

## CLINICAL INQUIRIES

# What is appropriate fetal surveillance for women with diet-controlled gestational diabetes?

Lucy Loomis, MD, Jay Lee, MD, Elizabeth Tweed, MLIS  
University of Colorado at Denver Health Sciences Center

### EVIDENCE-BASED ANSWER

No evidence clearly supports the practice of increased fetal surveillance in the pregnancies of women with well-controlled (ie, fasting blood sugar <105 mg/dL) class A1 gestational diabetes (strength of recommendation [SOR]: **B**, consistent

retrospective cohort studies). However, a number of guidelines recommend beginning surveillance of some kind between 32 and 40 weeks based on cumulative risk factors, including gestational diabetes (SOR: **C**, expert opinion).

### CLINICAL COMMENTARY

#### Follow local standards of care and continue fetal surveillance

Because malpractice issues weigh heavy in many states, a Family Physician who practices obstetrics may be liable even when a patient is at low risk. We know diabetes has devastating effects on patients. Why would there not be risk with gestational diabetes? The findings in this Clinical Inquiry provide practicing doctors little evidence for or against antenatal testing for women with

gestational diabetes. I agree more research is needed to reassure physicians that increased fetal surveillance does not make a difference in fetal or maternal outcomes. Until that time, it would seem prudent to find out what your local standards of care would be—possibly non-stress testing or biophysical profiles during 32 to 40 weeks—and continue your fetal surveillance.

Julia Fashner, MD  
Piqua, OH

#### ■ Evidence summary

Gestational diabetes mellitus is diagnosed when at least 2 of 4 values measured in a 3-hour glucose tolerance test are elevated; 2 different definitions of “elevated” are accepted (**TABLE 1**). White’s classification stratifies the risk of various types of diabetes during pregnancy (**TABLE 2**): Class A includes patients without a diagnosis of diabetes before pregnancy; classes B, C, and D include patients with pre-existing diabetes of increasing duration; and classes F, H, R, and T include patients with diabetes with various vascular complications.

Infants of mothers with *pre-existing* diabetes are at increased risk of pre- and neonatal complications (including still-

birth); it has been commonly assumed that type A1 gestational diabetes confers similar risks. However, 2 observational studies call this assumption into question. One study evaluated antepartum predictors of fetal distress requiring a cesarean delivery among 2134 pregnant women with gestational diabetes.<sup>4</sup> Antepartum surveillance consisted of biweekly non-stress testing with amniotic fluid index determination starting at 34 weeks gestation. Of the 1501 eligible participants, the study included 810 and 580 class A1 and A2 patients, respectively; the remaining 111 were classes B–T. They considered women with A1 gestational diabetes with fasting plasma glucose levels <105 mg/dL to be well-controlled. Results of

TABLE

**At least 2 of 4 measurements over 3 hours must be higher than these values to diagnose gestational diabetes mellitus**

STATUS	PLASMA OR SERUM GLUCOSE LEVEL (CARPENTER/COUSTAN CONVERSION AMERICAN DIABETES ASSOCIATION) <sup>1</sup>		PLASMA LEVEL DATA (NATIONAL DIABETES GROUP CONVERSION AMERICAN COLLEGE OF OB/GYN) <sup>2</sup>	
	MG/DL	MMOL/L	MG/DL	MMOL/L
Fasting	95	5.3	105	5.8
1 hour	180	10.0	190	10.6
2 hours	155	8.6	165	9.2
3 hours	140	7.8	145	8.0

antepartum surveillance did not significantly differ among the different diabetic classes.

In univariate and multivariate analyses, the greatest indicator for cesarean section due to fetal distress was a non-reactive non-stress test with decelerations (odds ratio [OR]=5.63; 95% confidence interval [CI], 2.67–11.9). Routine amniotic fluid measurement was not significantly related to either the classification of diabetes or to cesarean delivery for fetal distress. No patients with normal surveillance testing within 4 days of delivery had a stillbirth. However, all 5 stillbirths in the study population occurred among those with A2 diabetes whose last non-stress test was >4 days prior.

An earlier retrospective study followed 97 pregnant patients with gestational diabetes, 69 of whom were diet-controlled (class A1, fasting glucose <105 mg/dL).<sup>5</sup> Antepartum surveillance consisted of maternal monitoring and non-stress testing. At 28 weeks, pregnant patients assessed daily fetal activity; reassuring fetal well-being was defined as 10 fetal movements in a 12-hour period. At 40 weeks, a non-stress test was performed weekly. Contraction stress testing was performed for those with nonreactive non-stress tests. To observe for macrosomia, serial ultrasonography was performed every 4 to 6 weeks, starting at 28

weeks. Forty-four patients (64%) had spontaneous labors without intervention, while the rest required induction of labor or cesarean section (primary or failed induction). Five patients had primary cesarean section for suspected macrosomia, 3 patients had intervention for suspected intrauterine growth restriction, and only 4 (5.7%) patients were delivered due to fetal indications, defined as decreased fetal movement or a nonreactive non-stress test. No stillbirths or neonatal deaths occurred. Perinatal complications included hypoglycemia (n=13; 19%), hyperbilirubinemia (n=12; 17%), and macrosomia (n=11; 16%). The study did not compare complication rates between diet-controlled and insulin-requiring patients (SOR: B, retrospective study).

A Cochrane review found no evidence for or against increased surveillance in A1 gestational diabetes: “A lack of conclusive evidence has lead clinicians to equate the risk of adverse perinatal outcome with pre-existing diabetes. Consequently women are often managed with increased obstetrical monitoring, dietary regulation, and [pharmacological] treatment. However, no sound evidence base supports such intensive treatment.”<sup>6</sup>

#### Recommendations from others

The American College of Obstetricians and Gynecologists’ practice bulletin on

#### FAST TRACK

**Gestational diabetes alone may not confer increased risk for neonatal complications**

## CLINICAL INQUIRIES

**TABLE**

### White's classification for gestational diabetes mellitus

CLASS	DEFINITION
A1	Diabetes diagnosed during pregnancy; non-insulin-dependent
A2	Diabetes diagnosed during pregnancy; insulin-dependent
B	Diabetes diagnosed after age 20 years or duration less than 10 years; no vascular complications
C	Diabetes diagnosed between age 10 to 19 years or duration of 10 to 19 years; no vascular complications
D	Diabetes diagnosed before age of 10 years or duration greater than 20 years; vascular complications present
F	Diabetes with nephropathy
H	Diabetes with coronary artery or other heart disease
R	Diabetes with retinopathy
T	Diabetes status post-renal transplant

gestational diabetes states that there is no consensus regarding fetal surveillance for women with diet-controlled gestational diabetes. However, local practice may include non-stress and contraction stress testing, amniotic fluid determination, and biophysical profile; this may start as early as 32 weeks to or as late as 40 weeks, based upon the total cumulative risk to the fetus from all potential complications.<sup>2</sup> The American Diabetes Association states that increased fetal surveillance is appropriate but is not any more specific with this recommendation.<sup>1</sup>

34(Suppl 2):50-54.

- Tuffnell DJ, West J, Walkinshaw SA. Treatments for gestational diabetes and impaired glucose tolerance in pregnancy. *Cochrane Database Syst Rev* 2003; (3):CD003395.

#### REFERENCES

- American Diabetes Association. Gestational diabetes mellitus. *Diabetes Care* 2004; 27(suppl 1):S88-S90.
- American College of Obstetricians and Gynecologists Committee on Practice Bulletins—Obstetrics. ACOG Practice Bulletin. Clinical Management Guidelines for Obstetrician-Gynecologists. Gestational diabetes. *Obstet Gynecol* 2001; 98:525-538.
- White P. Classification of obstetric diabetes. *Am J Obstet Gynecol* 1978; 130:228-230.
- Kjos SL, Leung A, Henry OA, Victor MR, Paul RH, Medearis AL. Antepartum surveillance in diabetic pregnancies: Predictors of fetal distress in labor. *Am J Obstet Gynecol* 1995; 173:1532-1539.
- Landon MB, Gabbe SG. Antepartum fetal surveillance in gestational diabetes mellitus. *Diabetes* 1985;

#### FAST TRACK

**The greatest indicator for cesarean section due to fetal distress was a non-reactive non-stress test with decelerations**