
13. Diabetes in Women of Childbearing Age

Planning for Pregnancy

Babies born to mothers with either type 1 or type 2 diabetes have a higher risk of major congenital malformations, which lead to increased morbidity and mortality. Tight control of blood glucose during the pre-conception period and the first trimester of pregnancy can significantly reduce the rate of malformations. Given that two thirds of the pregnancies in women with diabetes are unplanned, you will need to counsel patients on pre-conception planning if they are of childbearing age.

- Counseling should begin at age 12 or 13 years.
- Counseling should emphasize the importance of planning for pregnancy for the best possible outcomes.

The multidisciplinary team needed to manage diabetes in women who desire pregnancy should include a diabetologist, the primary care physician, an obstetrician familiar with diabetes management of high-risk pregnancies, a diabetes educator, a nutritionist, and a social worker.

Glycemic Goals

Epidemiologic studies have shown that in women with diabetes, lowering the hemoglobin A1C value to within 1% of normal decreases the risk of congenital malformation and spontaneous abortion to a level close to that of women without diabetes. Thus, the goal should be to achieve blood glucose levels as near to normal as possible before conception and throughout the pregnancy, without undue risk of hypoglycemia. Optimum glycemic goals that your patient should aim for during pregnancy are shown in **Table 13-1**.

Management of Diabetes Before and During Pregnancy

Evaluation

The management of diabetes in women of childbearing age who want to become pregnant should ideally start before conception and continue throughout the pregnancy.

- Medical and obstetrical history should include an evaluation to detect the presence of complications associated with diabetes and of other coexisting medical conditions.
- Physical examination should include a dilated eye examination by an ophthalmologist, a cardiovascular assessment (electrocardiogram, echocardiogram, or cardiac stress test, depending on risk), and a neurologic examination. A complete gynecologic examination, including a Pap smear, is recommended before conception.
- Laboratory evaluation should include assessment of glycemic control, thyroid function, and indices of complications of diabetes that may deteriorate during pregnancy, such as serum creatinine level and spot urine albumin-to-creatinine ratio (to detect microalbuminuria).

Medical Management

Strategies to achieve glycemic and other goals in pregnant women are somewhat different from those in other patients with diabetes.

- Insulin should replace oral hypoglycemic agents or other injectable agents whose safety is not established during pregnancy.
- The safety of glargine, a long-acting analogue of insulin, is similarly not established during pregnancy. Therefore, patients who are

Table 13-1. Glycemic Goals During Pregnancy

Type of Diabetes	Blood Glucose
Preexisting diabetes Fasting and pre-meal 1-hour post-meal or peak postprandial	60–99 mg/dL 100–129 mg/dL
Gestational diabetes Fasting 1-hour post-meal	<100 mg/dL <130 mg/dL

Adapted from Joslin Diabetes Center and Diabetes Clinic. Guideline for detection and management of diabetes in pregnancy. 9/15/05. Available at www.joslin.org/Files/Gest_guide.pdf. Accessed 3 October 2006.

planning a pregnancy or who are pregnant should be taken off glargine.

- Angiotensin-converting enzyme (ACE) inhibitors, angiotensin II receptor blockers (ARBs), and cholesterol-lowering drugs should be stopped before pregnancy. Other medications should be checked and, if not known to be safe during pregnancy, replaced.
- Women with diabetes who are contemplating pregnancy or are pregnant should be referred to a diabetes educator and nutritionist for counseling regarding self-monitoring of blood glucose and medical nutrition therapy.
- Regular exercise should be encouraged, especially after meals, to improve postprandial hyperglycemia.

What do women of childbearing age with diabetes need to know about conception and pregnancy?

The following information should be shared with women of childbearing age with diabetes:

- Achieving blood glucose control as close to normal as possible before attempting to conceive and avoiding erratic daily blood glucose levels are essential. This message needs to be conveyed to all female patients when they reach childbearing age (usually age 13 years).
- Effective contraception should be used until good blood glucose control is achieved (A1C value of 6%–7%).
- Women with diabetes nowadays are more likely to have a healthy baby than in the past.

Although risks for congenital anomalies and other fetal and neonatal complications of maternal diabetes are present, these risks are reduced to the level of women without diabetes if blood glucose levels are normalized before a patient becomes pregnant.

- Review the effects of pregnancy on maternal complications of diabetes.
- Discuss the risks of obstetrical complications in women with diabetes.
- Educate patients on the increased care demands of diabetes during pregnancy.
- Make patients aware of the risk for diabetes in the child.
- Women with gestational diabetes need to be screened for diabetes early in any subsequent pregnancies.

Complications of Diabetes During Pregnancy

Retinopathy

During pregnancy, the risk of accelerated diabetic retinopathy is increased. A baseline comprehensive eye examination and appropriate treatment are thus necessary before conception. Women need to be educated about the risk of the development and progression of diabetic retinopathy during pregnancy.

Nephropathy

Serum creatinine and spot urine values should be measured before conception. Women with a severe decline in renal function (serum creatinine >3 mg/dL or creatinine clearance <50 mL/min/1.73 m²) are at high risk of a permanent decline in renal function. In women with less severe renal insufficiency, the decline in renal function is transient. Proteinuria of 190 mg/24 h or more, before or during pregnancy, is associated with a 3-fold increased risk of a hypertensive disorder in the second half of pregnancy. Women with diabetes should be counseled on the

risk of impaired renal function developing and progressing during pregnancy.

Neuropathy

Both autonomic and peripheral neuropathies should be identified before conception and followed closely for exacerbation. The presence of an autonomic neuropathy in the form of gastroparesis, orthostatic hypotension, hypoglycemic unawareness, or urinary retention can complicate diabetes management. Compartment syndromes (e.g., carpal tunnel syndrome) may be exacerbated during pregnancy.

Cardiovascular Disease

The American Diabetes Association recommends assessment and treatment of cardiovascular disease before conception in patients with

diabetes. Untreated cardiovascular disease increases the risk of mortality during pregnancy in these patients.

Hypertension

Women with diabetes have an increased risk of pregnancy-induced hypertension. This risk is higher when proteinuria in excess of 190 mg/dL is present before conception or during pregnancy. Aggressive control of blood pressure should be employed to avoid worsening of nephropathy and retinopathy. ACE inhibitors, ARBs, and diuretics should be avoided in women with diabetes who are planning to become pregnant and should be stopped as soon as possible in cases of unplanned pregnancy. Antihypertensive agents that can be safely used during pregnancy include alpha-methyldopa, beta-blockers (except atenolol), calcium channel blockers, and hydralazine.

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