Chorionic Villus Sampling (CVS)

What is chorionic villus sampling?

Chorionic villus sampling (CVS) is a prenatal test. It's used to test for chromosomal abnormalities and other genetic problems. During the test, a tissue sample is taken from the placenta and sent to a lab for analysis. The placenta is a structure in the uterus that provides blood and nutrients from the mother to the baby.

The chorionic villi are tiny projections of placental tissue that look like fingers. They have the same genetic material as the baby. Testing may be done for other genetic defects and disorders. This will depend on the family history, and on the types of lab testing that are available at the time of the procedure.

CVS is usually done between the 10th and 12th weeks of pregnancy. CVS doesn't give information on neural tube defects, such as spina bifida. For this reason, women who have CVS also need a follow-up blood test between 16 to 18 weeks of their pregnancy. This is to screen for neural tube defects.

There are two types of CVS procedures:

- **Transcervical.** A tube (catheter) is put through the cervix into the placenta to get the tissue sample.
- **Transabdominal.** A needle is put through the belly and uterus into the placenta to get the tissue sample.

Another test that may be used to diagnose genetic and chromosomal defects is amniocentesis. This test does give information on neural tube defects.

Anatomy of the baby in the uterus

- **Amniotic sac.** This is a thin-walled sac that surrounds the baby during pregnancy. The sac is filled with amniotic fluid. This is liquid made by the baby. The sac also contains the amnion. This is the membrane that covers the fetal side of the placenta. This protects the baby from injury and helps to control the temperature of the baby.
- **Cervix.** This is the lower part of the uterus that dips down into the vagina. It is made of mostly fibrous tissue and muscle. It has a circular shape.
- **Fetus.** This is a term used to describe an unborn baby from the 8th week after fertilization until birth.
- **Placenta.** This is a flat organ that only grows during pregnancy. It gives nutrients and other substances from the mother to the baby. The placenta allows the baby to take in oxygen, food, and other substances. It also lets the baby get rid of carbon dioxide and other wastes.
- **Umbilical cord.** This is a rope-like cord that connects the baby to the placenta. The umbilical cord has two arteries and a vein. They carry oxygen and nutrients to the baby and waste products away from the baby.
- **Uterine wall.** This is the wall of the uterus.
- **Uterus (womb).** This is a hollow, pear-shaped organ in a woman's lower belly. It sits between the bladder and the rectum. It sheds its lining each month during menstruation. When a fertilized egg (ovum) becomes implanted in the lining, a baby grows.
- **Vagina.** This is a canal behind the bladder and in front of the rectum. It forms a path from the uterus to the vulva.

Why might I need chorionic villus sampling?

Chorionic villus sampling may be used for genetic and chromosome testing in the first trimester of pregnancy. Reasons that a woman might choose to have CVS include:

- A previous child with, or family history of, a genetic disease, chromosomal abnormalities, or metabolic disorder
- Being older than age 35 by the pregnancy due date
- Risk of a sex-linked genetic disease
- Past ultrasound with abnormal results
- Abnormal cell-free DNA test

There may be other reasons for your healthcare provider to advise CVS.

What are the risks of chorionic villus sampling?

All procedures have some risks. Some risks of this procedure include:

- Cramping, bleeding, or leaking of amniotic fluid (water breaking)
- Infection
- Miscarriage
- Preterm labor
- Limb defects in infants, a higher risk in CVS tests done before 9 weeks. This is rare.

Tell your healthcare provider if you are allergic to or sensitive to any medicines or latex.

Women with twins or other multiples will need sampling from each placenta to study each baby.

There may be other risks depending on your specific health condition. Talk about any concerns with your healthcare provider before the procedure.

Certain factors or conditions may interfere with CVS. These factors include:

- Pregnancy earlier than 7 weeks or later than 13 weeks
- Position of the baby, placenta, amount of amniotic fluid, or mother's anatomy
- Vaginal or cervical infection
- Samples that are inadequate for testing, or that may contain the mother’s tissue

How do I get ready for chorionic villus sampling?

- The healthcare provider will explain the procedure to you. Ask any questions that you have about the procedure.
- You will be asked to sign a consent form that gives your healthcare provider permission to do the procedure. Before you sign, read the form carefully. Ask questions if anything isn't clear.
- Generally, there is no special restriction on diet or activity before CVS.
- Tell your healthcare provider if you are sensitive to or are allergic to any medicines, latex, iodine, tape, and anesthetic medicines (local and general).
- Tell your provider about all the medicines that you are taking. This includes prescription and over-the-counter medicines, vitamins, herbs, and other supplements.

- Tell your provider if you have a history of bleeding disorders or if you are taking any blood-thinning (anticoagulant) medicines, aspirin, or any other medicines that may affect blood clotting. You may need to stop these medicines before the procedure.

- Tell your provider if you are Rh negative. During the CVS procedure, blood cells from the mother and baby can mix. This may lead to Rh sensitization and breaking down of the baby's red blood cells. In most cases, prenatal blood tests will have found out if you are Rh negative. You may be asked to provide these lab results before the procedure.

- You may or may not be asked to have a full bladder right before the procedure. Depending on the position of the uterus and placenta, a full or empty bladder may help move the uterus into a better position for the procedure.

- Based on your health condition, your provider may ask for other specific preparation.

What happens during chorionic villus sampling?

A CVS procedure may be done on an outpatient basis. This means you go home the same day. Or it may be done as part of a hospital stay. Procedures may vary depending on your condition and your healthcare provider's practices.

Generally, a CVS procedure follows this process:

1. You will be asked to undress completely, or from the waist down, and put on a hospital gown.
2. You will be asked to lie down on an exam table.
3. Your blood pressure, heart rate, and breathing rate (vital signs) will be checked.
4. An ultrasound will be done to check the baby's heart rate, and the position of the placenta, baby, and umbilical cord.
5. Based on the location of the placenta, the CVS procedure will be performed through your cervix (transcervical). Or it will be done through your abdominal wall (transabdominal).

For a transcervical CVS procedure:

1. The healthcare provider will put a tool called a speculum into your vagina so that they can see your cervix.
2. Your vagina and cervix will be cleansed with an antiseptic solution.
3. Using ultrasound guidance, a thin tube will be guided through the cervix to the chorionic villi.
4. Cells will be gently suctioned through the tube into a syringe. You may feel a twinge or slight cramping. More than 1 sample may be needed to get enough tissue for testing.
5. The tube will then be removed.

For a transabdominal CVS procedure:

1. For an abdominal CVS, your belly will be cleansed with an antiseptic. You will be instructed not to touch the sterile area on your belly during the procedure.
2. The healthcare provider may inject a local anesthetic to numb the skin. If a local anesthetic is used, you will feel a needle stick when the anesthetic is injected. This may cause a brief stinging feeling.
3. Ultrasound will be used to help guide a long, thin, hollow needle through your belly and into the uterus and placenta. This may be slightly painful. You may feel a cramp as the needle enters the uterus.
4. Cells will be gently suctioned into a syringe. More than 1 sample may be needed to get enough tissue for testing.

5. The needle will then be removed. An adhesive bandage will be placed over the abdominal needle insertion site.

At the end of either method:

1. The baby’s heart rate and your vital signs will be checked.
2. If you are Rh negative, you may be given Rho(D) immune globulin. This is a special blood product that can prevent an Rh negative mother's antibodies from reacting to Rh positive fetal cells.
3. The chorionic villus tissue will be sent to a lab.

What happens after chorionic villus sampling?

You and your baby will be watched for a while after the procedure. Your vital signs and the baby’s heart rate will be checked periodically for an hour or longer.

The CVS tissue will be sent to a genetics lab for analysis. Counseling with a genetics specialist may be advised depending on the test results.

You may have some slight cramping and light spotting for a few hours after CVS.

You should rest at home. Don’t do any strenuous activities for at least 24 hours. Don't douche or have sex for 2 weeks, or until directed by your healthcare provider.

Call your healthcare provider if you have any of these:

- Any bleeding or leaking of amniotic fluid from the needle puncture site or the vagina
- Fever or chills
- Severe belly pain or cramping

If a transabdominal procedure was done, check the bandaged needle site on your belly for any bleeding or leaking of other fluid.

Your healthcare provider may give you other instructions after the procedure.

Next steps

Before you agree to the test or procedure make sure you know:

- The name of the test or procedure
- The reason you are having the test or procedure
- What results to expect and what they mean
- The risks and benefits of the test or procedure
- What the possible side effects or complications are
- When and where you are to have the test or procedure
- Who will do the test or procedure and what that person’s qualifications are
- What would happen if you did not have the test or procedure
- Any alternative tests or procedures to think about
- When and how you will get the results
- Who to call after the test or procedure if you have questions or problems

- How much you will have to pay for the test or procedure