

Preterm Labor

Preterm labor is when your uterus squeezes regularly and your cervix starts to change before week 37 of pregnancy, threatening to deliver the baby too early.

THE ONE-LINE TRUTH

The uterus starts squeezing and the cervix begins to open before 37 weeks — the goal is to buy more time for the baby to grow.

The chain — how it unfolds

1. An upstream trigger (infection, overstretching from twins or too much fluid, placental bleeding or poor blood flow, stress, or a weak cervix) starts the labor cascade before 37 weeks. — why: Any of these triggers releases prostaglandins (local chemical messengers that soften and ripen the cervix) and increases oxytocin receptors on the uterine muscle, making the uterus sensitive to contraction signals even though the baby is not ready to be born.
2. The uterus begins to contract in a regular pattern — at first mild and irregular, then stronger and every 5 to 10 minutes. — why: Prostaglandins and oxytocin bind to receptors on the smooth muscle cells of the uterus, causing the muscle fibers to shorten and squeeze in coordinated waves that push the baby downward toward the cervix.
3. The cervix starts to thin out (efface) and open (dilate), detected on physical exam or transvaginal ultrasound. — why: Each contraction pulls the cervix upward and stretches it outward; as the cervix softens from prostaglandins breaking down its collagen structure, it cannot resist the mechanical force and begins to change shape.
4. The amniotic sac (water bag) may rupture, or vaginal bleeding may appear. — why: As the cervix opens, the seal between the uterus and the outside world breaks — the membranes can tear under pressure, releasing amniotic fluid (premature rupture of membranes, PROM), or small blood vessels at the edge of the placenta or cervix can bleed as tissues stretch and separate.

5. If labor continues and the baby is born preterm, the lungs are not ready to breathe air on their own. — why: Surfactant (the slippery coating made by cells in the lung air sacs that keeps them from collapsing) is not produced in full amounts until around 34 to 36 weeks; without it, the tiny alveoli (air sacs) stick together, oxygen cannot cross into the blood, and the baby develops respiratory distress syndrome (RDS), struggling to breathe and turning blue.
6. The premature baby is also at high risk for intraventricular bleeding (hemorrhage) (bleeding in the fluid-filled spaces deep in the brain), necrotizing enterocolitis (part of the intestine dies), infections, feeding problems, and long-term developmental delays. — why: The brain's blood vessels in the germinal matrix (a fragile area near the fluid-filled ventricles) are delicate and can burst under the stress of birth and breathing; the gut lining is immature and can be damaged by early feedings or low oxygen; the immune system has not received enough protective antibodies from the mother; and the brain and nerves are still forming critical connections for movement, learning, and behavior.
7. Giving the mother corticosteroids (betamethasone or dexamethasone) before delivery speeds up the baby's lung development and reduces the risk of brain bleeding and death. — why: Steroids cross the placenta and signal the baby's lung cells to start making surfactant faster — the biggest benefit happens if steroids are given at least 24 hours before birth, and the protection lasts about 7 days.
8. Magnesium sulfate given to the mother before very early delivery (before 32 weeks) protects the baby's brain. — why: Magnesium acts like a shield around the baby's fragile brain cells, reducing inflammation and preventing the tiny blood vessels from breaking — studies show it cuts the risk of cerebral palsy (a permanent movement disorder caused by brain injury) in half.

Spot it — what you see, and why

- Regular contractions that come every 5 to 10 minutes or closer: The uterus (the muscular bag holding the baby) starts squeezing in a pattern too early, trying to push the baby out before 37 weeks. The contractions feel like the belly tightening and releasing over and over. They happen because the brain's hypothalamus (the control tower deep inside the brain that sets off labor) and the hormone oxytocin (a chemical messenger that tells the uterus to squeeze) turn on too soon, triggering rhythmic squeezing before the baby is ready to be born.

- The cervix (the opening at the bottom of the uterus) starts to thin out or open up before 37 weeks: When the uterus squeezes regularly, it pulls on the cervix, making it stretch thin and open. Normally the cervix stays thick and closed until close to the due date, acting like a locked door to keep the baby safe inside. In preterm labor, that door starts to unlock too early because the squeezing pressure is strong enough to change the cervix's shape and the hormone prostaglandin (a chemical that softens the cervix) rises too soon.
- Low, dull backache that does not go away: The uterus sits low in the pelvis, and when it starts contracting early, the squeezing pressure pushes against the lower spine and the ligaments (strong bands holding the uterus in place). This creates a constant ache in the lower back that comes in waves with the contractions, different from normal pregnancy backache that shifts with posture.
- Pelvic pressure or a feeling that the baby is pushing down: As the cervix thins and opens, the baby's head or body drops lower into the pelvis. The pressure you feel is the baby's weight pressing down on the pelvic floor (the sling of muscles at the bottom of the pelvis). This happens too early because the cervix is not staying firm and closed the way it should, so gravity pulls the baby down.
- Leaking fluid or a gush of watery fluid from the vagina: The amniotic sac (the bag of fluid cushioning the baby) can break or develop a tear when the cervix opens or the uterus contracts hard. When the sac breaks, the amniotic fluid (the clear or slightly cloudy liquid the baby floats in) leaks or pours out. This is dangerous early because the baby loses the protective cushion and bacteria can climb in, causing infection.
- More vaginal discharge than usual, or discharge that looks different (watery, mucus-like, or streaked with a small amount of blood): As the cervix thins and opens, the thick mucus plug that seals the cervix comes loose and slides out. You see this as extra discharge that may be clear, pink, or streaked with blood. The cervix also releases more moisture when it is changing shape because glands inside the cervix make extra mucus. This is the body's sign that the cervix is preparing to open, which should not happen before 37 weeks.

Red flags — act now

- Leaking or gushing watery fluid from the vagina (sign the amniotic sac may have broken, raising risk of infection and early delivery)
- Vaginal bleeding that is more than spotting or streaking (can mean the cervix is opening fast or the placenta is pulling away)
- Fever over 100.4°F (38°C) with contractions or leaking fluid (sign of infection inside the uterus, which can harm the baby and mother)
- Contractions that keep coming every few minutes and do not stop with rest or changing position (means labor is progressing and the cervix is likely changing)

- Baby is not moving as much as usual (can mean the baby is not getting enough oxygen or is under stress)

Treat it — in this order

1. Betamethasone (12 mg IM every 24 hours × 2 doses) or dexamethasone (6 mg IM every 12 hours × 4 doses) between 24 and 34 weeks if delivery expected within 7 days → Steroids tell the baby's lungs to finish maturing faster — they boost surfactant (the slippery coating that keeps air sacs open). This cuts the risk of respiratory distress syndrome, brain bleeding (intraventricular bleeding (hemorrhage)), gut damage (necrotizing enterocolitis), and death in premature babies.
2. Nifedipine (20 mg by mouth, then 10–20 mg every 4–6 hours) or indomethacin (50–100 mg rectal or oral, then 25–50 mg every 6 hours for ≤ 48 hours) to stop contractions (tocolysis) → These medicines relax the uterus muscles and pause contractions for about 48 hours — just long enough for the steroid shots to reach the baby's lungs and start working.
3. Magnesium sulfate (4–6 g IV load, then 1–2 g/hour infusion) if gestational age < 32 weeks and delivery expected within 24 hours → Magnesium coats the baby's brain cells and protects them from injury during early delivery. It cuts the risk of cerebral palsy and severe brain bleeding (intraventricular bleeding (hemorrhage)) in very premature babies.
4. Penicillin G (5 million units IV load, then 2.5–3 million units IV every 4 hours) or ampicillin (2 g IV every 6 hours) during labor if GBS-positive or status unknown → Antibiotics kill Group B Streptococcus bacteria in the birth canal so the baby does not breathe them in or swallow them during delivery. This prevents newborn sepsis, pneumonia, and meningitis.
5. Ampicillin (2 g IV every 6 hours) plus azithromycin (1 g oral once, or 500 mg IV daily) for 7 days if preterm premature rupture of membranes (PPROM) before 34 weeks → Antibiotics lower the chance of infection climbing into the uterus (chorioamnionitis) after the water bag breaks. They delay delivery by a few days and reduce newborn infections, giving the baby more time to grow.

Your top priorities at the bedside

1. Place the patient on continuous external fetal monitoring to watch the baby's heart rate and count contractions — why: We must confirm that contractions are regular and frequent enough to be real labor; monitoring also shows if the baby is tolerating the contractions or becoming stressed from lack of oxygen
2. Start an IV line with normal saline or lactated Ringer solution — why: Dehydration can trigger contractions so fluids may help stop early labor; an IV also gives us quick access to give tocolytics (contraction-stopping medicines) and steroids if needed

3. Give betamethasone or dexamethasone intramuscular injection if the patient is between 24 and 34 weeks and delivery is expected within 7 days — why: Corticosteroids (steroids) help the baby's lungs mature faster so the baby can breathe better if born early; steroids also reduce bleeding in the brain and gut problems in preterm babies