

PATIENT EDUCATION



The American College of
Obstetricians and Gynecologists
WOMEN'S HEALTH CARE PHYSICIANS

Fetal Heart Rate Monitoring During Labor

During labor and delivery, the condition of the **fetus** is checked using **fetal heart rate monitoring**. Although it cannot prevent problems from occurring, fetal heart rate monitoring may be able to alert your **obstetrician–gynecologist (ob-gyn)** or other health care professional to possible problems and allow steps to be taken that may help your fetus.

This pamphlet explains

- why fetal heart rate monitoring is done
- types of fetal heart rate monitoring
- what fetal heart rate patterns mean

Why Fetal Heart Rate Monitoring Is Done

During labor contractions, the blood vessels in the uterus narrow (constrict). This briefly reduces the fetus's oxygen supply. After the contraction, the vessels reopen and blood returns. The fetal heart rate normally changes in response to changes in the oxygen supply. Some changes in the fetal heart rate, however, may signal that the fetus is not getting enough oxygen.

Fetal heart rate monitoring may help detect changes in the normal heart rate pattern during labor. If certain changes are detected, steps can be taken to help treat the underlying problem. Fetal heart rate monitoring also can help prevent treatments that are not needed. A normal fetal heart rate can reassure both you and your ob-gyn or other health care professional that it is safe to continue labor if no other problems are present.

Types of Fetal Heart Rate Monitoring

There are two types of fetal heart rate monitoring: 1) **auscultation** and 2) **electronic fetal monitoring (EFM)**. Auscultation is a method of periodically listening to the fetus's heartbeat. EFM continuously records your fetus's heartbeat and the contractions of your uterus during labor. The choice of which method is used depends on the following factors:

- The policy of your ob-gyn, other health care professional, or hospital
- What problems your ob-gyn or other health care professional thinks you may be at risk of during labor
- How your labor is going

You may be able to discuss with your ob-gyn or other health care professional the method you prefer. If you do not have any complications or risk factors for problems during labor, either method is acceptable.

Auscultation

Auscultation is done with either a special stethoscope or a device called a **Doppler transducer**. The Doppler transducer converts signals of your fetus's heartbeat into sound waves. When the transducer is pressed against your abdomen, you can hear your fetus's heartbeat.

When auscultation is used, your ob-gyn or other health care professional will check the heart rate of the fetus at set times during labor. If you have risk factors for problems during labor or if problems appear during labor, the fetal heart rate will be checked and recorded more frequently.

Electronic Fetal Monitoring

EFM involves the use of special equipment to measure the fetal heart rate in response to contractions of the uterus. It provides an ongoing record that can be read by your ob-gyn or other health care professional. If

you have certain pregnancy complications or if certain problems arise during labor, your fetus may be monitored with EFM. Problems for which EFM is used include the following conditions:

- **Preeclampsia**
- Poor fetal growth
- Preterm labor
- **Diabetes mellitus**

EFM also may be done for a woman undergoing a **trial of labor after cesarean delivery (TOLAC)**. Even if you do not have risk factors or complications, EFM may be used if it is the policy of your ob-gyn, other health care professional, or hospital.

EFM can be external, internal, or both. You may need to stay in bed during both types of electronic monitoring, but you can move around and find a comfortable position. When EFM is used, your ob-gyn or other health care professional will review the electronic recording of the fetus's heartbeat (called the fetal heart rate tracing) at set times. The tracing may be reviewed more frequently if problems arise.

External Monitoring. With this method, a pair of belts is wrapped around your abdomen. One belt uses Doppler to detect the fetal heart rate. The other belt measures the length of contractions and the time between them.

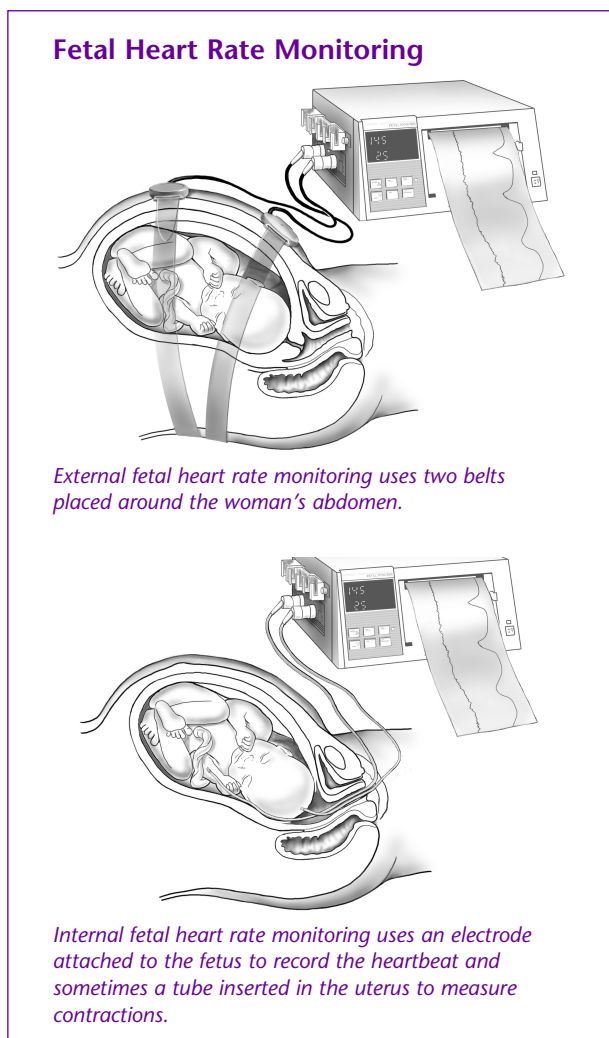
Internal Monitoring. Internal monitoring can be used only after the membranes of the **amniotic sac** have ruptured (after "your water breaks" or is broken). For internal monitoring, a wire called an **electrode** is used. It is placed on the part of the fetus closest to the **cervix**, usually the scalp. This device records the heart rate. Uterine contractions also may be monitored with a special tube called an intrauterine pressure catheter that is inserted through the vagina into your uterus. This tube measures the strength of contractions. You may feel some discomfort when the devices are put in place (about the same as for a pelvic exam).

Your ob-gyn or other health care professional may choose not to use internal monitoring if you have certain infections that could be passed to the fetus. These infections include active **genital herpes**, **human immunodeficiency virus (HIV)**, and some types of **hepatitis**.

What Fetal Heart Rate Patterns Mean

The normal fetal heart rate is between 110 and 160 beats per minute. The fetal heart rate normally changes in response to contractions. The heart rate may slow down as a contraction begins. Periodic increases in the heart rate also are normal. These changes form a pattern. However, certain patterns may suggest that the fetus is not getting enough oxygen.

Abnormal fetal heart rate patterns do not always mean there is a problem. Other tests may be done to get a better idea of what is going on with your fetus. If external monitoring has been used, internal monitoring may be done to check results.



If there is an abnormal fetal heart rate pattern, your ob-gyn or other health care professional will first try to find the cause. Steps can be taken to help the fetus get more oxygen, such as having you change position. You may be given medications or intravenous fluids. Sometimes the fetus can be stimulated by touching the scalp or with sound waves.

If these procedures do not work, or if further test results suggest your fetus has a problem, your ob-gyn or other health care professional may decide to deliver the fetus right away. In this case, the delivery of the fetus is more likely to be by *cesarean birth* or with *forceps* or by *vacuum-assisted delivery*.

Finally...

Fetal heart rate monitoring is a way to check the condition of your fetus during labor. If you have questions about fetal heart rate monitoring, be sure to discuss them with your ob-gyn or other health care professional.

Glossary

Amniotic Sac: Fluid-filled sac in the mother's uterus in which the fetus develops.

Auscultation: A method of listening to internal organs, such as the fetal heart during labor.

Cervix: The lower, narrow end of the uterus at the top of the vagina.

Cesarean Birth: Birth of a baby through incisions made in the mother's abdomen and uterus.

Diabetes Mellitus: A condition in which the levels of sugar in the blood are too high.

Doppler Transducer: A device that uses sound waves to reflect motion—such as the fetal heartbeat—in the form of signals that can be heard.

Electrode: A small wire that is attached to the scalp of the fetus to monitor the heart rate.

Electronic Fetal Monitoring (EFM): A method in which electronic instruments are used to record the heartbeat of the fetus and contractions of the mother's uterus.

Fetal Heart Rate Monitoring: A procedure in which instruments are used to record the heartbeat of the fetus and contractions of the mother's uterus during labor.

Fetus: The stage of prenatal development that starts 8 weeks after fertilization and lasts until the end of pregnancy.

Forceps: Special instruments placed around the baby's head to help guide it out of the birth canal during delivery.

Genital Herpes: A sexually transmitted disease caused by a virus that produces painful, highly infectious sores on or around the sex organs.

Hepatitis: Inflammation of the liver that can be caused by several types of viruses.

Human Immunodeficiency Virus (HIV): A virus that attacks certain cells of the body's immune system and causes acquired immunodeficiency syndrome (AIDS).

Obstetrician–Gynecologist (Ob-Gyn): A physician with special skills, training, and education in women's health.

Preeclampsia: A disorder that can occur during pregnancy or after childbirth in which there is high blood pressure and other signs of organ injury, such as an abnormal amount of protein in the urine, a low number of platelets, abnormal kidney or liver function, pain over the upper abdomen, fluid in the lungs, or a severe headache or changes in vision.

Trial of Labor After Cesarean Delivery (TOLAC): Labor in a woman who has had a previous cesarean delivery with a goal of having a vaginal birth after cesarean delivery (VBAC).

Vacuum-assisted Delivery: The use of a special instrument attached to the baby's head to help guide it out of the birth canal during delivery.

This information was designed as an educational aid to patients and sets forth current information and opinions related to women's health. It is not intended as a statement of the standard of care, nor does it comprise all proper treatments or methods of care. It is not a substitute for a treating clinician's independent professional judgment. Please check for updates at www.acog.org to ensure accuracy.

Copyright November 2017 by the American College of Obstetricians and Gynecologists. All rights reserved. No part of this publication may be reproduced, stored in a retrieval system, posted on the internet, or transmitted, in any form or by any means, electronic, mechanical, photocopying, recording, or otherwise, without prior written permission from the publisher.

This is EP015 in ACOG's Patient Education Pamphlet Series.

ISSN 1074-8601

American College of Obstetricians and Gynecologists
409 12th Street, SW
PO Box 96920
Washington, DC 20090-6920