



## Reducing Risks of Birth Defects

**M**ost babies are born healthy. About 1 in 33 babies are born with a **birth defect** in the United States each year. A birth defect is a condition that is present at birth. Most babies with birth defects are born to couples with no special risk factors. For some birth defects, steps can be taken before and during pregnancy to reduce the risk of having an affected child.

*This pamphlet explains*

- types of birth defects
- causes of birth defects
- things you can do that may reduce your risk

### Types of Birth Defects

More than 4,000 birth defects, ranging from mild to severe, are known. Some birth defects can be seen right after the baby is born, such as a **clubfoot** or extra fingers or toes. Special tests may be needed to find others, such as heart defects or hearing loss. Some birth defects are not noticed until later in life.

### Causes of Birth Defects

Some birth defects are caused by **genes** that can be passed down from parents to children. Others result from a problem with **chromosomes**. A small number of birth defects are caused by exposure during pregnancy to certain medications, infections, and chemicals. Only a few of these agents are known. How these agents cause birth defects often is not completely understood.

### Reducing Your Risk

Most birth defects cannot be prevented because their cause is not known. For a few birth defects, you may

be able to decrease your risk by taking certain steps (see box "A Checklist for Reducing Your Risk of Birth Defects").

### **See a Health Care Professional Before Getting Pregnant**

If you are thinking about getting pregnant, visit your **obstetrician-gynecologist (ob-gyn)** or other health care professional. Along with advice about diet and exercise, you can discuss your risk of having a child with a birth defect. Now is the best time to learn about the factors in your life that may affect your pregnancy.

### **Know Your Risk Factors**

Some people have risk factors for having a baby with a birth defect. You may be at an increased risk of having a baby with a birth defect if you

- are older
- have a family or personal history of birth defects
- have had a child with a birth defect
- used certain medicines around the time you became pregnant

## A Checklist For Reducing Your Risk of Birth Defects

- See your doctor before becoming pregnant.
- Know your risk factors.
  - Take a daily multivitamin before and during pregnancy.
- Maintain a healthy weight.
- Use medications wisely.
  - Take care of medical conditions before pregnancy.
  - Do not use alcohol, marijuana, illegal drugs, or prescription drugs for nonmedical reasons.
- Prevent infections.
- Avoid known harmful agents.

- have a medical condition such as *diabetes mellitus* or *obesity*
- use recreational drugs or drink alcohol during pregnancy

If you have a personal or family history of birth defects, genetic counseling and testing may be recommended.

### Take a Daily Multivitamin Before and During Pregnancy

It is a good idea to start taking a prenatal vitamin supplement before pregnancy. Prenatal vitamin supplements contain the recommended amounts of the vitamins and minerals you will need during your pregnancy, such as vitamins A, C, and D; *folic acid*; and minerals such as iron.

Folic acid, also known as folate, is a B vitamin that is especially important before and during pregnancy. Taking 400 micrograms (mcg) of folic acid daily for at least 1 month before pregnancy and during pregnancy helps prevent major birth defects of the baby's brain and spine called *neural tube defects (NTDs)*. Most prenatal and "women's formula" multivitamin supplements contain 400–800 mcg of folic acid.

If you previously have had a baby affected by an NTD, it is recommended that you take a higher daily dose of folic acid (4 milligrams) as a separate supplement 1 month before and for the first 3 months of pregnancy. If you take medication to prevent seizures, your ob-gyn or other health care professional also may recommend that you take this higher dose of folic acid before and during pregnancy.

### Use Medications Wisely

A few medications have been linked to birth defects. Tell anyone who prescribes drugs for you that you are pregnant or thinking of becoming pregnant. This includes doctors you see for non-pregnancy problems,

mental health care professionals, and your dentist. Do not stop taking a medicine prescribed for you without talking to a health care professional. Also, check with your ob-gyn or other health care professional before taking any over-the-counter drug, such as pain relievers, laxatives, cold or allergy remedies, vitamins, herbal products, and skin treatments. A good source for information about the safety or risk of specific drugs during pregnancy, as well as many other agents, is the Organization of Teratology Information Specialists' website at [www.mothersobaby.org](http://www.mothersobaby.org).

### Maintain a Healthy Weight

Obesity is defined as having a *body mass index (BMI)* of 30 or greater. Women who are obese when they become pregnant are at an increased risk of having babies with certain birth defects. Among the most common obesity-related birth defects are NTDs, heart defects, and *cleft palate*. It also may be more difficult to detect certain problems during an *ultrasound exam* when the mother is obese. In addition to birth defects, obesity is linked to many pregnancy problems, including *gestational diabetes*, *preeclampsia*, and *preterm birth*.

Despite these risks, you can have a safe pregnancy and a healthy baby if you are obese. You can work with your ob-gyn or other health care professional to monitor your weight, get regular *prenatal care*, and take steps to be as healthy as you can during your pregnancy, including eating a healthy diet and exercising regularly.

If you are planning a pregnancy, the best way to prevent problems caused by obesity is to lose weight before you become pregnant. Many women successfully lose weight by making changes in their diets and getting regular exercise. Weight-loss medications or *bariatric surgery* may be recommended depending on your weight and whether you have health problems caused by being obese. You should delay getting pregnant for 12–24 months after having bariatric surgery.

### Get Care for Medical Conditions Before Pregnancy

Some medical conditions—such as diabetes, *high blood pressure*, and *seizure disorders*—may increase the risk of having a baby with certain birth defects. Some of the increased risk may be due to the disorder itself, and some may be a result of medications used to treat it.

If you have a medical condition and are planning a pregnancy, see your ob-gyn or other health care professional before pregnancy. Together, you can discuss any changes you need to make in your diet, medication, or other areas to bring the condition under control before you try to become pregnant.

### Do Not Use Tobacco, Alcohol, or Drugs

When a woman smokes cigarettes during pregnancy, her *fetus* is exposed to many harmful chemicals. Nicotine is only one of 4,000 toxic chemicals that can pass from a pregnant woman to her fetus. Nicotine

causes blood vessels to narrow, so less **oxygen** and fewer **nutrients** reach the fetus. Nicotine also damages a fetus's brain and lungs. This damage is permanent.

Several problems are more likely to occur during pregnancy when a woman smokes. These problems may include preterm birth. Babies that are born too early may not be fully developed. They may be smaller than babies born to nonsmokers, and they are at increased risk of **sudden infant death syndrome (SIDS)**. They also are more likely to develop asthma and obesity in childhood.

Other forms of smoking also are harmful to your fetus. Secondhand smoke—other people's smoke that you inhale—increases the risk of SIDS. Electronic cigarettes (known as "e-cigarettes") do not burn tobacco, but they are not safe substitutes for cigarettes and should not be used during pregnancy. Chewing tobacco also should be avoided during pregnancy.

If you are smoking when you find out you are pregnant, you should stop. The American Lung Association offers information on how to quit on its website: [www.lung.org](http://www.lung.org). You also can contact 1-800-QUIT-NOW, a national network that can connect you to a counselor in your state.

Alcohol can interfere with the normal growth of fetus and cause birth defects. When a woman drinks during pregnancy, her fetus can develop physical, intellectual, behavioral, and learning disabilities that can last a lifetime. It is best not to drink at all during pregnancy. If it is hard for you to stop drinking, talk with your ob-gyn or other health care professional or contact Alcoholics Anonymous on its website: [www.aa.org](http://www.aa.org).

Using substances—including heroin, cocaine, methamphetamines, and prescription drugs taken for a nonmedical reason—is a widespread problem in the United States. Using illegal drugs early in pregnancy can cause birth defects and **miscarriage**. During the later weeks of pregnancy, illegal drugs can interfere with the growth of the fetus and cause preterm birth and fetal death. Infants born to women who used illegal drugs during pregnancy may need specialized care after birth. If you need help quitting illegal drugs, you can find resources at the website of Narcotics Anonymous: [www.na.org](http://www.na.org).

Although it is legal in some states, marijuana should not be used in any form during pregnancy. Marijuana used during pregnancy is associated with attention and behavioral problems in children. Marijuana may increase the risk of **stillbirth** and the risk that babies will be smaller than babies who are not exposed to marijuana before birth.

Some women use medical marijuana with a prescription ordered by a health care professional. The American College of Obstetricians and Gynecologists recommends that pregnant women and those planning to become pregnant stop using medical marijuana. You and your ob-gyn or other health care professional can discuss alternative treatments that will be safe for your fetus.

**Opioids** are a type of medication that relieves pain. Doctors may prescribe opioids for people who have had surgery, dental work, or an injury. Prescribed

opioids include oxycodone, hydromorphone, hydrocodone, and codeine. When taken under a doctor's care, opioids are safe for both you and your fetus. It is important to take the medication only as prescribed.

Most people who use a prescription opioid have no trouble stopping their use, but some people develop an addiction. Those who become addicted may look for other ways to get the drug when their prescription runs out. They may go from doctor to doctor to have new prescriptions written for them. Some people use the illegal drug market to supply themselves with opioids. Misusing opioids during pregnancy can increase the risk of serious **complications**, including preterm birth, stillbirth, and problems with the placenta and fetal growth.

If you need help with an opioid addiction, you can find resources at the website of the Substance Abuse and Mental Health Services Administration (SAMHSA): [www.samhsa.gov](http://www.samhsa.gov). SAMHSA also has a 24-hour treatment referral line: 800-662-HELP (4357).

### **Prevent Infections**

**Rubella** (German measles) is a viral infection that usually causes a mild rash and a low fever. However, having rubella during pregnancy can cause miscarriage or result in deafness, intellectual disability, heart defects, and blindness in your newborn. There is a **vaccine** against rubella, but it is not recommended for pregnant women. If you have not already had the disease or been vaccinated, you should be vaccinated against rubella and wait at least 1 month before becoming pregnant. If you are not sure you have had rubella or have been vaccinated, a test can be done to see if you are **immune** to the virus.

**Toxoplasmosis** is a disease caused by a parasite that lives in soil. You can become infected by eating raw or undercooked meat or unwashed vegetables or by coming into contact with animal feces, especially from cats that go outdoors. If you are infected for the first time while you are pregnant, you can pass the disease on to your fetus. Toxoplasmosis can cause birth defects, including hearing loss, vision problems, and intellectual disability. To protect against toxoplasmosis, make sure that you eat well-cooked meat and wear gloves while gardening or handling unwashed vegetables. If you have an outdoor cat that uses a litter box, have someone else empty it. If you must empty the litter box, use gloves and wash your hands well after doing so.

**Sexually transmitted infections (STIs)** can cause serious birth defects. For instance, **syphilis** and **genital herpes** infection can cause severe problems in infants, including blindness and death. You will be tested for some STIs at your first prenatal care visit. Depending on your and your partner's health history, you may be tested again later in pregnancy. Treating an STI—preferably before you become pregnant—may prevent or reduce harm to the fetus.

**Cytomegalovirus (CMV)** is the most common viral infection in newborn babies. Most CMV infections cause no significant problems, but in severe cases the infection may cause intellectual disability, hearing loss, and vision problems. The risk of the fetus getting infected is greatest if a woman is infected for the first time when she is pregnant.

Young children are those who are most likely to be infected with CMV. The virus can be spread by contact with an infected child's urine or other body fluids. Pregnant women who work with young children, such as day care workers or health care workers, should take steps to prevent infection, such as wearing gloves when changing diapers. Pregnant women with young children at home also are at risk and should take these steps. Frequent handwashing also is recommended. If a pregnant woman has been exposed to the virus, a test can be done to find out if she has the infection.

### Zika Virus

**Zika** virus has been found in South America, Central America, and North America. Infection with the virus during pregnancy can cause serious birth defects, including **microcephaly** (a birth defect in which a baby's head and brain are smaller than normal) and other brain abnormalities. These birth defects can lead to lifelong problems, including seizures, feeding problems, hearing loss, vision problems, and learning difficulties. There still are many things that researchers do not know about Zika virus.

Zika virus can be transmitted through the bite of an infected mosquito or through sex with an infected partner. Many people infected with Zika virus will not have symptoms or will have only mild symptoms, including

- fever
- rash
- joint pain
- red, itchy eyes

Infection during pregnancy, even infection without symptoms, can be passed from a woman to her baby. There is no vaccine against Zika virus, and as of 2019, there is no treatment for it.

To avoid Zika virus, take strict steps to avoid mosquito bites. If your male partner lives in or travels to an area where Zika virus is spreading, use a condom each time you have sex. Do not travel to areas where Zika virus is known to be active.

If you or your partner must travel to an area where Zika virus is active, strictly follow these four steps to prevent mosquito bites:

1. Use EPA-registered bug spray with DEET, picaridin, IR3535, oil of lemon eucalyptus, para menthane-diol, or 2-undecanone. Used as directed, these sprays are safe for pregnant and breastfeeding women.
2. Wear long-sleeved shirts and long pants.
3. Treat clothing and gear with permethrin or buy permethrin-treated items.
4. Stay in air-conditioned or screened-in areas during the day and at night.

Follow these steps at all times. Mosquitoes are active during the day and night.

If you or your sexual partner have traveled or live in an area where Zika is present, or if one of you has symptoms of Zika virus infection, see your ob-gyn or other

health care professional. You may need to be tested for Zika virus infection.

### Limit Your Exposure to Harmful Agents

Prenatal exposure to toxic agents, such as lead or mercury, is associated with an increased risk of birth defects. You can be exposed to these agents at home or at work. Only a small number of women are exposed to high levels of toxic agents known to cause birth defects. A few precautions that are recommended for all pregnant women include the following:

- Fish and shellfish are nutritious foods with vital nutrients for a pregnant woman and her fetus. You should eat 8–12 ounces of fish and shellfish a week, but make sure they are low in mercury. Mercury is a substance that can build up in certain types of fish. If eaten in very large amounts, it can harm a woman and her fetus. To limit your exposure to mercury while still getting the healthy benefits of eating fish, follow a few simple guidelines. Eat a variety of fish that have lower levels of mercury, such as shrimp, salmon, tilapia, and pollock. Do not eat bigeye tuna, king mackerel, marlin, orange roughy, shark, swordfish, or tilefish. Limit eating white (albacore) tuna to 6 ounces a week. You also should check advisories about fish caught in local waters.
- Lead exposure during pregnancy can have harmful effects for a pregnant woman and her fetus. Lead can be found in old paint, construction materials, alternative medicines, and items made in foreign countries, such as jewelry and pottery. It can be inhaled in dust, absorbed through the skin, or ingested. Your ob-gyn or other health care professional may ask questions to see if you are being exposed to lead. If you are at risk of this exposure, you may have a blood test to measure how much lead is in your blood.
- Very high levels of vitamin A have been linked to severe birth defects. You should consume no more than 10,000 international units of vitamin A a day. Read labels on all medications and vitamin supplements carefully.

### Finally...

Although some birth defects cannot be prevented, there are things that you can do to reduce your risk of having a baby with certain birth defects. Many involve making lifestyle and other changes before you become pregnant. Specific suggestions for reducing your risk may be recommended based on your personal and family history.

## Glossary

**Bariatric Surgery:** Surgical procedures that cause weight loss. These procedures are used to treat obesity.

**Birth Defect:** A physical problem that is present at birth.

**Body Mass Index (BMI):** A number calculated from height and weight. BMI is used to determine whether a person is underweight, normal weight, overweight, or obese.

**Chromosomes:** Structures that are located inside each cell in the body. They contain the genes that determine a person's physical makeup.

**Cleft Palate:** A birth defect that causes an opening or split in the roof of the mouth.

**Clubfoot:** A birth defect in which the foot is misshaped and twisted out of position.

**Complications:** Diseases or conditions that happen as a result of another disease or condition. An example is pneumonia that occurs as a result of the flu. A complication also can occur as a result of a condition, such as pregnancy. An example of a pregnancy complication is preterm labor.

**Cytomegalovirus (CMV):** A virus that can be transmitted to a fetus if a woman becomes infected during pregnancy. CMV can cause hearing loss, mental disability, and vision problems in newborns.

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

**Fetus:** The stage of human development beyond 8 completed weeks after fertilization.

**Folic Acid:** A vitamin that reduces the risk of certain birth defects when taken before and during pregnancy.

**Genes:** Segments of DNA that contain instructions for the development of a person's physical traits and control of the processes in the body. The gene is the basic unit of heredity and can be passed from parent to child.

**Genital Herpes:** A sexually transmitted infection (STI) caused by a virus. Herpes causes painful, highly infectious sores on or around the vulva and penis.

**Gestational Diabetes:** Diabetes that starts during pregnancy.

**High Blood Pressure:** Blood pressure above the normal level. Also called hypertension.

**Immune:** Protected against infectious disease.

**Microcephaly:** A birth defect in which a baby's head and brain are smaller than normal. Babies with microcephaly may have seizures, developmental delays, mental disability, vision and hearing problems, and problems with balance and movement.

**Miscarriage:** Loss of a pregnancy that is in the uterus.

**Neural Tube Defects (NTDs):** Birth defects that result from a problem in development of the brain, spinal cord, or their coverings.

**Nutrients:** Nourishing substances found in food, such as vitamins and minerals.

**Obesity:** A condition characterized by excessive body fat.

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

**Opioids:** Drugs that decrease the ability to feel pain.

**Oxygen:** An element that we breathe in to sustain life.

**Preeclampsia:** A disorder that can occur during pregnancy or after childbirth in which there is high blood pressure and other signs of organ injury. These signs include 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.

**Prenatal Care:** A program of care for a pregnant woman before the birth of her baby.

**Preterm:** Less than 37 weeks of pregnancy.

**Rubella:** A virus that can be passed to the fetus if a woman becomes infected during pregnancy. The virus can cause miscarriage or severe birth defects.

**Seizure Disorders:** Any condition that causes seizures, which cause changes in movement, consciousness, mood, or emotions. Epilepsy is one kind of seizure disorder.

**Sexually Transmitted Infections (STIs):** Infections that are spread by sexual contact. Infections include chlamydia, gonorrhea, human papillomavirus (HPV), herpes, syphilis, and human immunodeficiency virus (HIV, the cause of acquired immunodeficiency syndrome [AIDS]).

**Stillbirth:** Birth of a dead fetus.

**Sudden Infant Death Syndrome (SIDS):** The unexpected death of an infant in which the cause is unknown.

**Syphilis:** A sexually transmitted infection (STI) that is caused by an organism called *Treponema pallidum*. This infection may cause major health problems or death in its later stages.

**Toxoplasmosis:** An infection caused by *Toxoplasma gondii*, an organism that may be found in raw meat, garden soil, and cat feces (stool). This infection can harm a fetus.

**Ultrasound Exam:** A test in which sound waves are used to examine inner parts of the body. During pregnancy, ultrasound can be used to check the fetus.

**Vaccine:** A substance that helps the body fight disease. Vaccines are made from very small amounts of weak or dead agents that cause disease (bacteria, toxins, and viruses).

**Zika:** A disease caused by the Zika virus, which is spread through mosquito bites.

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](http://www.acog.org) to ensure accuracy.

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