Q/Which women should we screen for gestational diabetes mellitus?

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EVIDENCE-BASED ANSWER

A/ IT'S UNCLEAR which women we should screen. No randomized controlled trials (RCTs) demonstrate that either universal screening or risk factor screening for gestational diabetes mellitus (GDM) prevents maternal and fetal adverse outcomes.

That said, the common practice of universal screening is more sensitive than screening based on risk factors (strength of recommendation [SOR]: **B,** 1 randomized trial and 3 retrospective cohort studies without patient-oriented outcomes). Historic risk factors are poor predictors of GDM in a current pregnancy (SOR: **C,** 1 retrospective cohort study without patient-oriented outcomes).

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Evidence summary

No RCTs have evaluated the risks, benefits, and clinical outcomes of screening for GDM. A review of universal screening compared with risk factor screening included 2 retrospective studies, 1 observational cohort study, and 1 nonconcurrent cohort study.[1-4]

Risk factor screening misses women with GDM

All 4 studies clearly show that risk factor screening would miss patients with GDM.[1-4] Two studies found that the detection rate of GDM increases when universal screening is performed.[1,4]

One observational study in a multiethnic cohort concluded that risk factor screening missed 30% of patients with GDM and that universal screening increased the detection rate from 8.3% to 12.6% (P=.001) compared with risk factor screening.[1] Similarly, a retrospective study of 147 pregnant women with GDM found that risk factor screening would have missed 23%.[2]

Universal screening diagnoses GDM earlier than risk factor screening

One prospective randomized study that compared universal screening (using a 50-g 1-hour glucose challenge test) in 1853 women with risk factor screening in 1299 women demonstrated that nearly half of those with GDM had no historical risk factors and would have been missed by risk factor screening in a low-prevalence, mostly Caucasian sample. The prevalence was 2.7% in the universal screening group vs 1.45% in the risk factor screening group (P<.03). Universal screening diagnosed GDM earlier than risk factor screening (mean gestation 30 ± 2.6 weeks vs 33 ± 3.7 weeks; P<.05).[3]

Need for insulin is similar, with and without GDM risk factors

A retrospective cohort study demonstrated that risk factor screening misses 43% of women with GDM. The study also showed that women with GDM who had identifiable risk factors and women without identifiable risk factors were equally likely to require insulin to control their GDM. Adverse birth outcomes such as macrosomia and shoulder dystocia or cesarean section were similar in patients with and without risk factors for GDM.[4]

Macrosomia and primary C-section increase along with glucose intolerance

The prospective cohort Hyperglycemia and Adverse Pregnancy Outcome (HAPO) Study

of 23,316 women at 15 centers in 9 countries used the 2-hour 75-g oral glucose tolerance test at 24 to 32 weeks' gestation to clarify the risks of adverse outcomes associated with varying degrees of maternal glucose intolerance. The study found a linear increase in the risk of macrosomia and primary cesarean section as glucose intolerance levels increased from normal to the gestational diabetes range.[5]

Recommendations

The US Preventive Services Task Force states that evidence is insufficient to advise for or against routine screening for GDM.[6]

The American College of Obstetricians and Gynecologists considers universal glucose challenge screening for GDM to be the most sensitive approach, but notes that some pregnant women at low risk may be less likely to benefit from testing.[7]

The Cochrane review protocol states that universally accepted screening is controversial because of a lack of clearly defined, universally accepted screening criteria and uncertainty about the severity of glucose intolerance at which treatment is beneficial.[8] JFP

References

1. Cosson E, Benchimol M, Carbillon L, et al. Universal rather than selective screening for gestational diabetes mellitus may improve fetal outcomes. *Diabetes Metab*. 2006;32:140-146.
2. Baliutaviciene D, Petrenko V, Zalinkevicius R. Selective or universal diagnostic testing for gestational diabetes mellitus. *Int J Gynaecol Obstet*. 2002;78:207-211.
3. Griffin ME, Coffey M, Johnson H, et al. Universal vs. risk factor-based screening for gestational diabetes mellitus: detection rates, gestation at diagnosis and outcome. *Diabetes Med*. 2000;17:26-32.
4. Weeks JW, Major CA, de Veciana M, et al. Gestational diabetes: does the presence of risk factors influence perinatal outcome? *Am J Obstet Gynecol*. 1994;171:1003-1007.
5. HAPO Study Cooperative Research Group, Metzger BE, Lowe LP, et al. Hyperglycemia and adverse pregnancy outcomes. *N Engl J Med*. 2008;358:1991-2002.
6. US Preventive Services Task Force. Screening for gestational diabetes mellitus: US Preventive Services Task Force recommendation statement. *Ann Intern Med*. 2008;148:759-765.
7. American College of Obstetricians and Gynecologists Committee on Practice Bulletins—Obstetrics. ACOG Practice Bulletin. Clinical management guidelines for obstetrician-gynecologists. Number 30, September 2001 (replaces Technical Bulletin Number 200, December 1994). Gestational diabetes. *Obstet Gynecol*. 2001;98:525-538.
8. Tieu J, Crowther CA, Middleton P, et al. Screening for gestational diabetes mellitus for improving maternal and infant health (Protocol). *Cochrane Database Syst Rev*. 2008;(2):CD007222 .