Practice Guidelines

Predicting and Preventing Preterm Birth: Recommendations From ACOG

Key Points for Practice

- Preterm birth rates can be reduced by ceasing tobacco and alcohol use, increasing contraception access, and increasing interpregnancy intervals to at least 18 months.
- Daily vaginal progesterone starting between 20 and 24 weeks until 34 weeks' gestation can reduce preterm birth risk for patients with cervical shortening or a history of preterm birth.
- When a visually dilated cervix is identified, cervical cerclage therapy increases pregnancy duration and improves neonatal survival.

From the *AFP* Editors

Preterm birth, or delivery occurring between 20 and 37 weeks' gestation, may be spontaneous or due to a maternal or fetal complication. Early preterm birth occurs up to 34 weeks' gestation, and late preterm birth occurs between 34 and 37 weeks' gestation. Preterm births account for one in 10 deliveries, and 3% of births are early preterm. The American College of Obstetricians and Gynecologists (ACOG) has new recommendations for predicting and preventing preterm birth.

Risk Factors

All pregnant patients are at risk for preterm birth, and one in 20 nulliparous patients will deliver preterm. Many risk factors for preterm birth are unmodifiable. Multiple pregnancies confer the highest risk, with preterm births occurring in 60% of twin pregnancies and 98% of triplet pregnancies.

A history of preterm birth is a strong risk factor for subsequent preterm birth, although a term birth after the preterm birth reduces future risk. The risk for preterm birth in a subsequent single pregnancy is elevated even when the preterm birth was a twin delivery.

A history of dilation and curettage increases the risk of preterm birth by approximately 30% for a single procedure and more for multiple procedures.

Non-Hispanic Black women have preterm birth rates nearly 50% higher than Hispanic or White women. Because this increase affects more Black women with higher levels of education as well as those with less education, it is likely an effect of structural racism instead of solely the result of socioeconomic factors that correlate with race.

Bacterial vaginosis is associated with a twofold increased risk of spontaneous preterm birth, especially if present in early pregnancy, although treatment has not been demonstrated to reduce this risk. Similarly, vaginal bleeding, urinary tract infections, genital tract infections, and periodontal disease increase preterm birth risk regardless of treatment.

Although a short cervical length determined using ultrasonography is associated with increased preterm birth risk, having a shortened cervix due to surgical treatment of cervical dysplasia does not appear to increase risk.

Some risk factors for preterm birth are modifiable. Tobacco and substance use increase the risk of preterm birth, and an interpregnancy interval of less than 18 months increases the risk of preterm birth and pregnancy complications. Although unintended pregnancies have an increased risk of preterm birth, increasing access to family planning and long-acting reversible contraception reduces preterm birth risk.

Assessing Risk of Preterm Birth

A cervical length less than 25 mm measured by endovaginal ultrasonography between 16 and 24 weeks' gestation demonstrates increased preterm birth risk. Endovaginal cervical length is measured with an empty bladder and the endovaginal probe placed in the anterior fornix.

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This series is coordinated by Michael J. Arnold, MD, contributing editor.

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Visualized intra-amniotic debris demonstrates further increased risk of preterm birth in patients with a short cervix, but funneling of the internal os, change with fundal pressure, and change with subsequent examinations do not demonstrate further increased risk.

Although the absence of fetal fibronectin by vaginal swab is useful to demonstrate low risk for patients with symptoms of preterm labor, the positive predictive value is low, and the test is not useful for screening asymptomatic patients.

SCREENING

Although the cost-effectiveness of universal screening is uncertain, the cervix is often visualized on the fetal anatomy ultrasound scan routinely conducted between 18 and 23 weeks' gestation. If the cervical length measurement is 36 mm or less, an endovaginal measurement can be considered. Based on a study of nulliparous patients with singleton pregnancies, 680 patients would need to be screened by endovaginal ultrasonography with a cervical measurement cutoff of 20 mm to predict one spontaneous preterm birth.

In a large cohort study, a cervical length of 36 mm or less on transabdominal ultrasonography identified 96% of patients with an endovaginally measured cervical length of 25 mm or less, and a transabdominal cervical measurement of 35 mm or less identified 100% of patients with an endovaginally measured cervical length of 20 mm or less. In this study, 60% of patients had transabdominal measurements of 36 mm or greater.

Patients with a previous spontaneous preterm delivery are at increased risk and are recommended for endovaginal cervical measurement. In these patients, a cervical length less than 25 mm before 24 weeks' gestation has a 33% positive predictive value for preterm birth, whereas a cervical length greater than 25 mm has a 92% negative predictive value.

Screening for bacterial vaginosis in pregnancy is not recommended because treatment does not reduce the risk of preterm birth.

SURVEILLANCE

For patients with a singleton pregnancy and a history of previous spontaneous preterm birth without a short cervix, serial cervical length measurements by endovaginal ultrasonography are recommended between 16 and 24 weeks' gestation. If the previous preterm birth was medically indicated, the benefit of serial measurements is uncertain. Without a previous preterm birth, serial measurements are not recommended.

Interventions to Reduce Preterm Birth

PROGESTERONE

Vaginal progesterone treatment reduces the risk of preterm birth in patients with a short cervix, with a number needed to treat (NNT) of 14 to prevent one preterm birth before 33 weeks' gestation and an NNT of 22 to prevent one case of neonatal respiratory distress. In this study, progesterone was inserted vaginally daily starting between 20 weeks and 23 weeks 6 days of gestation and continued until 34 weeks' gestation. Vaginal progesterone also reduces preterm birth risk in patients with previous preterm birth but does not appear to reduce the risk in patients with multiple gestations.

Intramuscular progesterone does not appear to reduce preterm birth risk in patients with singleton pregnancies with a short cervix and may increase preterm birth risk for patients with multiple gestations. A systematic review suggested that intramuscular progesterone does reduce preterm birth risk in patients with a singleton pregnancy and previous preterm births, but not as effectively as vaginal progesterone.

CERVICAL CERCLAGE

For patients with a cervical length less than 25 mm, cervical cerclage does not reduce the risk of preterm birth. A small, planned subgroup analysis suggests that for patients with a cervical length less than 10 mm, cervical cerclage may reduce the risk of delivery before 35 weeks' gestation.

For patients with a visibly dilated cervix on examination between 16 weeks and 23 weeks 6 days of gestation, a cervical cerclage appears to prolong pregnancy and improve neonatal mortality. A meta-analysis of low-quality studies suggested that cervical cerclage prolongs pregnancy by a mean of 34 days (95% CI, 18 to 50 days) and reduces neonatal mortality with an NNT of 4 (95% CI, 2 to 13). This increased survival can be associated with significant disability and thus requires careful shared decision-making. Performing an amniocentesis before placing a cervical cerclage does not appear necessary and increases the risk of chorioamnionitis.

Cervical cerclage is not beneficial in patients with twin pregnancies with a cervical length less than 25 mm but may reduce preterm birth risk if cervical length is less than 15 mm. A small trial

suggested cervical cerclage may benefit patients with twin pregnancies and cervical dilation visualized on examination between 16 weeks and 23 weeks 6 days of gestation.

CERVICAL PESSARY

Cervical pessary treatment does not appear to be effective for cervical length less than 25 mm, previous preterm birth, or multiple gestation and is not recommended.

ACTIVITY RESTRICTION

Activity restriction appears to increase preterm birth rate and is not recommended.

The views expressed are those of the author and do not necessarily reflect the official policy or position of the Department of the Navy, Uniformed Services University of the Health Sciences, U.S. Department of Defense, or the U.S. government.

Editor's Note: The NNTs and their corresponding CIs were calculated by the author based on data provided in the guideline.

Reducing the preterm births that occur in one in 10 pregnancies, especially the early preterm births that occur in one in 36 pregnancies, can prevent a lifetime of morbidity. The greatest evidence for preventing preterm birth is measuring cervical length in women with previous preterm birth and treating those with a shortened cervix with vaginal progesterone. ACOG also recommends monitoring transabdominal cervical length with every fetal evaluation ultrasonography, but declines to specify a cervical length threshold for action. Data from a recent trial suggest that an endovaginal cervical length of 25 mm or less can be ruled out with a transabdominal measurement of 36 mm or greater. Using this as a universal screening threshold would require that nearly 40% of pregnant women receive a transvaginal measurement. ACOG declines to recommend this, and only discusses that women should have their cervix visualized between 18 and 23 weeks.—Michael J. Arnold, MD, Contributing Editor

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