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Wolters Kluwer

Patient education: Preterm labor (Beyond the Basics)

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INTRODUCTION

Preterm labor is defined as labor that begins before 37 weeks and 0 days (abbreviated "37+0" in this topic) of pregnancy. A normal pregnancy lasts 37 to 42 weeks, counting from the first day of the last menstrual period. Early term is considered 37+0 weeks through 38+6 weeks, full term is 39+0 weeks through 40+6 weeks, late term is 41+0 weeks through 41+6 weeks, and postterm is 42+0 weeks and beyond. Ideally, babies are born full term.

Approximately 10 percent of babies in the United States are born preterm; 80 percent of these are due to preterm labor that begins on its own or after preterm prelabor rupture of the fetal membranes (or "broken bag of waters"). These are called spontaneous preterm labor. The remaining 20 percent are planned early deliveries that are done for maternal or fetal problems. In these cases, the potential risks to mother and/or baby from continuing the pregnancy are considered to be greater than the potential risks of giving birth early.

Not all women who have spontaneous preterm labor will give birth to their baby early; estimates are that between 30 and 50 percent of these women will go on to give birth at term. If preterm labor leads to an early birth, the preterm newborn is at risk for problems related to incomplete development of its organ systems. These problems include difficulty with breathing, staying warm, feeding, as well as injury to the eyes, intestines, and nervous system.

Preterm birth is a major cause of newborn complications and death. Regular prenatal care can help to identify some, but not all, women at risk for preterm labor. If preterm labor occurs,

various measures can be taken to both delay birth and decrease the risk of newborn complications.

PRETERM LABOR RISK FACTORS

It is difficult to predict who will develop preterm labor. Certain obstetric conditions and other factors are known to increase a woman's risk. However, most preterm births occur in women who have no known risk factors.

The strongest risk factor for preterm birth is a previous preterm birth, although most women who have had a preterm birth will have a term pregnancy in the future. As an example, one study found that only 22 percent of women with a previous preterm birth had another preterm birth with their next pregnancy.

Other factors that may increase a woman's risk include:

- Being pregnant with twins, triplets, or more.
- A history of excisional therapy (cervical conization, cone biopsy, loop electrosurgical excision procedure [LEEP], large loop excision of the transformation zone [LLETZ]) for treatment of abnormal Pap smears, especially if the amount of the cervix removed is large.
- Abnormalities of the uterus.
- Uterine bleeding, especially in the second or third trimester.
- Use of certain "recreational" drugs, such as cocaine.
- Cigarette smoking.
- Some infections.
- Excessive amniotic fluid.
- A short interval (less than 12 to 18 months) between consecutive births.
- Abdominal surgery during pregnancy.
- Moderate to severe anemia early in the pregnancy.
- Low prepregnancy weight and low weight gain during pregnancy.

Black women appear to have double the incidence of preterm labor and birth when compared with white women. The risk of preterm birth is also higher in women under 18 to 20 years of age. Older maternal age alone (over 35 to 40) is not associated with an increased risk of preterm labor. However, older women are more likely to have other conditions (such as hypertension and diabetes) that can cause complications requiring preterm birth.

PRETERM LABOR CAUSES

It is usually difficult to identify the cause of preterm labor. Four general categories causes include:

Uterine bleeding — Conditions like placenta previa (when the placenta partially or completely covers the cervix) and placental abruption (when the placenta separates from the uterus before delivery) cause vaginal bleeding and can trigger preterm labor.

Excessive stretching of the uterus — Having twins, triplets, or more, or having polyhydramnios (an excessive amount of amniotic fluid around the baby) causes greater than usual stretching of the uterus, which can lead to uterine contractions and preterm labor.

Bacteria or inflammation — Bacteria or inflammation caused by an infection can stimulate the production of substances in the uterus, placenta, and/or baby that trigger uterine contractions.

Physical or psychological stress — Severe stress may lead to the release of hormones that cause uterine contractions and preterm labor.

PREDICTING PRETERM BIRTH

Research is ongoing to identify a chemical or physical marker that predicts whether and when preterm birth will occur. Two tests have been identified that may be helpful in some settings.

Cervical length — Ultrasound measurement of the cervix can help to predict the risk of preterm birth; the risk increases as cervical length decreases. A cervix ≤ 25 mm measured by transvaginal ultrasound in the second trimester is considered short and predictive of an increased risk of preterm birth.

Fetal fibronectin — A substance called fetal fibronectin is released when the fetal membranes begin to change prior to labor. Studies have shown that if this substance is **not** present in vaginal discharge in high concentrations in women with contractions or in women at high risk for preterm birth, preterm birth is unlikely. If there are high amounts of fetal fibronectin, there

is an increased chance of preterm birth but it does not always mean that she will deliver prematurely.

PRETERM LABOR SIGNS AND SYMPTOMS

The signs of preterm labor are similar to the signs of labor at the end of pregnancy:

- Change in type or amount of vaginal discharge (watery, mucus, or bloody)
- Pelvic or lower abdominal pressure or pain
- Constant, low, dull backache
- Mild or menstrual-like abdominal cramps, with or without diarrhea
- Regular or frequent contractions or uterine tightening that may be painless
- Ruptured membranes (broken water)

Braxton Hicks contractions (also called false labor contractions) are uterine contractions (tightening of the uterus) that occur less than eight times in an hour or four times every twenty minutes; these contractions are not accompanied by bleeding or vaginal discharge and are relieved by resting. These are normal and do not increase the risk of preterm birth. However, it is often difficult to tell the difference between preterm labor and false labor without having a cervical examination.

In the early stages of labor, a woman may experience cramping that is relatively mild and occurs irregularly. At this stage the discomfort may be similar to menstrual cramping and may cause low back pain. As uterine contractions strengthen they usually become more painful and occur at regular and shorter intervals.

In addition, a woman may notice excessive mucus discharge from the vagina. Light bleeding or spotting is also common. The fetal membranes can rupture (known as water breaking) before or during preterm labor. If this happens, a trickle to a sudden gush of fluid will drain from the vagina.

A woman should contact her hospital or health care provider immediately if she is concerned she could be in preterm labor or has other concerning symptoms. In particular, she should call if she has more than six contractions in an hour that continue despite lying down, if she has leakage of amniotic fluid, or she has any vaginal bleeding.

The health care provider will perform a pelvic examination to determine if the membranes have ruptured and if the cervix is effacing (thinning) or dilating (beginning to open), and may also

perform an ultrasound examination. He or she may also place a monitor on the uterus that electronically records uterine contractions and the baby's heart rate.

HOME MONITORING

A health care provider may ask a woman to monitor herself for contractions. This is best accomplished by lying down and gently feeling the uterus with the fingertips. Normally, the uterus should be relaxed, soft, and easily indented by pushing on it with the fingers. During a contraction, the uterus becomes firm and difficult to indent. The time between the start of one contraction and the start of the next indicates how often contractions are occurring.

PRETERM LABOR TREATMENT

Treatment can be given in an attempt to slow or stop preterm labor. The primary goal of treatment is to delay giving birth long enough that steroids, which promote development of the baby's lungs, can be given and produce the desired effects. Delaying preterm birth also allows the woman to be transferred, if necessary, to a facility that can provide specialized care to a preterm baby.

Treatment to delay giving birth is typically recommended if pregnancy is less than 34 weeks of gestation because babies born before 34 weeks are at particularly high risk for complications of preterm birth. However, if the mother's or baby's health is at risk, labor may be allowed to proceed.

A woman in preterm labor will be admitted to the hospital for close monitoring while medications for trying to stop labor are administered. An intravenous line will be inserted to give fluids and possibly some medications, and a fetal monitor will be used to evaluate uterine contractions and the baby's heart rate.

Treatments to stop labor — If the mother and baby are healthy, medications are often used to try to relax the uterine muscle and try to stop contractions. Medications used to stop or slow labor are called "tocolytic" drugs. They include terbutaline, nifedipine, and indomethacin. Some of these drugs are given intravenously or by injection while others can be taken orally.

Tocolytics are usually given along with a steroid (glucocorticoid) injection (see below). Tocolytic medications can sometimes stop or reduce the frequency of contractions, which can delay giving birth for several hours and optimally for 48 hours while the steroid takes effect. Although tocolytics can stop or reduce the frequency of contractions, they do not treat the underlying

cause of the preterm contractions. Therefore, preterm labor often recurs and results in preterm birth.

While tocolytics are used, the mother is monitored for medication side effects. If labor stops, she is usually kept in the hospital for a period of time to monitor for more uterine contractions. Depending upon a number of factors, she may be discharged home or asked to stay in the hospital. While at home, she may be asked to limit her activities, and told to contact her hospital or health care provider immediately if signs of labor return.

Treatments to help the baby — Steroids (glucocorticoids) can speed the development of a preterm baby's lungs and are often administered during preterm labor. Steroids help the lungs mature and may promote the production of surfactant, a substance that prevents the collapse of alveoli (small sacs in the lungs where air is exchanged). Steroids also decrease the baby's risk for intraventricular hemorrhage (bleeding into the brain) and other complications, which affect the bowels and circulatory system. They also reduce the risk of death from complications of preterm birth.

Steroids are usually administered if the mother is between approximately 23 and 34 weeks of gestation. Before approximately 22 to 23 weeks of gestation, the baby is too immature to benefit from steroids. After 34 weeks, the baby's lungs are more likely to be sufficiently developed. Practice varies at this gestational age range and some clinicians give steroids if the pregnancy is less than 37 weeks and the patient has not received a previous dose of the medication. The most commonly used steroid is betamethasone.

The timing of the dose of steroids is important. Steroids must be given to the mother as an injection several hours before the infant is delivered. A second dose is usually given 24 hours after the first dose. There is probably some benefit from steroids, even if birth occurs before the second dose is given. The greatest benefit is seen when the first dose of the steroid is given at least 48 hours and no more than seven days before the baby is born. It is not usually necessary to repeat the steroid treatment later in pregnancy if preterm labor recurs.

If the mother gives birth early, a number of treatments can be given to support the preterm baby. Over the past decade, significant advances have been made in the care of preterm newborns. However, not all hospitals are equipped to care for them. For this reason, it is important that a woman who is at high risk for preterm birth be treated in a hospital with a neonatal intensive care unit.

PRETERM LABOR PREVENTION

One of the most important things a pregnant woman can do to prevent preterm labor is to stop habits that can be harmful, such as smoking and use of recreational drugs.

Women with a history of a previous preterm birth at less than 37 weeks of pregnancy (due to spontaneous labor or prelabor rupture of membranes) may be offered a progesterone supplement to prevent recurrent preterm birth. Progesterone supplementation is begun between 16 and 26 weeks of pregnancy and continued until 36 weeks. Research on the benefit of progesterone supplements in women with a previous preterm birth is conflicting, and your health care provider will discuss this with you. Following a meeting in October 2022, the Food and Drug Administration (FDA)'s Obstetrics, Reproductive, and Urologic Drugs Advisory Committee voted to recommend that the FDA pursue withdrawal of [Makena](#) (hydroxyprogesterone caproate injection) from the US market because recent studies failed to show a benefit of the drug in preventing recurrent preterm birth. Although not bound by the committee's recommendations, the FDA does take them into consideration when making decisions on market withdrawal. Until the final decision has been made, Makena remains approved for prevention of recurrent preterm birth.

Women with no history of previous preterm birth who are found to have a short cervix on a second trimester transvaginal ultrasound examination may be offered a daily vaginal progesterone supplement. Women with a history of previous preterm birth who are found to have a short cervix on a second trimester transvaginal ultrasound examination may be offered placement of a stitch (called a cerclage) around the cervix.

WHERE TO GET MORE INFORMATION

Your health care provider is the best source of information for questions and concerns related to your medical problem.

This article will be updated as needed on our web site (www.uptodate.com/patients). Related topics for patients, as well as selected articles written for health care professionals, are also available. Some of the most relevant are listed below.

Patient level information — UpToDate offers two types of patient education materials.

The Basics — The Basics patient education pieces answer the four or five key questions a patient might have about a given condition. These articles are best for patients who want a general overview and who prefer short, easy-to-read materials.

[Patient education: Preterm labor \(The Basics\)](#)

[Patient education: Preterm prelabor rupture of membranes \(The Basics\)](#)

[Patient education: Activity during pregnancy \(The Basics\)](#)

[Patient education: Having twins \(The Basics\)](#)

[Patient education: Hyperthyroidism \(overactive thyroid\) and pregnancy \(The Basics\)](#)

Beyond the Basics — Beyond the Basics patient education pieces are longer, more sophisticated, and more detailed. These articles are best for patients who want in-depth information and are comfortable with some medical jargon.

This topic currently has no corresponding Beyond the Basics content.

Professional level information — Professional level articles are designed to keep doctors and other health professionals up-to-date on the latest medical findings. These articles are thorough, long, and complex, and they contain multiple references to the research on which they are based. Professional level articles are best for people who are comfortable with a lot of medical terminology and who want to read the same materials their doctors are reading.

[Antenatal corticosteroid therapy for reduction of neonatal respiratory morbidity and mortality from preterm delivery](#)

[Cervical insufficiency](#)

[Inhibition of acute preterm labor](#)

[Management of pregnancy after resolution of an episode of acute idiopathic preterm labor](#)

[Preterm labor: Clinical findings, diagnostic evaluation, and initial treatment](#)

[Spontaneous preterm birth: Pathogenesis](#)

[Preterm birth: Risk factors, interventions for risk reduction, and maternal prognosis](#)

The following organizations also provide reliable health information.

- National Library of Medicine

<https://medlineplus.gov/healthtopics.html>

- National Institute of Child Health and Human Development

www.nichd.nih.gov

- The March of Dimes

www.marchofdimes.com

- The Mayo Clinic

(www.mayoclinic.com)

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Topic 6726 Version 23.0

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Edmund F Funai, MD No relevant financial relationship(s) with ineligible companies to disclose. **Charles J Lockwood, MD, MHCM** No relevant financial relationship(s) with ineligible companies to disclose. **Vanessa A Barss, MD, FACOG** No relevant financial relationship(s) with ineligible companies to disclose.

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