 126$  mg/dL (7.0 mmol/L) *OR*
- 2-hour plasma glucose  $\geq 200$  mg/dL (11.1 mmol/L) during OGTT *OR*
- Random plasma glucose  $\geq 200$  mg/dL (11.1 mmol/L), in patients with classic symptoms of hyperglycemia or hyperglycemic crisis

Criteria indicating pre-diabetes (impaired fasting glucose (IFG) or impaired glucose tolerance (IGT)):

- Hemoglobin A1C 5.7-6.4%
- Fasting plasma glucose (FPG) of 100–125 mg/dL (5.6–6.9 mmol/L)\*
- 2-hour plasma glucose (2-h PG) in the 75-g oral glucose tolerance test (OGTT) of 140–199 mg/dL (7.8–11.0 mmol/L)

Once diabetes has been diagnosed, the provider should either conduct an initial medical evaluation and management for the patient or refer patient to receive this medical evaluation and management.

## II. PLAN OF ACTION

Contraceptive Choice for Women with Diabetes:

- Combined hormonal contraceptives can be prescribed for clients with diabetes mellitus if the client is under age 35, is not a smoker and has no known vascular complications or other risk factors, such as a strong family history or ischemic heart disease.
- Prescriptions for CHC should be made with the concurrence of the physician primarily responsible for managing the diabetes.
- Changes in blood levels of insulin and glucose with low-dose oral contraceptives are so slight they are of minimal clinical significance.
- Women with diabetes who have additional risk factors for cardiovascular disease including age >35 years, smoking, hypertension, are not candidates for estrogen-containing methods of contraception.

- E. Women with advanced diabetes complicated by nephropathy (proteinuria), retinopathy, neuropathy, or diabetes of more than 20-year duration are not candidates for estrogen-containing methods of contraception.
- F. Progestin-only oral contraceptives, so-called “mini-pills” (Micronor®), have minimal effects on carbohydrate metabolism and are less likely to increase the risk of cardiovascular disease than combined oral contraceptives. By comparison, they have a much higher incidence of irregular bleeding and a higher pregnancy rate.
- G. IUD use is appropriate and may be the ideal choice of contraception, especially if vascular disease is present.
- H. The injectable contraceptive (Depo-Provera®) may be ideal for contraception in women with diabetes. The contraceptive effectiveness is comparable to combined oral contraceptives, there is less likelihood of an increase in the risk of cardiovascular disease, and there is only a slight modification in glucose metabolism with long-term usage.
- I. A client who has completed her family is a candidate for tubal ligation.
- J. If a client with diabetes elects to use a diaphragm or other barrier method, she should be educated as to the symptoms and methodology for prompt diagnosis and treatment of a urinary infection. This problem is twice as common among diaphragm users as among women using oral contraceptives. Spermicide use can also increase the risk of bacteriuria with *E. Coli* perhaps due to an alteration in the vaginal flora.

#### Preconception Counseling for Women with Diabetes

In addition to the usual components of preconception screening and counseling, the following are specific to women with diabetes:

- A. Major congenital malformations remain the leading cause of mortality and serious morbidity in infants of mothers with type 1 and type 2 diabetes. Women with diabetes should be counseled on the increased risk of malformations that has been observed in studies and that indicate that the risk increases continuously with increasing maternal glycemia during the first 6–8 weeks of gestation.
- B. A1C levels should be as close to normal as possible (7%) in an individual patient before conception is attempted
- C. Women with diabetes who are contemplating pregnancy should be evaluated and, if indicated, treated for diabetic retinopathy, nephropathy, neuropathy, and CVD.
- D. Medications used by such women should be evaluated prior to conception, since drugs commonly used to treat diabetes and its complications may be contraindicated or not recommended in pregnancy.
- E. Among the oral antidiabetic agents, metformin and acarbose are classified as category B (no evidence of risk in humans) and all others as category C

### III. FOLLOW-UP

Clients with diabetes may be followed on the same schedule as other family planning clients provided they are under ongoing medical supervision. They should be encouraged to discuss contraceptive choices with their medical health care providers.

## REFERENCES

1. Centers for Disease Control and Prevention. U.S. Medical Eligibility Criteria for Contraceptive Use, 2010. *Recommendations and Reports*; June 18, 2010; 59(RR04);1-6
2. American Diabetes Association. Standards of Medical Care in Diabetes, 2013. *Diabetes Care January 2013* 36:S11-S66.

APPENDIX

**DIAGNOSIS OF DIABETES MELLITUS IN NONPREGNANT ADULTS**

---

Classification	Normal (mg/dL)	Prediabetes (mg/dL)	Diabetes* (mg/dL)
Random glucose with symptoms of overt hyperglycemia (fatigue, weight loss, thirst, polyuria)			≥200
Fasting plasma glucose <sup>o</sup>	<110	110-125	≥126
2-hour, 75-g glucose tolerance test	<140	141-199	≥200

---

\*Confirm diagnosis with a second fasting plasma glucose level of ≥126 mg/dL

<sup>o</sup>Measured in plasma in a certified clinical laboratory