U.S. Preventive Services Task Force

Screening for Gestational Diabetes Mellitus: Recommendation Statement

This summary is one in a series excerpted from the Recommendation Statements released by the USPSTF. These statements address preventive health services for use in primary care clinical settings, including screening tests, counseling, and preventive medications.

The complete version of this statement, including supporting scientific evidence, evidence tables, grading system, members of the USPSTF at the time this recommendation was finalized, and references, is available on the USPSTF website at http://www.uspreventiveservicestaskforce.org/.

This series is coordinated by Sumi Sexton, MD, Associate Medical Editor.

A collection of USPSTF recommendation statements published in *AFP* is available at http://www.aafp.org/afp/uspstf.

Summary of Recommendations and Evidence

The U.S. Preventive Services Task Force (USPSTF) recommends screening for gestational diabetes mellitus (GDM) in asymptomatic pregnant women after 24 weeks of gestation *(Table 1)*. **B recommendation.**

The USPSTF concludes that the current evidence is insufficient to assess the balance of benefits and harms of screening for GDM in asymptomatic pregnant women before 24 weeks of gestation. **I statement.**

Rationale

IMPORTANCE

GDM is glucose intolerance discovered during pregnancy. The prevalence of GDM in the United States is 1% to 25%, depending on patient demographics and diagnostic thresholds.[1] Pregnant women with GDM are at increased risk of maternal and fetal complications, including preeclampsia, fetal macrosomia (which can cause shoulder dystocia and birth injury), and neonatal hypoglycemia. Women with GDM are also at increased risk of developing type 2 diabetes; approximately 15% to 60% develop type 2 diabetes within five to 15 years of delivery.[2] Screening for GDM generally occurs after the 24th week of pregnancy. Screening before 24 weeks may identify women with glucose intolerance earlier in pregnancy.

DETECTION

The USPSTF found adequate evidence that primary care professionals can accurately detect GDM in asymptomatic pregnant women after 24 weeks of gestation. The most commonly used screening test in the United States is the 50-g oral glucose challenge test.

Other methods of screening include the fasting plasma glucose test and screening based on risk factors. However, there is limited evidence on these alternative screening approaches. The USPSTF found inadequate evidence to compare the effectiveness of different screening tests or thresholds for a positive screen result.

BENEFITS OF DETECTION AND EARLY TREATMENT

The USPSTF found adequate evidence that treatment of screen-detected GDM with dietary modifications, glucose monitoring, and insulin (if needed) can significantly reduce the risk of preeclampsia, fetal macrosomia, and shoulder dystocia. When these outcomes are considered collectively, there is a moderate net benefit for the mother and infant. The benefit of treatment on long-term metabolic outcomes in women who are treated for GDM compared with those who are not treated is uncertain.

The USPSTF found inadequate evidence to determine whether there are benefits to screening for GDM in women before 24 weeks of gestation.

HARMS OF DETECTION AND EARLY TREATMENT

Overall, the USPSTF found adequate evidence that the magnitude of the harms of screening and treatment is small to none. Randomized controlled trials demonstrated an increase in the number of prenatal visits in screen-detected women who were treated for GDM compared with screen-detected women who were not treated. There was conflicting evidence on the risk of an increase in the induction of labor associated with treatment. No significant differences were reported for cesarean delivery or neonatal intensive care unit admissions between women who were treated and women who were not treated for GDM in the overall pooled meta-analysis. Trials also

Table 1. Screening for Gestational Diabetes Mellitus: Clinical Summary of the USPSTF Recommendation

Population	Asymptomatic pregnant women after 24 weeks of gestation	Asymptomatic pregnant women before 24 weeks of gestation
Recommendation	Screen for GDM Grade: B	No recommendation Grade: I statement
Risk assessment	Risk factors that increase a woman's risk of developing GDM include obesity, increased maternal age, history of GDM, family history of diabetes, and belonging to an ethnic group with increased risk of type 2 diabetes (Hispanic, Native American, South or East Asian, African American, or Pacific Island descent).	
Screening tests	The most commonly used screening test in the United States is the 50-g oral glucose challenge test, administered between 24 and 28 weeks of gestation in a nonfasting state. If the screening threshold is met or exceeded (130, 135, or 140 mg per dL [7.21, 7.49, or 7.77 mmol per L]), patients receive the oral glucose tolerance test. A diagnosis of GDM is made when one or more glucose values fall at or above the specified glucose thresholds. Other methods of screening include fasting plasma glucose and screening based on risk factors. However, there is limited evidence about these alternative screening approaches.	
Treatment	Initial treatment includes moderate physical activity, dietary changes, support from diabetes educators and nutritionists, and glucose monitoring. If the patient's glucose is not controlled after these initial interventions, she may be prescribed medication (either insulin or oral hypoglycemic agents), have increased surveillance in prenatal care, and have changes in delivery management.	
Balance of benefits and harms	There is a moderate net benefit to screening for GDM after 24 weeks of gestation to reduce maternal and fetal complications.	The evidence for screening for GDM before 24 weeks of gestation is insufficient, and the balance of benefits and harms of screening cannot be determined.
Other relevant USPSTF recommendations	The USPSTF has made recommendations on screening for type 2 diabetes. These recommendations are available at http://www.uspreventiveservicestaskforce.org/.	

NOTE: *For a summary of the evidence systematically reviewed in making this recommendation, the full recommendation statement, and supporting documents, go to http://www.uspreventiveservicestaskforce.org/.*

GDM = gestational diabetes mellitus; USPSTF = U.S. Preventive Services Task Force.

demonstrated no significant differences in the incidence of small-for-gestational-age infants or episodes of neonatal hypoglycemia, but the trials were not adequately powered to detect meaningful differences in these outcomes.

USPSTF ASSESSMENT

The USPSTF concludes with moderate certainty that there is a moderate net benefit to screening for GDM after 24 weeks of gestation to reduce maternal and fetal complications (the collective outcomes of preeclampsia, macrosomia, and shoulder dystocia).

The USPSTF concludes that the evidence on screening for GDM before 24 weeks of gestation is insufficient, and the balance of benefits and harms of screening cannot be determined.

Clinical Considerations

PATIENT POPULATION

These recommendations apply to pregnant women who have not been previously diagnosed with type 1 or 2 diabetes.

ASSESSMENT OF RISK

Several factors increase a woman's risk of developing GDM, including obesity, increased maternal age, history of GDM, family history of diabetes, and belonging to an ethnic group that has increased risk of developing type 2 diabetes (Hispanic, Native American, South or East Asian, African American, or Pacific Island descent).

Factors associated with a lower risk of developing GDM include age younger than 25 to 30 years, white race, a body mass index (BMI) of 25 kg per m^2 or less, no family history (that is, in a first-degree relative) of diabetes, and no history of glucose intolerance or adverse pregnancy outcomes related to GDM.

SCREENING

A two-step approach is commonly used in the United States. The 50-g oral glucose challenge test is performed between 24 and 28 weeks of gestation in a nonfasting state. If the screening threshold is met or exceeded (130, 135, or 140 mg per dL [7.21, 7.49, or 7.77 mmol per L]), patients receive the oral glucose tolerance test.

During the oral glucose tolerance test, a fasting glucose level is obtained, followed by administration of a 100-g glucose load, and glucose levels are evaluated after one, two, and three hours. Alternatively, a 75-g glucose load is administered after fasting glucose and plasma glucose levels are evaluated after one and two hours (one-step approach). A diagnosis of GDM is made when two or more glucose values fall at or above the specified glucose thresholds.

TIMING OF SCREENING

Screening is recommended after 24 weeks of gestation. Screening for GDM may occur earlier than 24 weeks of gestation in high-risk women, but there is little evidence about the benefits and harms of screening before 24 weeks of gestation.

TREATMENT

Initial treatment includes moderate physical activity, dietary changes, support from diabetes educators and nutritionists, and glucose monitoring. If the patient's glucose is not controlled after these initial interventions, she may be prescribed medication (either insulin or oral hypoglycemic agents) or have increased surveillance in prenatal care or changes in delivery management.

SUGGESTIONS FOR PRACTICE REGARDING THE I STATEMENT

In deciding whether to screen for GDM before 24 weeks of gestation, primary care clinicians should consider the following.

Potential Preventable Burden. GDM affects about 240,000 of the 4 million annual births in the United States.[3] Pregnant women who are diagnosed with GDM before 24 weeks may be at even greater risk of maternal and fetal complications and development of type 2 diabetes, and may benefit from early identification and treatment. Women with GDM are at increased risk of developing type 2 diabetes.

Potential Harms. Potential harms of screening for GDM include psychological harms and intensive medical interventions (induction of labor, cesarean delivery, or admission to the neonatal intensive care unit). Possible adverse effects of treatment include neonatal or maternal hypoglycemia and maternal stress.

Current Practice. A cross-sectional study reported that universal screening is the most common practice in the United States, with 96% of obstetricians routinely screening for GDM.[4] Some women are screened earlier than 24 weeks of gestation because they have risk factors for type 2 diabetes, such as obesity, family history of type 2 diabetes, or fetal macrosomia during a previous pregnancy.

If a pregnant woman presents in the first trimester or in early pregnancy with risk factors for type 2 diabetes, clinicians should use their clinical judgment to determine what is appropriate screening for that individual patient given her health needs and the insufficient evidence.

OTHER APPROACHES TO PREVENTION

Most pregnant women should be encouraged to attain moderate gestational weight gain, based on their prepregnancy BMI, and to participate in physical activity based on their clinician's recommendations. The Institute of Medicine has made recommendations for weight gain during pregnancy based on prepregnancy BMI.[5]

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The "Other Considerations," "Discussion," "Update of Previous Recommendation," and "Recommendations of Others" sections of this recommendation statement are available at http://www.uspreventiveservicestaskforce.org/Page/Document/RecommendationStatementFinal/gestational-diabetes-mellitus-screening.

REFERENCES

1. Hartling L, Dryden DM, Guthrie A, et al. Screening and diagnosing gestational diabetes mellitus. Evidence report/technology assessment no. 210. AHRQ publication no. 12(13)-E021-EF. Rockville, Md.: Agency for Healthcare Research and Quality; 2012. http://www.ncbi.nlm.nih.gov/books/NBK114844/. Accessed December 11, 2013.
2. Kim C, Newton KM, Knopp RH. Gestational diabetes and the incidence of type 2 diabetes: a systematic review. *Diabetes Care.* 2002;25(10):1862-1868.
3. Nicholson WK, Wilson LM, Witkop CT, et al. Therapeutic management, delivery, and postpartum risk assessment and screening in gestational diabetes. Evidence report/technology assessment no. 162. AHRQ publication no. 08-E004. Rockville, Md.: Agency for Healthcare Research and Quality; 2008. http://www.ncbi.nlm.nih.gov/books/NBK27011/. Accessed December 11, 2013.
4. Gabbe SG, Gregory RP, Power ML, Williams SB, Schulkin J. Management of diabetes mellitus by obstetrician-gynecologists. *Obstet Gynecol.* 2004;103(6):1229-1234.
5. Institute of Medicine and National Research Council. Weight gain during pregnancy: reexamining the guidelines. Washington, DC: National Academies Press; 2009. http://www.iom.edu/Reports/2009/Weight-Gain-During-Pregnancy-Reexamining-the-Guidelines.aspx. Accessed December 11, 2013. ■