

Should antenatal testing be performed in patients with a pre-pregnancy BMI \geq 35?

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Possibly. Elevated body mass index (BMI) is associated with an increased risk for stillbirth (strength of recommendation (SOR), B; Cohort studies and meta-analysis of cohort studies). Three studies found an association between elevated BMI and stillbirth and one did not. However, no studies demonstrate that antenatal testing in pregnant people with higher BMIs decreases stillbirth rates, or that no harm is caused by unnecessary testing or resultant interventions.

Still, in 2021, the American College of Obstetricians and Gynecologists (ACOG) suggested weekly antenatal testing may be considered from 34 weeks' 0 days' gestation for pregnant people with a BMI \geq 40.0 kg/m² and from 37 weeks' 0 days' gestation for pregnant people with a BMI between 35.0 and 39.9 kg/m² (SOR, C; consensus guideline). Thus, doing the antenatal testing recommended in the ACOG guideline in an attempt to prevent stillbirth is reasonable, given evidence that elevated BMI is associated with stillbirth.

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Evidence summary

Association between higher maternal BMI and increased risk for stillbirth

The purpose of antenatal testing is to decrease the risk for stillbirth between visits. Because of the resources involved and the risk for false-positives when testing low-risk patients, antenatal testing is reserved for pregnant people with higher risk for stillbirth.

In a retrospective cohort study of more than 2.8 million singleton births including 9,030 stillbirths, pregnant people with an elevated BMI had an increased risk for stillbirth compared with those with a normal BMI. The adjusted hazard ratio was 1.71 (95% confidence interval (CI), 1.62-1.83) for those with a BMI of 30.0 to 34.9 kg/m²; 2.04 (95% CI, 1.8-2.21) for those with a BMI of 35.0 to 39.9 kg/m²; and 2.50 (95% CI, 2.28-2.74) for those with a BMI \geq 40 kg/m².¹

A meta-analysis of 38 studies, which included data on 16,274 stillbirths, found that a 5-unit increase in BMI was associated with an increased risk for stillbirth (relative risk, 1.24; 95% CI, 1.18-1.30).²

Another meta-analysis included 6 cohort studies involving more than 1 million pregnancies and 3 case-control studies involving 2,530 stillbirths and 2,837 controls from 1980-2005. There was an association between increasing BMI and stillbirth: the odds ratio (OR) was 1.47 (95% CI, 1.08-1.94) for those with a BMI of 25.0 to 29.9 kg/m² and 2.07 (95% CI, 1.59-2.74) for those with a BMI \geq 30.0, compared with those with a normal BMI.³

However, a retrospective cohort study

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of 182,362 singleton births including 442 stillbirths found no association between stillbirth and increasing BMI. The OR was 1.10 (95% CI, 0.90-1.36) for those with a BMI of 25.0 to 29.9 and 1.09 (95% CI, 0.87-1.37) for those with a BMI \geq 30.0 kg/m², compared with those with a normal BMI.⁴ However, this cohort study may have been underpowered to detect an association between stillbirth and BMI.

Recommendations from others

In 2021, ACOG suggested that weekly antenatal testing may be considered from 34 weeks' and 0 days' gestation for pregnant people with a BMI \geq 40.0 kg/m² and from 37 weeks' and 0 days' gestation for pregnant people with a BMI between 35.0 and 39.9 kg/m².⁵ The 2021 ACOG Practice Bulletin on obesity in pregnancy rates this recommendation as Level C—based primarily on consensus and expert opinion.⁶

A 2018 Royal College of Obstetricians and Gynecologists Green-top Guideline recognizes “definitive recommendations for fetal surveillance are hampered by the lack of randomized controlled trials demonstrating that antepartum fetal surveillance decreases perinatal morbidity or mortality in late-term and post-term gestations.... There are no

definitive studies determining the optimal type or frequency of such testing and no evidence specific for women with obesity.”⁷

A 2019 Society of Obstetricians and Gynecologists of Canada practice guideline states “stillbirth is more common with maternal obesity” and recommends “increased fetal surveillance ... in the third trimester if reduced fetal movements are reported.” The guideline notes “the role for non-stress tests ... in surveillance of well-being in this population is uncertain.” Also, for pregnant people with a BMI > 30 kg/m², “assessment of fetal well-being is ... recommended weekly from 37 weeks until delivery.” Finally, increased fetal surveillance is recommended in the setting of increased BMI and an abnormal pulsatility index of the umbilical artery and/or maternal uterine artery.⁸

Editor’s takeaway

Evidence demonstrates that increased maternal BMI is associated with increased stillbirths. However, evidence has not shown that third-trimester antenatal testing decreases this morbidity and mortality. Expert opinion varies, with ACOG recommending weekly antenatal testing from 34 and 37 weeks' gestation, respectively, for pregnant people with BMIs of \geq 40 kg/m² and of 35 to 39.9 kg/m². ●

FAST TRACK

ACOG does recommend third-trimester antenatal testing for pregnant people with increased BMI in order to protect against stillbirth

References

1. Yao R, Ananth C, Park B, et al; Perinatal Research Consortium. Obesity and the risk of stillbirth: a population-based cohort study. *Am J Obstet Gynecol*. 2014;210:e1-e9. doi: 10.1016/j.ajog.2014.01.044
2. Aune D, Saugstad O, Henriksen T, et al. Maternal body mass index and the risk of fetal death, stillbirth, and infant death: a systematic review and meta-analysis. *JAMA*. 2014;311:1536-1546. doi: 10.1001/jama.2014.2269
3. Chu S, Kim S, Lau J, et al. Maternal obesity and risk of stillbirth: a meta-analysis. *Am J Obstet Gynecol*. 2007;197:223-228. doi: 10.1016/j.ajog.2007.03.027
4. Mahomed K, Chan G, Norton M. Obesity and the risk of stillbirth—a reappraisal—a retrospective cohort study. *Eur J Obstet Gynecol Reprod Biol*. 2020;255:25-28. doi: 10.1016/j.ejogrb.2020.09.044
5. American College of Obstetricians and Gynecologists' Committee on Obstetric Practice, Society for Maternal-Fetal Medicine. Indications for outpatient antenatal fetal surveillance: ACOG committee opinion, number 828. *Obstet Gynecol*. 2021;137:e177-e197. doi: 10.1097/AOG.0000000000004407
6. American College of Obstetricians and Gynecologists' Committee on Practice Bulletins-Obstetrics. Obesity in pregnancy: ACOG practice bulletin, number 230. *Obstet Gynecol*. 2021;137:e128-e144. doi: 10.1097/AOG.0000000000004395
7. Denison F, Aedla N, Keag O, et al; Royal College of Obstetricians and Gynaecologists. Care of women with obesity in pregnancy: Green-top Guideline No. 72. *BJOG*. 2019;126:e62-e106. doi: 10.1111/1471-0528.15386
8. Maxwell C, Gaudet L, Cassir G, et al. Guideline No. 391—Pregnancy and maternal obesity part 1: pre-conception and prenatal care. *J Obstet Gynaecol Can*. 2019;41:1623-1640. doi: 10.1016/j.jogc.2019.03.026