



A Service of the U.S. Department
of Health and Human Services

HIV During Pregnancy, Labor and Delivery, and After Birth

Health Information for HIV Positive Pregnant Women

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Fact Sheets



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HIV During Pregnancy, Labor and Delivery, and After Birth

This series of fact sheets is intended for women who are HIV positive and pregnant or have recently given birth. These fact sheets describe the steps an HIV positive pregnant woman can take to preserve her health and prevent transmission of HIV to her baby.

These fact sheets are designed as a series but can also be used as stand-alone documents. The information in these fact sheets is based on the U.S. Public Health Service's *Recommendations for Use of Antiretroviral Drugs in Pregnant HIV-1-Infected Women for Maternal Health and Interventions to Reduce Perinatal HIV-1 Transmission in the United States* (available at <http://aidsinfo.nih.gov/guidelines>).

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HIV Testing and Pregnancy

I am pregnant, and I may have HIV. Will I be tested for HIV when I visit a doctor?

In most cases, health care providers cannot test you for HIV without your permission. However, the U.S. Public Health Service recommends that all pregnant women be tested. If you are thinking about being tested, it is important to understand the different ways **perinatal HIV testing** is done. There are two main approaches to HIV testing in pregnant women: *opt-in* and *opt-out testing*.

In *opt-in testing*, a woman cannot be given an HIV test unless she specifically requests to be tested. Often, she must put this request in writing.

In *opt-out testing*, health care providers must inform pregnant women that an HIV test will be included in the standard group of tests pregnant women receive. A woman will receive that HIV test unless she specifically refuses. The **CDC** currently recommends that health care providers adopt an opt-out approach to perinatal HIV testing.

What are the benefits of being tested?

By knowing your HIV status, you and your doctor can decide on the best treatment for you and your baby and can take steps to prevent **mother-to-child transmission** of HIV (see [HIV and Pregnancy Fact Sheet](#)). It is also important to know your HIV status so that you can take the appropriate steps to avoid infecting others (see [Understanding HIV Prevention Fact Sheet](#)).

What happens if I agree to be tested?

If you agree to be tested, your doctor should counsel you before the test about the way your life may change after you receive the test results. If the test indicates that you have HIV, you should be given a second test to confirm the results. Your doctor will provide counseling to help you decide which treatment options are best for you and your baby. If the test indicates that you do not have HIV, you may receive counseling on HIV prevention.

Terms Used in This Fact Sheet:

CDC (Centers for Disease Control and Prevention): an agency of the U.S. Federal government that focuses on disease prevention and control, environmental health, and health promotion and education. www.cdc.gov.

Mother-to-child transmission: the passage of HIV from an HIV positive mother to her infant. The infant may become infected while in the womb, during labor and delivery, or through breastfeeding. Also known as *perinatal transmission*.

Perinatal HIV testing: testing for HIV during pregnancy or during labor and delivery.

What happens if I refuse to be tested?

If you decide that you do not want to be tested for HIV, your doctor may offer you counseling about the way HIV is transmitted and the importance of taking steps to prevent HIV transmission. He or she may also talk to you about the importance of finding out your HIV status so that you can take steps to prevent your baby from becoming infected.

Will my baby be tested for HIV?

Health care providers recommend that all babies born to HIV positive mothers be tested for HIV. However, states differ in the ways they approach HIV testing for babies.

- some states require that babies receive a mandatory HIV test if the status of their mother is unknown
- some states require that health care providers test babies for HIV unless a mother refuses
- some states are only required to offer an HIV test to pregnant women (not their babies), which they can either accept or refuse

How can I find out the testing policies of my state?

The U.S. Department of Health and Human Services (DHHS) can provide you with HIV testing information for your state. Contact DHHS at 1-877-696-6775 or 202-619-0257.

For more information:

Contact your doctor or an *AIDSinfo* Health Information Specialist at 1-800-448-0440 or <http://aidsinfo.nih.gov>.

Drug Regimens for HIV Positive Pregnant Women

I am HIV positive and pregnant. How do I find out what anti-HIV drug regimen is best for me?

Anti-HIV drug treatment is an important part of maintaining your health and preventing your baby from becoming infected with HIV. Decisions about when to start drug treatment and which drugs to take should be based on many of the same factors that women who are not pregnant must consider. These factors include:

- risk that the HIV infection may become worse
- risks and benefits of delaying drug treatment (see [Starting Anti-HIV Medications Fact Sheet](#))
- potential drug toxicities and interactions with other drugs you are taking
- the need to adhere to a drug regimen closely (see [What is Treatment Adherence Fact Sheet](#))

In addition to these factors, pregnant women must consider the following issues:

- benefit of lowering **viral load** and reducing the risk of **mother-to-child transmission** of HIV
- unknown long-term effects on your baby if you take anti-HIV drugs during your pregnancy
- information available about the use of anti-HIV drugs during pregnancy

You should discuss your treatment options with your doctor so that together you can decide which treatment regimen is best for you and your baby.

What drug regimen should I follow during my pregnancy if I have never taken anti-HIV drugs?

Your best treatment options may differ depending on when you were diagnosed with HIV, when you found out you were pregnant, and at what point you sought medical treatment during your pregnancy. Women who are in the first trimester of pregnancy and who do not have symptoms of HIV disease may consider delaying treatment until after 10 to 12 weeks into their

Terms Used in This Fact Sheet:

CD4 count: CD4 cells, also called T cells or CD4⁺ T cells, are white blood cells that fight infection. HIV destroys CD4 cells, making it harder for your body to fight infections. A CD4 count is the number of CD4 cells in a sample of blood.

Intravenous (IV): the administration of fluid or medicine into a vein.

Mother-to-child transmission: the passage of HIV from an HIV positive mother to her infant. The infant may become infected while in the womb, during labor and delivery, or through breastfeeding. Also known as perinatal transmission.

Oral: to be taken by mouth.

Viral load: the amount of HIV in a sample of blood.

pregnancies. After the first trimester, pregnant women with HIV should receive at least zidovudine (also known as ZDV or AZT); your doctor may recommend additional drugs depending on your **CD4 count** and viral load. The dosing schedule can be 100 mg of ZDV five times a day, 200 mg of ZDV three times a day, or 300 mg of ZDV twice a day. During labor and delivery, women should receive **intravenous (IV)** ZDV.

I am currently taking anti-HIV drugs and I just learned that I am pregnant. Should I stop taking my drugs?

Do not stop taking any of your drugs without consulting your doctor first. Stopping drug treatment could lead to problems for you and your baby. If you are receiving anti-HIV drug therapy and your pregnancy is identified during the first trimester, talk with your doctor about the risks and benefits of continuing your current regimen. He or she may recommend that you stop your drug therapy or change the drugs you take. If your pregnancy is identified after the first trimester, it is recommended that you continue with your current treatment. No matter what anti-HIV drug regimen you were on before your pregnancy, it is generally recommended that ZDV become part of your regimen.

Drug Regimens for HIV Positive Pregnant Women (continued)

Will I need treatment during labor and delivery?

Most mother-to-child transmission of HIV occurs around the time of labor and delivery. Therefore, drug treatment during this time is very important for protecting your baby from HIV infection. Several treatment regimens are available to reduce the risk of transmission to your baby. The most common regimen is the three-part ZDV regimen:

- **oral** ZDV during pregnancy
- IV ZDV during labor and delivery
- oral ZDV for the baby for 6 weeks after birth

If you have been taking any other anti-HIV medications during your pregnancy, your doctor will probably recommend that you continue to take them on schedule during labor.

Advances in the understanding of HIV transmission have contributed to dramatically reduced rates of mother-to-child transmission of HIV. Discuss the benefits of anti-HIV drug therapy with your doctor during pregnancy; these benefits should be weighed against the risks to you and to your baby.

For more information:

Contact your doctor or an *AIDSinfo* Health Information Specialist at 1-800-448-0440 or <http://aidsinfo.nih.gov>.

Safety and Toxicity of Anti-HIV Medications During Pregnancy

I am HIV positive and pregnant. Are there any anti-HIV drugs that may be dangerous to me or my baby during my pregnancy?

Although information on anti-HIV medications in pregnant women is limited compared to information for non-pregnant adults, enough is known to make recommendations about which drugs are appropriate for you and your baby. However, the long-term consequences of babies' exposure to anti-HIV drugs *in utero* are unknown. Talk to your doctor about which drugs may be harmful during your pregnancy and what drug substitutions and dose changes are possible.

The **non-nucleoside reverse transcriptase inhibitor (NNRTI)** nevirapine (NVP) may be part of your anti-HIV treatment regimen. Long-term use of NVP may cause negative side effects, such as exhaustion or weakness; nausea or lack of appetite; yellowing of eyes or skin; or signs of liver toxicity, such as liver tenderness or enlargement or elevated liver enzyme levels (see [Hepatotoxicity Fact Sheet](#)). These negative side effects have not been observed with short-term use (one or two doses) of NVP during pregnancy. However, because pregnancy can mimic some of the early symptoms of liver toxicity, your doctor should monitor your condition closely while you are taking NVP. Also, NVP should be used with caution in women who have never received anti-HIV treatment and who have CD4 counts greater than 250 cells/mm³. Liver toxicity has occurred more frequently in these patients.

Delavirdine and efavirenz, the two other FDA-approved NNRTIs, are not recommended for the treatment of HIV positive pregnant women. Use of these drugs during pregnancy may lead to birth defects.

Nucleoside reverse transcriptase inhibitors (NRTIs) may cause **mitochondrial toxicity**, which may lead to a buildup of lactic acid in the blood. This buildup is known as hyperlactatemia or lactic acidosis (see [Lactic Acidosis Fact Sheet](#)). This toxicity may be of particular concern for pregnant women and babies exposed to NRTIs *in utero*.

Terms Used in This Fact Sheet:

Diabetic ketoacidosis: a complication of diabetes in which sugar is not broken down for energy and fat is broken down instead. This leads to an unhealthy buildup of ketones (fat by-products).

Fusion inhibitor: class of anti-HIV medication. A fusion inhibitor works by preventing HIV from entering a cell. The fusion inhibitor approved by the FDA is Fuzeon.

In utero: the time an unborn baby is in its mother's uterus.

Mitochondrial toxicity: damage to the mitochondria (rod-like structures that serve as a cell's powerhouse) that can cause problems in the heart, nerves, muscles, pancreas, kidneys, and liver.

Non-nucleoside reverse transcriptase inhibitor (NNRTI): class of anti-HIV medication. NNRTIs work by blocking reverse transcriptase, a protein that HIV needs to make copies of itself. The NNRTIs approved by the FDA are Rescriptor, Sustiva, and Viramune.

Nucleoside reverse transcriptase inhibitor (NRTI): class of anti-HIV medication. NRTIs are faulty versions of the building blocks (nucleosides) used by reverse transcriptase, a protein that HIV needs to make copies of itself. The NRTIs approved by the FDA are Combivir, Emtriva, Epzicom, Epivir, Hivid, Retrovir, Trizivir, Truvada, Videx, Viread, Zerit, and Ziagen.

Protease inhibitor (PI): class of anti-HIV medication. PIs work by blocking protease, a protein that HIV needs to make copies of itself. The PIs approved by the FDA are Agenerase, Crixivan, Fortovase, Invirase, Kaletra, Lexiva, Norvir, Reyataz, and Viracept.

Protease inhibitors (PIs) are associated with increased levels of blood sugar (hyperglycemia), development of diabetes mellitus or a worsening of diabetes mellitus symptoms (see [Hyperglycemia Fact Sheet](#)), and **diabetic ketoacidosis**. Pregnancy is also a risk factor for hyperglycemia, but it is not known whether PI use increases the risk for pregnancy-associated hyperglycemia or gestational diabetes.

Enfuvirtide (T-20) is the only FDA-approved **fusion inhibitor**; very little is known about use of this drug during pregnancy.

For more information:

Contact your doctor or an *AIDSinfo* Health Information Specialist at 1-800-448-0440 or <http://aidsinfo.nih.gov>.

Delivery Options for HIV Positive Pregnant Women

I am HIV positive and pregnant. What delivery options are available to me when I give birth?

Depending on your health and treatment status, you may plan to have either a cesarean (also called c-section) or a vaginal delivery. The decision of whether to have a cesarean or a vaginal delivery is something that you should discuss with your doctor during your pregnancy.

How do I decide which delivery option is best for my baby and me?

It is important that you discuss your delivery options with your doctor as early as possible in your pregnancy so that he or she can help you decide which delivery method is most appropriate for you.

Cesarean delivery is recommended for an HIV positive mother when:

- her viral load is unknown or is greater than 1,000 copies/mL at 36 weeks of pregnancy
- she has not taken any anti-HIV drugs or has only taken zidovudine (also known as ZDV or AZT) during her pregnancy
- she has not received **prenatal** care until 36 weeks into her pregnancy or later

To be most effective in preventing transmission, the cesarean should be scheduled at 38 weeks or should be done before the **rupture of membranes** (also called water breaking).

Vaginal delivery is an option for an HIV positive mother when:

- she has been receiving prenatal care throughout her pregnancy
- she has a viral load less than 1,000 copies/mL at 36 weeks, and
- she is taking ZDV with or without other anti-HIV drugs

Vaginal delivery may also be recommended if a mother has ruptured membranes and labor is progressing rapidly.

Terms Used in This Fact Sheet:

Intravenous (IV): the administration of fluid or medicine into a vein.

Mother-to-child transmission: the passage of HIV from an HIV positive mother to her infant. The infant may become infected while in the womb, during labor and delivery, or through breastfeeding. Also known as perinatal transmission.

Prenatal: the time before birth.

Rupture of membranes: when the sac containing the unborn baby bursts or develops a hole. Also called water breaking.

What are the risks involved with these delivery options?

All deliveries have risks. The risk of **mother-to-child transmission** may be higher for vaginal delivery than for a scheduled cesarean. For the mother, cesarean delivery has an increased risk of infection, anesthesia-related problems, and other risks associated with any type of surgery. For the infant, cesarean delivery has an increased risk of infant respiratory distress.

Is there anything else I should know about labor and delivery?

Intravenous (IV) ZDV should be started 3 hours before a scheduled cesarean delivery and should be continued until delivery. IV ZDV should be given throughout labor and delivery for a vaginal delivery. It is also important to minimize the baby's exposure to the mother's blood. This can be done by avoiding any invasive monitoring and forceps- or vacuum-assisted delivery.

All babies born to HIV positive mothers should receive anti-HIV drug treatment for prevention of mother-to-child transmission of HIV. The usual treatment for infants is 6 weeks of ZDV; sometimes additional drugs are also given. (see the [After Birth Fact Sheet](#)).

For more information:

Contact your doctor or an *AIDSinfo* Health Information Specialist at 1-800-448-0440 or <http://aidsinfo.nih.gov>.

HIV Positive Women and Their Babies After Birth

I am an HIV positive pregnant woman and I am currently on an anti-HIV drug regimen. Will my regimen change after I give birth?

Many women who are on an anti-HIV drug regimen during pregnancy decide to stop or change their regimens after they give birth. You and your doctor should discuss your **postpartum** treatment options during your pregnancy or shortly after delivery. Don't stop taking any of your drugs without consulting your doctor first. Stopping drug treatment could lead to problems.

How will I know if my baby is infected with HIV?

HIV tests are usually performed soon after birth and again several weeks after a baby is born. Even if your baby tested HIV negative in the first 6 weeks after birth, the test should be repeated after your baby has completed a 6-week zidovudine (also known as ZDV or AZT) regimen so that his or her HIV status can be confirmed.

Babies are tested for HIV in a different way than adults are tested. Adults are tested by looking for antibodies to HIV in their blood. Because babies keep antibodies from an HIV infected mother for many months after birth, an antibody test may be positive in an infant even if the baby does NOT have an HIV infection. Therefore, babies are tested by looking for the virus itself, not antibodies to the virus.

Are there any other tests my baby will receive after birth?

Babies born to HIV positive mothers should have a **complete blood count (CBC)** after birth. They should also be monitored for signs of **anemia**, which is the main negative side effect caused by the 6-week ZDV regimen. They may also undergo other routine blood tests and vaccinations for babies.

Terms Used in This Fact Sheet:

Adherence: how closely you follow, or adhere to, your treatment regimen. This includes taking the correct dose at the correct time as prescribed by your doctor.

Anemia: a condition in which there are too few red blood cells in the blood. Without enough red blood cells, not enough oxygen gets to tissues and organs. Symptoms of anemia include fatigue, chest pain, and shortness of breath.

CDC (Centers for Disease Control and Prevention): an agency of the U.S. Federal government that focuses on disease prevention and control, environmental health, and health promotion and education. www.cdc.gov.

Complete blood count (CBC): a routine blood test that measures white and red blood cell counts, platelets (cells involved in blood clotting), hematocrit (amount of iron in the blood), and hemoglobin (an iron-containing substance in red blood cells). Changes in the amounts of each of these may indicate infection, anemia, or other problems.

Mother-to-child transmission: the passage of HIV from an HIV positive mother to her infant. The infant may become infected while in the womb, during labor and delivery, or through breastfeeding. Also known as perinatal transmission.

Oral: to be taken by mouth.

P. carinii/jiroveci pneumonia (PCP): a common opportunistic infection in which fluid develops in the lungs. It is caused by the fungus *Pneumocystis carinii/jiroveci*. PCP is considered an AIDS-defining illness by the CDC.

Postpartum: the time after giving birth.

Will my baby receive anti-HIV treatment?

It is recommended that all babies born to HIV positive mothers receive a 6-week course of **oral ZDV** to help prevent **mother-to-child transmission** of HIV. This oral ZDV regimen should begin within 6 to 12 hours after your baby is born. Some doctors may recommend that ZDV be given in combination with other anti-HIV drugs. You and your doctor should discuss the options to decide which treatment is best for your baby.

HIV Positive Women and Their Babies After Birth (continued)

In addition to anti-HIV treatment, your baby should also receive treatment to prevent **P. carinii/jiroveci pneumonia (PCP)**. The recommended treatment is a combination of the drugs sulfamethoxazole and trimethoprim. This treatment should be started when your baby is 4 to 6 weeks old and should continue until your baby is confirmed to be HIV negative. If your baby is HIV positive, he or she will need to take this treatment indefinitely.

What type of medical follow-up should I consider for my baby and me after I give birth?

Seeking the right medical and supportive care services is important for your and your baby's health. These services may include:

- routine medical care
- HIV specialty care
- family planning services
- mental health services
- substance abuse treatment
- case management

Talk to your doctor about these services and any others you may need. He or she should be able to help you locate appropriate resources.

What else should I think about after I give birth?

The CDC recommends that in areas where safe drinking water and infant formula are available (such as the United States), women should not breastfeed in order to avoid transmission of HIV to their infants through breast milk.

Physical and emotional changes during the postpartum period, along with the stresses and demands of caring for a new baby, can make it difficult to follow your anti-HIV drug regimen. **Adherence** to your regimen is important for you to stay healthy (see [What is Treatment Adherence Fact Sheet](#)). Other issues you may want to discuss with your doctor include:

- concerns you may have about your regimen and treatment adherence
- feelings of depression (many women have these feelings after giving birth)
- long-term plans for continuing medical care and anti-HIV drug treatment for you and your baby

For more information about HIV and pregnancy, your doctor can contact the National HIV Telephone Consultation Service (Warmline), a service that provides health care professionals with HIV information. The number is 1-800-933-3413.

If you are interested in joining a pregnancy registry that monitors HIV positive women during their pregnancies and after giving birth, contact the Food and Drug Administration's Guide to Pregnancy Registries at www.fda.gov/womens/registries. Researchers are especially interested in learning more about the effects of anti-HIV drugs during pregnancy. HIV positive pregnant women are therefore encouraged to register with the Antiretroviral Pregnancy Registry at 1-800-258-4263 or www.APRegistry.com.

For more information:

Contact your doctor or an *AIDSinfo* Health Information Specialist at 1-800-448-0440 or <http://aidsinfo.nih.gov>.