

# Fetal Heart Monitoring

## Definition

Fetal heart monitoring lets the health care provider monitor the baby's heartbeat in the uterus, including during labor. The procedure can be done with monitors outside the body (external monitoring) or in the uterus (internal monitoring).

## Alternative Names

Non-stress test; NST; CST; Contraction; Scalp monitoring

## Why the Test is Performed

Both types of tests are performed to evaluate fetal heart rate and variability between beats, especially in relation to uterine contractions. The tests also indicate the frequency and strength of uterine contractions.

This information is invaluable in determining how well your baby is tolerating the birth process, and if there needs to be emergency intervention.

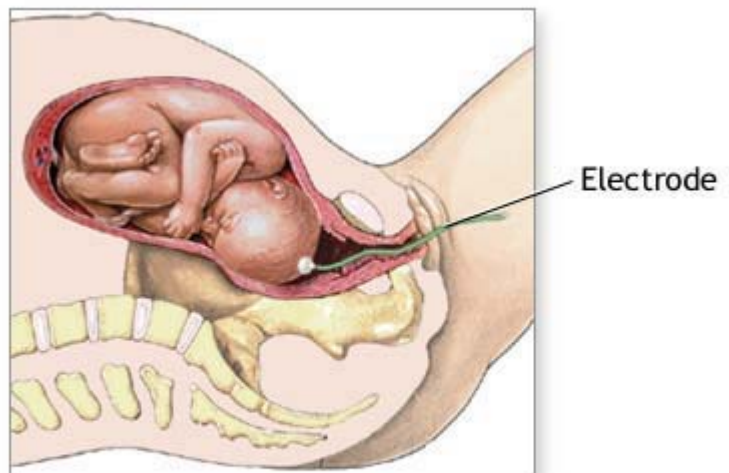


## How the Test is Performed

### EXTERNAL FETAL MONITORING

By definition, external fetal monitoring is done through the skin and is not meant to be invasive. You will sit with knees and back partially elevated with a cushion under the right hip, which moves your uterus to the left. You can also sit in other comfortable positions, as long as your uterus is shifted to the left or, for brief periods, to the right.

Sensitive electrodes (connected to monitors) are placed on your abdomen over conducting jelly. The electrodes can sense the fetal heart rate (FHR) and the presence and duration of uterine contractions. Usually, the results of this test are continuous and are printed out, or they appear on a computer screen. External monitors, however, cannot tell how strong contractions are.



Internal fetal monitoring

ADAM.

This allows your health care provider to check if your baby is experiencing fetal distress, and how well the baby is tolerating the contractions. The decision to move to internal fetal monitoring is based on the information first obtained by external fetal monitoring.

### NON-STRESS TEST (NST)

The NST is another way of externally monitoring your baby. The NST can be done as early as the 27th week of pregnancy, and it measures the FHR accelerations with normal movement. For this test, you will sit with knees and back partially elevated with a cushion under the right hip, which moves your uterus to the left.

The same monitors described above are placed on your abdomen to measure the FHR and the ability of the uterus to contract. If there is no activity after 30 - 40 minutes, you will be given something to drink or a small meal which may stimulate fetal activity. Other interventions that might encourage fetal movement include the use of fetal acoustic stimulation (sending sounds to the fetus) and gently placing your hands on your abdomen and moving the fetus.

## CONTRACTION STRESS TEST (CST)

The CST is a final method of externally monitoring your baby. This test measures the ability of the placenta to provide enough oxygen to the fetus while under pressure (contractions).

For this test, you will sit with knees and back partially elevated with a cushion under the right hip, which moves your uterus to the left. The same monitors described above are placed on your abdomen to measure uterine contractions and FHR. If contractions are not occurring spontaneously, either a medication (called oxytocin) will be given intravenously, or nipple stimulation will be used to induce contractions.

If oxytocin is administered, it is called the oxytocin challenge test (OCT). Oxytocin is administered through an IV until three uterine contractions are observed, lasting 40 - 60 seconds, over a 10-minute period.

Another test is called the nipple stimulation contractions stress test. Every effort will be taken to ensure your privacy, but the nurse will be with you through the entire procedure.

In this test, you will rub the palm of your hand across one nipple through your garments for 2 - 3 minutes. After a 5-minute rest, the nipple stimulation should continue until 40 minutes have elapsed, or 3 contractions have occurred, lasting more than 40 seconds, within a 10-minute period. If a uterine contraction starts, you should stop the nipple stimulation.

## INTERNAL FETAL MONITORING

Internal fetal monitoring involves placing a electrode directly on the fetal scalp through the cervix. Your health care provider may use this method of monitoring your baby if external monitoring is not working well, or the information is suspicious.

A vaginal examination will be performed, and the electrode will be introduced with its plastic sheath into the vaginal canal. This plastic guide is moved through the cervix and placed on the fetus' scalp, then removed. The electrode's wire is strapped to your thigh, and attached to the monitor.

## How to Prepare for the Test

Your health care provider will explain the procedure and its risks. You will be asked to wear a hospital gown and sign a consent form prior to the procedure.

## How the Test Will Feel

External fetal monitoring:

- Sitting in place for extended periods of time can become uncomfortable for some people. If this is the case, your health care provider can help reposition you to a more comfortable position.
- The jelly that is placed under the external monitors is the same used for ultrasounds, and may be cold.

Internal fetal monitoring:

- Some patients report feeling mild discomfort while the electrode is inserted through the cervix.

## Risks

External fetal monitoring:

- There are no risks associated with external monitoring. Some people believe the test, however, may lead to early delivery, unnecessary cesarean section, and other more invasive forms of delivery. Talk to your health care provider about the use of external monitoring.

Internal fetal monitoring:

- Infection
- Fetal scalp bruising

## Normal Results

Normal values indicate that the fetus is not in distress by showing a fetal heart rate between 120 and 160 beats per minute. A variability of 5 - 25 beats per minute from the baseline (normal) fetal heart rate may occur.

The fetal heart rate may drop slightly during a contraction, since placental blood supply is diminished under the compression of a uterine contraction. This is normal as long as the fetal heart rate recovers quickly once the contraction has stopped.

## What Abnormal Results Mean

Fetal heart monitoring tests can detect the following abnormal situations or conditions:

- Cord compression (there is no free blood flow to the fetus)
- Fetal heart block (where there is a block of electrical flow within the heart muscle causing an altered heart rhythm)
- Fetal malposition
- Fetal hypoxia (insufficient oxygen supply to the fetus)
- Infection (monitoring cannot diagnose an infection, but can suggest the presence of an infection)
- Uteroplacental insufficiency (insufficient oxygen exchange between the uterus and the placenta)
- Fetal distress
- Abruptio placenta

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