

# Prenatal Care

## HEALTH TERMS

prenatal  
fetal alcohol syndrome  
rubella  
ultrasound  
amniocentesis  
chorionic villi sampling  
birth defect

## HEALTH CONCEPTS

- Each trimester of pregnancy has physical and emotional characteristics.
- Prenatal care includes regular check-ups, a well-balanced diet, staying healthy, and not using alcohol, tobacco, or illegal drugs.
- Tests performed during pregnancy verify if a baby is at risk or if a problem is present.

**B**efore a female even takes a pregnancy test, she may already “feel” pregnant. She might feel nauseous and may notice that her breasts are tender, her pelvic area aches, and there is an increase in vaginal secretions. However, a female may mistake some of these symptoms as the start of her period. If she suspects she might be pregnant, taking a reliable pregnancy test as soon as possible is best for her and her baby. This will allow the mother to begin prenatal care immediately. **Prenatal** means *occurring or existing before birth*. Prenatal care ensures the health of the mother, which directly affects the health of the developing fetus.

## Characteristics of a Pregnancy

**T**hese early signs of pregnancy are the first of many physical changes a pregnant female’s body will go through. While some changes occur throughout a pregnancy, some changes occur during specific trimesters. A trimester is a group of three months; pregnancies have three trimesters.

**First Trimester.** During the first trimester, a pregnant female’s breasts begin to get fuller and tender. They will continue to enlarge throughout the pregnancy. Blood vessels become more prominent and the areola (area around the nipples) darkens. Toward the end of the third month, the female’s abdomen may become enlarged, though it is caused more by bloating of the intestines than to the growing fetus and uterus. She may also feel fatigued after only a small amount of exertion.

**Second Trimester.** In the second trimester, the swollen abdomen becomes apparent because of the growing fetus and uterus. The female’s appetite increases. Fetal movement can be detected, usually as a fluttery feeling in the abdomen. The volume of blood in the female’s system increases. Many women find that their energy increases during this trimester.

**Third Trimester.** By the third trimester, almost all females are obviously pregnant. Most will have gained between 25–40 pounds by the ninth month. The way a female puts on weight during pregnancy is highly individual. Some will gain only in the abdomen. Others will gain in the abdomen; hips, buttocks, and breasts.

Blood volume has increased between 30–40 percent. The heart also beats faster. The uterus is stretched to many times its original size. Most of the organs have been pushed up and compressed between the uterus and diaphragm. Many females will have trouble taking a deep breath. Eating also becomes difficult as the stomach is compressed.



## Did You Know?

A female can get pregnant without having intercourse. If sperm are released near the outside of the vagina, they can move into the vagina. Even if the hymen, the thin membrane covering the opening of the vagina in some females is intact, sperm can move through the small openings in the hymen.

**THINKING SKILLS.** Remind students that one of the developmental tasks of adolescence is to accept one's physique and use one's body effectively. Ask how a teen pregnancy might affect a female's ability to accomplish this. Also ask how the emotional changes occurring during pregnancy might affect a teen differently than a mature woman.

**STRESS.** Delayed prenatal care can have harmful effects on mother and baby. Many tests are available to detect problems that, while easily treated during pregnancy, can lead to serious complications if left untreated.

## Emotional Changes

Along with the physical changes, a female goes through many emotional changes during her pregnancy. Because of major hormonal shifts taking place in her body, a pregnant female will often be more emotional, and have wide mood swings throughout the pregnancy.

Beginning in the first trimester, a pregnant female may have a wide range of feelings from anger to joy to fear to excitement, whether or not the pregnancy was planned. She also may experience moodiness similar to premenstrual syndrome.

By the second trimester, some females become forgetful, clumsy, or have trouble concentrating. Some females also become upset about feeling "in between." They may not be showing enough for others to realize they are pregnant, may not feel pregnant themselves, and their pre-pregnancy clothes no longer fit but maternity clothes are too big.

By the third trimester, some females may feel that their bodies are no longer their own and they cannot wait for the end of the pregnancy. Others have never felt more feminine and beautiful and are thoroughly enjoying the feeling of carrying their baby. Many have apprehensions that something is wrong with the baby or that something will go wrong during the birth. All of these changing emotions and concerns are normal. It is best if the expectant mother has a caring partner with whom she can discuss these feelings.

## Common Discomforts

Along with the physical and mental changes, most women experience at least a few common discomforts during pregnancy. One discomfort is the need to urinate more frequently. As the fetus grows, it compresses the bladder more and more. Leg cramps are also common throughout pregnancy.

In the first trimester, many females experience headaches, fatigue, nausea, and breast tenderness. Fortunately for most, these symptoms go away by the fourth month. The mood swings caused by hormonal changes also can begin at this time.

Another common discomfort is back pain. It usually begins in the fifth month and can last until several weeks after giving birth. Most discomforts that begin in the second trimester continue through the third trimester as well.

In the last trimester, common discomforts include swelling of the hands, ankles, and feet; exhaustion; stretch marks; non-painful and irregular contractions; sleep difficulties and nightmares; urine leaking and very frequent urination. Almost all these discomforts disappear after the baby is born.

## Components of Prenatal Care

The sooner the mother confirms her pregnancy, the sooner she can begin prenatal care. This is important because the mother's health choices affect the developing baby's health. Prenatal care includes regular visits to a health care professional, a well-balanced diet, exercise, the avoidance of substances harmful to the mother and fetus, and staying in good health.



## Medical Care

A pregnant female should have regular visits with an obstetrician or a certified nurse-midwife. An obstetrician is a doctor specializing in the care of a female and her developing baby. A certified nurse-midwife is an advanced practice nurse who, in addition to providing prenatal care, specializes in delivering babies.

Either the obstetrician or midwife gives the pregnant female a complete physical examination, including blood tests and a pelvic examination, and takes a thorough medical history. They also monitor the developing baby. Possible complications may be identified at this time and, in some cases, corrected early. The mother can discuss her concerns and questions about her pregnancy and the birth. The doctor or midwife will also discuss important health behaviors with the mother. Most doctors will want to examine the mother-to-be once a month through her seventh month, every two weeks in the eighth month, and weekly in the ninth month. At each visit the doctor will note a pregnant woman's weight, take blood pressure, test urine, measure the abdomen to monitor the growth of the fetus, and listen to the fetus' heartbeat (starting in the twelfth week).

## Nutrition and Exercise

The pregnant female's eating habits are a special concern. She needs a well-balanced diet to ensure proper nourishment not only for herself but also for her developing baby. A female needs to eat extra protein during pregnancy. Protein is needed to supply energy, to aid in the development of the placenta, amnion, and extra blood, and to develop the baby's brain.

The mother needs to eat foods rich in calcium (for strong bones and teeth), vitamin E (for tissue growth and red blood cells), and iron (for red blood cells). If not enough iron is present in the mother's blood, the iron drawn out by the fetus will leave the mother tired and possibly anemic. Folic acid, found in whole grains and fish, is also necessary. Folic acid helps prevent defects, such as spina bifida, to the baby's spine. While a mother-to-be must increase her intake of calories by about 300–500 per day, she has to avoid foods with little or no nutrition. Most of these extra calories should come from her added intake of milk (or other calcium-rich food) and protein.

The doctor will likely discuss the importance of exercise during pregnancy. The doctor will also monitor the female's weight during pregnancy. The amount of weight gained depends on the mother's size and build and the size of the baby and placenta. Most females gain between 25–35 pounds, though a *healthy* weight gain varies from a low of 20 to a high of 40 pounds. Any more or less weight can be harmful to the fetus' development. A doctor will watch for any sudden weight gain, which can signal a health problem for the mother or fetus.

## Medical Complications

During any pregnancy, there is the possibility of a medical complication. Of course, the mother can help prevent some of these with proper nutrition and care. However, sometimes medical problems are unavoidable.



## Pregnancy and Exercise

Depending on the mother's health and level of fitness the doctor will have recommendations for a safe exercise program. Some form of exercise is almost always recommended. It helps:

- prevent unnecessary weight gain
- increase blood circulation
- prepare the mother for the rigors of labor.

**THINKING SKILLS.** Remind students how various body parts and organs develop during specific weeks in fetal growth. Then ask them why it is of great importance that a pregnant female's diet be consistently healthy rather than switching back and forth from a week of junk food to a week of healthy eating.





**▲ Prenatal care is important for the health of the mother and fetus.**

**NOTE.** Rhogam is a blood product called Rh-immune globulin. It is administered to a pregnant female at risk at 28 weeks to prevent any build up of antibodies. It is given again usually immediately after birth, a miscarriage or an abortion, but certainly within 72 hours. In rare cases where the baby contracts severe Rh incompatibility, a transfusion of negative blood is given to the baby at birth.

**Rh Factor in Blood.** The Rh factor is a substance in the blood. About 86 percent of people have an Rh antigen in their red blood cells and are called Rh+ (Rh positive). Those who do not have it are Rh- (Rh negative). If someone with Rh- receives blood transfusions containing Rh+, the Rh- blood gradually builds up antibodies to defend the blood from the Rh antigen. These antibodies spread throughout the body. Every Rh- female should have her blood checked regularly, beginning early in pregnancy. If she has received an Rh+ blood transfusion, has had earlier pregnancies, or if the father is Rh+, there could be problems when the antibodies from the mother cross the placenta and attack the baby's red blood cells. This can cause serious complications. Fortunately, a serum called Rhogam can be given to the Rh- mother to prevent the build-up of antibodies.

**Pregnancy-Induced Hypertension (PIH) and Preeclampsia.** A slight rise in blood pressure is expected and normal around the seventh month of pregnancy. However, about five percent of pregnant women develop prolonged high blood pressure called pregnancy-induced hypertension (PIH). While for most, PIH is harmless and will go away after birth, doctors carefully monitor females with this condition.

If the increase in blood pressure is accompanied by a sudden weight gain, severe swelling from water retention, and/or protein in the urine, the female has a condition called preeclampsia. If undiagnosed, it can lead to a range of problems from blurred vision and headaches to convulsions and coma in the mother and growth and mental retardation in the fetus.

Females most at risk are first-time mothers in their early teens or over 35. This condition is usually treated with complete bed rest and medication. Doctors will sometimes have to induce (artificially begin) labor or perform a cesarean birth.

## Dangers to the Fetus

A pregnant female must be very careful about what substances she puts in her body. She should not take any medicine without her doctor's permission, even aspirin or over-the-counter drugs. She should not drink alcohol, or use tobacco or illegal drugs.

■ **Alcohol.** Females who drink alcohol during pregnancy run a high risk of having babies with **fetal alcohol syndrome**, a condition of physical, mental, and behavioral abnormalities and birth defects that results when a pregnant woman drinks alcohol. Babies who are born with this syndrome are shorter and lighter in weight than babies born to mothers who did not drink alcohol. These babies can have a variety of problems at birth and as they mature. These include impaired speech, a cleft palate, general weakness, slow body growth, facial abnormalities, poor coordination, and heart defects. Mental retardation, poor attention span, the inability to understand the consequences of actions, nervousness, and hyperactivity also are common.

Like all substances taken into a pregnant female's body, alcohol passes into her blood and flows through the umbilical cord into the blood of the fetus. Unfortunately, the developing infant cannot rid



the body of alcohol as an adult can, therefore the alcohol remains in the infant's body much longer. If drinking is done on a weekly basis, chances are that the fetus never fully rids its body of alcohol. A baby born to a female who drinks alcohol during her pregnancy can be born addicted to alcohol.

Because even small amounts of alcohol can be harmful, it is safest if a pregnant female avoids drinking any alcohol. Fetal alcohol syndrome is completely preventable. It does not occur in non-drinking pregnant females. Every female who is pregnant has the choice not to drink.

- **Tobacco.** A pregnant female also should avoid smoking cigarettes. Babies born to females who smoke have a greater chance of being born premature and thus have lower birth weights. Babies with birth weights of 5½ pounds (2.3 k) or less often develop serious health problems early in life. Later in life, low birth weight babies may have learning problems in school. Pregnant females who smoke are about two times more likely to have a miscarriage or stillbirth than mothers who do not smoke. There are also dangers to the fetus from secondhand smoke. Children of mothers who smoked during pregnancy or who lived in homes with a smoker have a much higher rate of asthma, bronchitis, and pneumonia.
- **Medications and Drugs.** Any medicines, even natural supplements, should be taken only with the approval of a health professional. Just because a substance is "natural" or is a prescription or over-the-counter medicine doesn't mean it can't be harmful to a fetus.

No illegal drugs should be taken. Illegal drugs present serious health threats. Certain drugs can cause serious birth defects, including mental retardation. A baby can be born physically dependent on a drug its mother takes during pregnancy. After birth, the newborn will have to go through withdrawal. The withdrawal process may cause breathing difficulties, vomiting, diarrhea, tremors, and convulsions. They are also at risk for respiratory problems, visual and hearing disabilities, learning and emotional problems, low birth weight, and even death.

- **Caffeine.** Caffeine is another possible hazard to a fetus. Caffeine is present in coffee, tea, chocolate, colas, and other carbonated drinks. High caffeine intake has been associated with an increased risk of birth defects and other problems.
- **Rubella (German measles).** Rubella, also called German measles, is a contagious disease caused by a virus. The symptoms include a reddish pink rash on the face that spreads to the body, and often a slight fever, sore throat, and swollen lymph glands in the neck. While most people in the U.S. are immune to rubella through vaccination or having had the disease, one in seven pregnant females is not immune. Cases of rubella are most common among teenagers and young adults.



## Did You Know?

Despite currently available medical technology, nearly 20 countries report lower infant mortality rates than the United States. In other countries, lower mortality rates are caused in part by higher rates of prenatal care. Low birth weight causes infant death. Improper nutrition, smoking, drinking, and illegal drug use cause low birth weight. Infant mortality rates are highest for teen mothers.

**NOTE.** An occasional drink during pregnancy does not cause FAS. It is generally a result of constant and heavy alcohol use. However, even moderate drinking (one or two drinks a day) can cause problems.

**STRESS:** Because of its small size, a fetus can be harmed by even small amounts of drugs. Also, a fetus excretes the drug into the amniotic fluid. The fetus is bathed in the drug and receives repeated doses as it constantly swallows amniotic fluid.

👉 **Females increase their chances of having a healthy baby by avoiding harmful substances during pregnancy.**



Contracting rubella *after* the fourth month of pregnancy rarely causes birth defects. Unfortunately, having rubella during the first three months of pregnancy, while harmless to the mother, can cause serious birth defects in a fetus. The baby of an infected mother may be born with heart defects, mental retardation, hearing loss, and loss of sight. Death of the baby can sometimes result from such an infection. For this reason, doctors test all pregnant women for immunity to rubella as early as possible. Pregnant females who are not immune and have been exposed to rubella are sometimes given shots of gamma globulin, though its effectiveness in keeping the mother from getting the disease is inconsistent.

### SEXUALLY TRANSMITTED DISEASES

Sexually transmitted diseases (STDs) are diseases spread through sexual contact. Because some STDs are very harmful to a fetus and newborn, a pregnant woman is tested for STDs at her first visit with her doctor or midwife. Some STDs are harmful to a forming fetus. Others pose a threat during the birth process. For example, the STD chlamydia can be transmitted to a baby during delivery. Untreated, this disease can cause eye infections, blindness, and even pneumonia in newborns. Another STD, gonorrhea, can also be transmitted to a baby during birth. Gonorrhea results in eye infections, blindness, and general infections throughout the baby's body. Herpes is another STD that can be transmitted at birth. A herpes infection in a newborn attacks its nervous system and can result in encephalitis and death.

Syphilis is an STD that affects the fetus as it is forming. This disease can cause bone and tooth deformities, nervous system deformities and damage, brain damage, and death of the fetus. However, treatment with antibiotics before the fifth month can often prevent harm to the fetus. You will read more about the symptoms and treatments for STDs in Chapter 7.

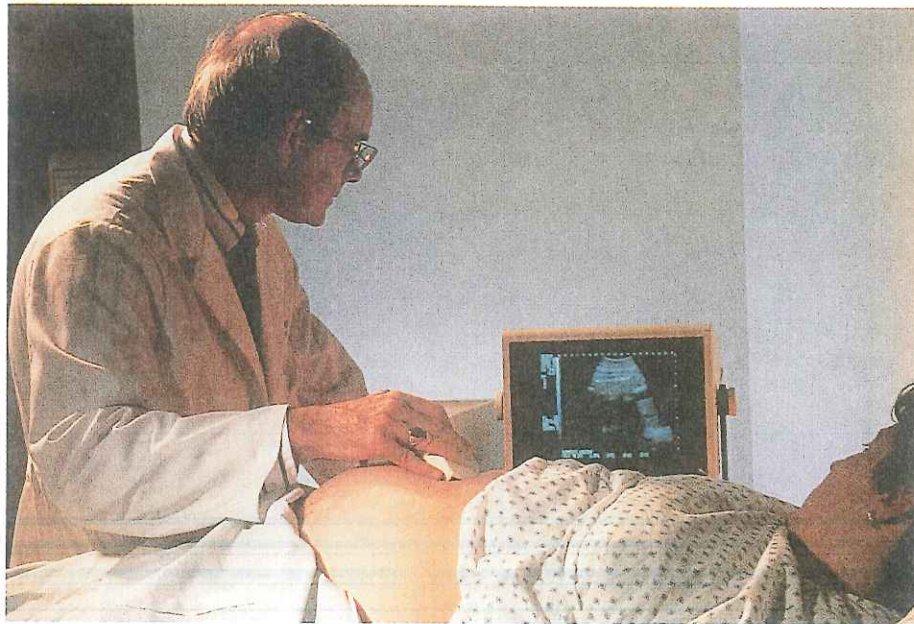
- **HIV.** HIV, the virus that causes AIDS, can be passed from a pregnant female to her fetus through the umbilical cord. Twenty to thirty-five percent of babies born to HIV-infected mothers will contract the virus in this way. Babies can also contract the virus if blood from the mother gets in a cut in the baby's body during birth. Babies can also be infected by drinking breast milk from an HIV-infected mother. A treatment is available that can reduce the risk of HIV being transmitted from mother to fetus. This is why it is so important for all pregnant females to get early prenatal care and to be tested for HIV.
- **Radiation.** While direct exposure to radiation can result in fetal deformity, it is very unlikely that dental X rays will harm a forming fetus. However, avoiding exposure to X rays while pregnant is recommended unless it is absolutely necessary.


## Tests During Pregnancy

A doctor may want to perform tests on a pregnant female to see if the baby is at risk. Sometimes treatment can be done before the baby is born if a problem is detected.

**NOTE.** Explain that because of antibody exchange between mother and baby, babies of HIV-infected mothers usually test positive for HIV at birth. This is because the tests determine the presence of antibodies to HIV, not for the virus itself. Three-quarters of babies who test positive for HIV at birth are free of the antibodies by their first birthday. These babies will not develop AIDS.





 **Ultrasound shows information about the fetus.**

## Ultrasound

**Ultrasound** is a test that reflects sound waves off the body's inner organs and bones to produce a picture of the organs and bones on a screen. This test can be done at any point during a pregnancy. An instrument called a transducer is moved back and forth across the abdomen. A computer translates the reflections into pictures on a video screen, making the fetus visible. Ultrasound can be used to check the baby's position as well as the position of the placenta. It can help confirm the date of conception. Ultrasound also gives information as to the general development of the fetus.

**NOTE.** The chance of contracting an infection or experiencing other complications that lead to miscarriage are less than 1 in 200 for amniocentesis and about 3 in 200 for CVS. For this reason, these tests are often not given unless the mother is over the age of 35—when the risk of serious defects is higher than the risk of miscarriage.

## Amniocentesis

**Amniocentesis** is a procedure used to reveal chromosomal abnormalities and certain metabolic disorders in the fetus. The test is done after the sixteenth week of pregnancy. Prior to amniocentesis, ultrasound is used to determine the position of the fetus. Immediately after the ultrasound, the doctor inserts a long thin needle through the abdominal wall, through the uterus, and into the amniotic fluid surrounding the fetus. About 4 teaspoons of amniotic fluid are withdrawn. The fluid contains some cells shed by the baby. These cells are put in a culture (a prepared solution) where they continue to grow. After two to three weeks, doctors can analyze the chromosomes in the cells for content and number. In addition to identifying chromosomal disorders, the sex of the baby can also be determined, since the X or Y chromosome can be seen.

## Chorionic Villi Sampling

**Chorionic villi sampling (CVS)** is a test used to reveal chromosomal abnormalities. During CVS, a small piece of membrane is removed from the chorion, a layer of tissue that develops within the placenta. Fetal cells in the chorion are grown in a lab where they can be analyzed. The chorionic cells grow in about a week, more quickly than those from amniotic fluid. Also, CVS can be done at eight weeks, eight to twelve



weeks earlier than amniocentesis. The risk of miscarriage, while low, is still somewhat higher with CVS than with amniocentesis. Because they can get the results more quickly, many more doctors are choosing to use CVS rather than amniocentesis. Other tests are available to check the health of the baby and to see if prenatal treatment should be given.

## Birth Defects

There are more than 2,000 known types of genetic conditions and birth defects. A genetic condition, in the broadest definition, is any quality an individual inherits. However, the term *genetic condition* used in this lesson refers to genetic diseases and disorders, illness, or other conditions of malfunction with which an individual is born.

**Birth defects** are *defects present at birth, including genetic conditions or problems caused by environmental factors*. While a majority of birth defects are genetically related, some are the result of environmental factors. These include disabilities that can occur when the mother has taken certain drugs or has become infected with rubella during pregnancy, or when the fetus has been deprived of oxygen in the womb or during birth.

Some defects are immediately observable at birth. These include physical malformations, such as cleft lip, cleft palate, and clubfoot. Others may be present at birth, but testing is required to confirm their presence. Other conditions that are present at birth do not generate observable symptoms until the infant is several months to a year or more old. Among these are Tay-Sachs disease, cystic fibrosis (a disorder that affects the mucous-secreting gland and the sweat glands), sickle-cell anemia, phenylketonuria (PKU) (an inherited enzyme deficiency), and hearing loss. Various types of mental retardation, cerebral palsy, and minimal brain dysfunction cannot be observed until the infant begins to grow, or fails to begin to grow, through the normal stages of development.

**THINKING SKILLS.** Ask the students how prenatal testing might help the survival of a baby born with a genetic birth defect.

## LESSON

## 2

## Review

LESSON 2 REVIEW ANSWERS ARE FOUND ON PAGE TM34.

### Reviewing Facts and Vocabulary

1. List two physical changes that occur during each trimester.
2. What occurs during a pregnant female's examination by a doctor or midwife?
3. Name four diseases and their effects on the health of a fetus.
4. Name two tests that can be done during pregnancy to see if the baby is at risk for a chromosomal abnormality.

### Thinking Critically

5. **Synthesizing.** How might prenatal care make a difference in the development of the baby and in the health of the mother?

6. **Evaluating.** Do you think a female should be charged with a crime if she willingly drinks alcohol or takes illegal drugs during her pregnancy?

### Applying Health Skills

7. **In Your School.** Contact the March of Dimes and find out what birth defects can be prevented. Make a chart showing ways that these birth defects can be prevented and present it to your class.