

Fetal monitoring during labor explained



What fetal monitoring is assessing

Fetal monitoring during labor primarily evaluates the fetal heart rate and how it changes in relation to uterine contractions. Contractions temporarily reduce uteroplacental blood flow; most babies tolerate this well, but changes in the heart-rate pattern may suggest reduced oxygen reserve, cord compression, infection, excessive contraction frequency, or another evolving concern.

The monitor does not directly measure fetal oxygen in most routine settings. Instead, clinicians interpret patterns: the baseline fetal heart rate, beat-to-beat variability, accelerations, decelerations, and contraction frequency. A stable baseline between about 110 and 160 beats per minute with normal variability is generally reassuring, but context matters. A baby who is preterm, post-term, exposed to certain medicines, or affected by maternal fever may have a different pattern that needs clinical interpretation.

It is also important to separate fetal heart tones from the maternal pulse, especially in second stage labor when maternal heart rate can rise. Good care combines the tracing or auscultation findings with maternal blood pressure, temperature, pulse, pain pattern, fluid color, bleeding, labor progress, and known antenatal risks.

Intermittent auscultation and continuous CTG

The two main approaches are intermittent auscultation and continuous cardiotocography, often called CTG or electronic fetal monitoring. Intermittent auscultation means listening to the fetal heart rate at set intervals with a handheld Doppler device or Pinard stethoscope. Continuous CTG uses external transducers, usually held on the abdomen with elastic belts, to record fetal heart rate and contraction activity continuously on a screen or printed trace.

For healthy people in spontaneous labor with no identified risk factors, major guidelines recommend intermittent auscultation rather than routine continuous CTG. WHO also advises against routine admission CTG for healthy pregnant women presenting in spontaneous labor, recommending auscultation on admission instead. The reason is not that continuous monitoring is useless; rather, evidence shows trade-offs. Compared with intermittent auscultation, continuous electronic monitoring is associated with fewer neonatal seizures, but not clear reductions in perinatal death or cerebral palsy, and it increases cesarean and operative vaginal delivery rates.

This is why intermittent auscultation in labour is not a lesser form of care for low-risk labor. It is an evidence-based monitoring strategy when performed consistently by skilled staff with ongoing risk assessment.

How intermittent checks are performed

In established first stage labor, intermittent auscultation is typically performed immediately after a contraction for at least one minute and repeated at least every 15 minutes. In second stage labor, when the cervix is fully dilated or pushing has begun, checks are usually more frequent, often at least every 5 minutes. The clinician records the fetal heart rate as a single rate and notes accelerations or decelerations if they are heard.

The timing matters because some fetal heart rate abnormalities are most visible after a contraction, when oxygen recovery is being tested. The clinician may also palpate the uterus to assess contraction strength and resting tone, and check the maternal pulse to avoid confusing maternal and fetal heart rates.

If a deceleration is heard, the fetal heart rate rises substantially from the earlier baseline, or the heartbeat cannot be clearly identified, the team usually reassesses more frequently and considers a broader review. That review may include maternal observations, fluid color, contraction frequency, progress in labor, medication exposure, and whether continuous fetal heart monitoring is now appropriate.

How CTG traces are interpreted

A CTG trace is interpreted by looking at several features together, not by reacting to one number in isolation. Baseline fetal heart rate is the average rate over a stable period, excluding accelerations and decelerations. Variability describes small oscillations around the baseline; moderate variability is usually reassuring because it reflects neurologic and cardiovascular responsiveness. Accelerations are temporary rises in the fetal heart rate and are generally a reassuring sign. Decelerations are temporary drops below baseline and are interpreted by their timing, depth, duration, recovery, and relationship to contractions.

Contractions are also part of the CTG assessment. Five or more contractions in 10 minutes, or contractions lasting longer than expected with reduced resting time, can reduce fetal recovery time and may require action. Some guidelines categorize CTG features by increasing concern, such as white, amber, and red features, and then combine those findings with the clinical picture.

An abnormal trace does not automatically mean fetal distress or immediate birth. It may prompt simple intrauterine resuscitation measures, such as changing position, reviewing oxytocin, treating low blood pressure, giving fluids when appropriate, or addressing fever. If abnormal fetal heart rate patterns persist or worsen, senior review and discussion about expedited birth may be needed.

When continuous monitoring is recommended

Continuous CTG is commonly recommended when the chance of fetal compromise is higher or when new concerns develop during labor. Examples include a previous cesarean birth or full-thickness uterine scar, hypertensive disorders requiring medication, diabetes requiring medication, suspected intra-amniotic infection

or maternal sepsis, fresh vaginal bleeding, fetal growth restriction, reduced fetal movement before birth, non-cephalic presentation, or significantly prolonged pregnancy.

Intrapartum findings can also change the recommendation. Meconium-stained fluid, especially green or brown amniotic fluid, maternal fever, severe hypertension, unusual pain between contractions, delayed progress, oxytocin augmentation, regional anesthesia in labor, or excessive contraction frequency may all lead the care team to advise continuous CTG. This shift is not a failure of a birth plan; it is the result of ongoing risk assessment.

Sometimes internal monitoring is considered if the external signal is poor. A fetal scalp electrode can record the fetal heart rate more directly, but it requires ruptured membranes and is not suitable for everyone. The team should explain why it is being suggested, what information it may add, and what risks or alternatives apply. Informed consent in labor remains relevant even when decisions feel urgent.

Staying involved in decisions

Monitoring can feel emotionally loaded because it sits at the intersection of safety, autonomy, mobility, and uncertainty. A supportive team should explain what they are seeing, whether the pattern is reassuring, concerning, or evolving, and how the information affects the next decision. You do not need to interpret the trace yourself, but you are entitled to understand the recommendation.

Useful questions include: What risk factor makes this monitoring method advisable? Is the current pattern reassuring? Are there fetal heart rate abnormalities that need action now? Can I move, change positions, use water, or use wireless telemetry? If continuous monitoring was started for a temporary concern, can we reassess whether intermittent monitoring is appropriate again?

Continuous monitoring may restrict movement or water labor in some settings, although wireless telemetry can help when available. Intermittent monitoring may support mobility while still giving structured fetal assessment. The best plan is individualized: it respects your preferences, uses the least burdensome method that is clinically appropriate, and changes promptly if maternal or

fetal status changes.