

Gestational Diabetes

Caring for Women During and After Pregnancy

This guide summarizes clinical evidence about prenatal treatment and delivery management for women with gestational diabetes. It also summarizes evidence about followup for the development of type 2 diabetes among women who have had gestational diabetes. There are very few high-quality studies focusing on the treatment and appropriate followup of gestational diabetes. Many of the questions that surround these clinical issues have only a limited evidence base. This guide does not cover the general care of women with type 1 or type 2 diabetes during pregnancy. It also does not cover screening for gestational diabetes or evidence about diet and exercise in the management of gestational diabetes.

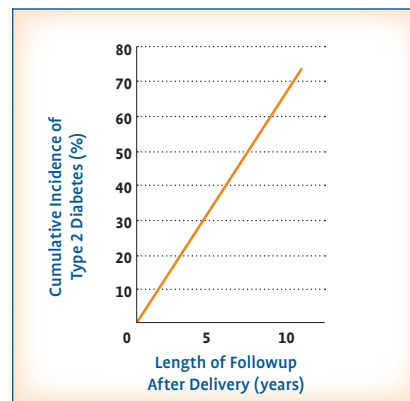
Clinical Issue

Approximately 7 percent of pregnancies in the United States are complicated by gestational diabetes. Gestational diabetes can lead to neonatal hypoglycemia, respiratory distress syndrome, and fetal macrosomia. Larger infants have increased rates of birth trauma, shoulder dystocia, and cesarean delivery. Current guidelines recommend adequate glycemic control as a strategy to decrease these maternal and fetal complications. Most women who have gestational diabetes can successfully control their blood sugar with diet and exercise. However, some will need oral diabetes medication or insulin.

Gestational diabetes is not just a complication of pregnancy. It is a risk factor for type 2 diabetes. While only about 5 percent of women who have gestational diabetes develop type 2 diabetes within 6 months of delivery, about 60 percent will develop type 2 diabetes within 10 years. (See Figure 1.)

Several organizations recommend testing women with a history of gestational diabetes for type 2 diabetes at a postpartum visit and then following them over time.

Figure 1. Cumulative incidence of type 2 diabetes in women with a history of gestational diabetes.



Based on data reported in *Diabetes Care* 2002;25:1862-1868.

Clinical Bottom Line

- Insulin, glyburide, and metformin are each effective for lowering blood sugar in women with gestational diabetes, and all appear to be safe for use in pregnancy.

LEVEL OF CONFIDENCE ● ● ○

- Women with gestational diabetes who have a higher prepregnancy body mass index (BMI) or who gain more weight during pregnancy are more likely to develop type 2 diabetes following pregnancy.

LEVEL OF CONFIDENCE ● ● ○

- Women diagnosed with gestational diabetes earlier in pregnancy are more likely to develop type 2 diabetes than those diagnosed later in pregnancy.

LEVEL OF CONFIDENCE ● ● ○

CONFIDENCE SCALE

The confidence ratings in this guide are derived from a systematic review of the literature. The level of confidence is based on the overall quantity and quality of clinical evidence.

HIGH ● ● ● There are consistent results from good quality studies. Further research is very unlikely to change the conclusions.

MEDIUM ● ● ○ Findings are supported, but further research could change the conclusions.

LOW ● ○ ○ There are very few studies, or existing studies are flawed.

SOURCE The source material for this guide is a systematic review of 45 research publications. The review, *Therapeutic Management, Delivery, and Postpartum Risk Assessment and Screening in Gestational Diabetes* (2008), was prepared by the Johns Hopkins University Evidence-based Practice Center. The Agency for Healthcare Research and Quality (AHRQ) funded the systematic review and this guide. The systematic review was updated as a journal article (*Obstet Gynecol* 2009;113:193-205). This guide was developed using feedback from clinicians who reviewed preliminary drafts. The full systematic review is available at www.effectivehealthcare.ahrq.gov.

Insulin and Oral Hypoglycemic Medications

The first intervention for women with gestational diabetes is to modify diet and increase exercise. Women who do not have adequate blood sugar control with these measures have traditionally been started on insulin. More recently, the oral hypoglycemic medications glyburide and metformin have been used, although neither is currently approved by the Food and Drug Administration to treat gestational diabetes. Glyburide is the only sulfonylurea that has been well studied in pregnant women.

Evidence is insufficient to determine whether insulin, glyburide, or metformin is superior for treating gestational diabetes. No studies compare metformin with glyburide for the treatment of gestational diabetes.

Insulin vs. Glyburide

Studies comparing insulin with glyburide have failed to find differences in maternal or fetal outcomes.

- Maternal serum glucose values are similar in women treated with insulin and women treated with glyburide.
- There is no evidence that infants born to mothers treated with glyburide weigh more or less than infants born to mothers treated with insulin.

Insulin vs. Metformin

A recent high-quality randomized trial compared insulin with metformin. It found that metformin was effective at lowering blood sugar and safe for pregnant women and their fetuses. Another finding of this trial was higher rates of severe hypoglycemia in women who used insulin than in women using metformin. The trial also found that women preferred metformin to insulin.

Insulin Regimens

While several studies have compared different insulin regimens for treating gestational diabetes, none of the studies were of high quality. Thus, it is not known whether any particular insulin regimen is superior for treating gestational diabetes.

Delivery: Timing and Mode

It has been common practice to induce labor prior to week 40 for women with gestational diabetes as a strategy to reduce complications. Evidence is insufficient to determine whether there are more harms or benefits for early induction of labor compared with expectant management.

Evidence is also insufficient to determine whether maternal or fetal outcomes are improved if an elective cesarean delivery is performed compared with induction of labor or expectant management.

Followup

A history of gestational diabetes is a strong risk factor for developing type 2 diabetes. Additional risk factors for developing type 2 diabetes after having gestational diabetes include:

- Higher prepregnancy BMI.
- Greater weight gain during pregnancy.
- Higher postpartum waist circumference.
- Diagnosis of gestational diabetes earlier in pregnancy.
- Higher fasting blood glucose levels during pregnancy.
- Higher readings on the 100-gram oral glucose tolerance test (OGTT).

Evidence is insufficient to determine the best time interval for type 2 diabetes screening among women who previously had gestational diabetes.

Evidence is also insufficient to determine whether a 75-gram (or 2 hour) OGTT test is superior to a fasting blood glucose level for diagnosing type 2 diabetes in women who had gestational diabetes.

Considerations

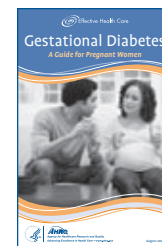
Provide support on diet and exercise.

Most women can manage their gestational diabetes with diet and exercise alone. Early referral to a dietitian or diabetes educator may prevent the need for medication. It is also important to remember that oral medications and insulin are only adjunctive therapy for gestational diabetes. Diet and exercise are mainstays of therapy.

Consider oral medication. Both glyburide and metformin are effective and appear to be safe when treating pregnant women. Insulin has not been shown to improve clinical outcomes more than metformin or glyburide.

Test for type 2 diabetes. Over half the women with gestational diabetes will develop type 2 diabetes. It is important to tell all women with gestational diabetes to be tested regularly for type 2 diabetes, even long after their pregnancy.

Resource for Patients



Gestational Diabetes: A Guide for Pregnant Women is a companion to this Clinician's Guide. It can help women talk with their health care professional about treatments for gestational diabetes and screening for type 2 diabetes after pregnancy.

For More Information

For electronic copies of this clinician's guide, the consumer's guide, and the full systematic review, visit this Web site: www.effectivehealthcare.ahrq.gov

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