

# CHAPTER 20

# From Conception Through Parenting

## Sections

1. The Responsibilities of Pregnancy
2. Deciding to Bear or Adopt Children
3. Reproduction
4. Pregnancy
5. Fetal Development
6. Birth Defects and Other Problems
7. Childbirth
8. The Elements of Parenting



## Chapter Preview

When people become parents, their lives are changed forever. At any age, having children greatly impacts the future. In this chapter you will learn about the reproductive process and some basic elements of parenting.

## Fact or Fiction?

### What Do You Think?

*Is each statement true or false? If you think it's false, explain what's true.*

1. The lifestyle choices a couple makes in the weeks before pregnancy can affect their future child's development.
2. A missed menstrual period is a sure sign that a female is pregnant.
3. Possibly the single most important task in parenting is to help the child develop positive self-esteem.

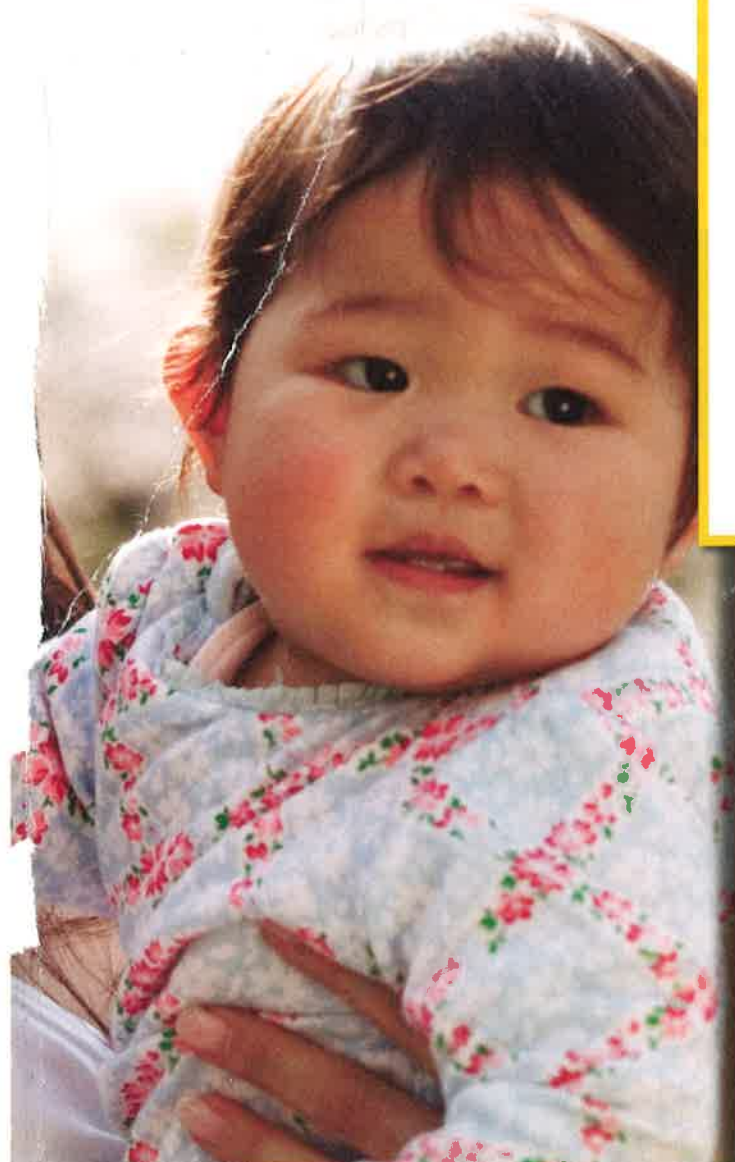


**Writing** Write a paragraph to explain what it means to be a parent. As you read the chapter, update your paragraph to include new information you learn.

*(Answers on page 573)*



Visit [glencoe.com](http://glencoe.com) and complete the Life Choice Inventory for Chapter 20.





## SECTION

# 1

# The Responsibilities of Pregnancy

A pregnancy greatly affects people's lives. Many first-time parents cannot imagine the lifestyle changes and responsibilities that await them, both before and after the birth of a baby. Parents must provide protection, food, clothing, shelter, education, and medical care for their children. Parenting also involves fostering emotional growth, instilling values, setting limits, and giving unconditional love. Parents who successfully meet these challenges are often rewarded with some of life's greatest joys.



### Did You Know?

Reading to a child at any age will increase their knowledge.

## Teen Parenting Risks

**MAIN IDEA** ➤ Becoming a parent brings many rewards, but is also hard work.

Teen mothers and fathers face particular challenges and risks. They may become separated from their peer groups, interrupt their educations, and diminish their chances for desired careers. In addition, younger pregnant teens face higher physical risks to both mother and child, as described in later sections.

■ **Figure 20.1** *Parenting changes a person's life forever. How does parenting change a person's life?*







■ **Figure 20.2** Parenting can be both challenging and rewarding. *In what ways can teenage parenting be particularly challenging?*

The responsibilities of pregnancy affect people in less obvious and less dramatic ways too. Just the fear of pregnancy can damage relationships. Many couples worry and disagree about readiness to bear a child, and they sometimes must make hard choices. When unwanted pregnancies occur, unstable relationships are likely to crumble.

For all of the reasons just named, many teens find that the choice to abstain from sexual activity brings freedoms—from stress, from worry, and from unnecessary complications. The rest of this chapter assumes that pregnancy is an event welcomed with joy by mature, ready, and loving parents.

## SECTION 1 Review

### Reviewing the Facts

1. **Explain.** What are some responsibilities that parenting brings?
2. **List.** In what ways is teen pregnancy risky?
3. **Identify.** How does pregnancy affect relationships?
4. **Describe.** What are the freedoms that come from abstaining from sexual activity?

### Writing Critically

5. **Narrative.** Paul is 17 years old, and has learned his girlfriend is pregnant. Write him a letter explaining what he will likely experience in the months and years to come with regards to becoming a father. Be realistic, but not harsh.



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## SECTION 2

# Deciding to Bear or Adopt Children

The decision of whether to have a child is affected by personal beliefs, needs, and wishes. For example, people may base their decisions on childhood memories of a happy family. They may wish to become a parent and to nurture and raise children. Outside pressures—such as a spouse's needs, or parents' or friends' expectations—can also affect these decisions. Finally, people may simply wish to experience being parents. Most decisions, however, should be based on this single question: Am I ready to become a parent? Children are a responsibility for many years.

## Responsible Parenting

**MAIN IDEA** ► Prospective parents should think about how children will change their lives.

To get an idea of what it takes to be a parent, you can try the following exercise. Pretend an egg is a baby, and that you are its parent. Don't put it down. Carry it from place to place, even while shopping or showering. Bathe it every day. Keep an eye on it at all times. Sleep with it close by. Set your alarm for 2 A.M., and check the egg. Never let it out of your sight unless you can get another person to agree to tend to it as you are doing. Try this for one week, and you will get some sense of what it would be like to care for a child. Multiply the week by 52 for a year, and then by 18 for the duration of active parenthood. If you find this exercise difficult, remember that rearing a child is more difficult still. An egg requires neither food nor discipline. It does not cry, soil diapers, or get sick.

■ **Figure 20.3** *For parents who are ready to accept the responsibility, babies are a joy. How does a person decide if he or she is ready to become a parent?*





## **APPLYING** Health Skills

### *Decision Making*

#### ► **Objectives**

- Apply the decision-making process to a life-changing decision.
- Consider possible outcomes of each option when making a major decision.

#### **Oh, Baby!**

Kayla's sister Briana is a college senior who plans to continue her studies by going to medical school. Briana has wanted to become a doctor since she was 10 years old. Last summer, Briana married her boyfriend Todd, who is also a senior in college. Todd has always wanted to become a lawyer, and he plans to go to law school after he graduates.

Lately, Briana and Todd have been talking about having a baby. They love children and are eager to start a family of their own. They know, however, that one of them will have to work, putting any plans for further education on hold. They are trying to decide whether to have a baby now or wait until after they finish their education. Kayla hasn't been asked what she thinks, but she hopes they wait. She worries that they may not have enough time or money to go to medical school or law school if they have a young child now.

#### ► **Identify the Problem**

1. What decision are Briana and Todd trying to make?

#### ► **Form an Action Plan**

2. What are their options? What are possible outcomes of each option?
3. How do their values relate to the decision they are trying to make?
4. What decision does Kayla think Briana and Todd should make? Why?

#### ► **What Did You Learn?**

5. What did you learn from this activity about considering possible outcomes when making a major life decision?



■ **Figure 20.4** Opening one's home to a foster child can be especially challenging and rewarding. What is the difference between adoption and foster parenthood?



Some couples decide to start a family by adopting a child. Adoption is the legal process of taking a child of other parents as one's own. People may choose adoption because they want to offer a home to a child or because they are unable to bear a child themselves.

Adoption is not quick. It requires persistence, patience, and the willingness to work with an agency. Such agencies take seriously their job of matching parents and children. Foster parenthood offers an opportunity to care for and provide a home for children who may not be able to stay permanently. Opening a home—and life—to a foster child can be both challenging and rewarding.

## SECTION 2 Review

### Reviewing the Facts

1. **Identify.** What outside pressures do people encounter while deciding whether or not to have a child?
2. **Explain.** Why might people choose adoption?

### Writing Critically

3. **Narrative.** Write a short letter persuading a couple to think about the responsibilities of parenting.



For more information on health careers, visit Career Corner at [glencoe.com](http://glencoe.com).



# Reproduction

## SECTION

# 3

The beginning of a new human being takes place in a single moment. That event is **conception**, *the union of an ovum and a sperm that starts a new individual*. Because many complex events lead up to conception, it may be helpful to review the male and female reproductive systems before proceeding with an explanation of conception. Reread the “Physical Maturation” section in Chapter 3, as well as the sections on the reproductive systems in Chapter 6.

## The Menstrual Cycle and Conception

**MAIN IDEA** ▶ The menstrual cycle prepares the female body for pregnancy. Conception occurs when an ovum and a sperm unite.

Males and females differ in the way they produce reproductive cells. Males produce **sperm**, *the male cells of reproduction*; females produce eggs, or **ova** (singular, *ovum*), *the female cells of reproduction*. In males, a constant flow of the hormone testosterone stimulates sperm cells to mature daily at a steady rate. In the female system, only one (or, rarely, two or three) ova ripen and are released from the ovary each month. This cyclic ripening depends on hormonal changes that occur in a monthly rhythm; this is called the **menstrual cycle**, *the cyclic ripening of an ovum and the preparation of the uterus for pregnancy*.

### The Menstrual Cycle

Every 28 days on average, the uterus prepares for a pregnancy. The cycle begins with the building up of the uterine lining (endometrium) with soft tissue and a rich blood supply. At about midcycle, **ovulation** occurs—*the ripening and release of an ovum*.

The ovum is gently swept into the tube leading to the uterus. If the egg encounters sperm cells in the fallopian tube, the egg may become fertilized. If fertilized, it may embed in the prepared uterine lining, beginning a pregnancy.

If the egg is not fertilized, or if the fertilized egg does not embed in the uterine lining, it passes out of the body unnoticed. With no pregnancy, the uterine lining weakens in the two weeks following ovulation, and is eventually shed. This shedding of the uterine lining is called menstruation. Following menstruation, the whole cycle begins anew. The cycle is summarized in **Figure 20.5** on page 550.

## Vocabulary

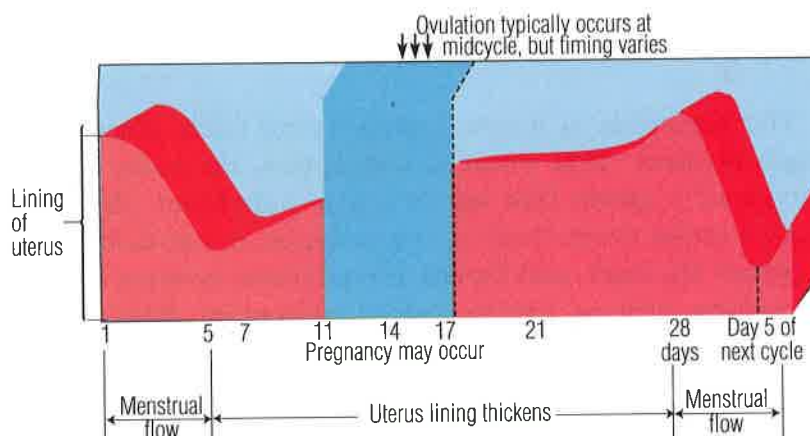
conception  
menstrual cycle  
sperm  
ova  
ovulation  
fertilization  
implantation  
fertility awareness method



**Figure 20.5**

## The Menstrual Cycle

The cycle begins with bleeding. The lining of the uterus then begins to thicken to become ready to support pregnancy. If no pregnancy occurs, the lining weakens and is shed in menstrual bleeding to start the cycle again.



In menstruation, a few tablespoons of blood and fragments of the uterine lining flow from the vagina. Menstruation lasts for four to five days on average. These few days of menstrual flow are only the outward sign of the events that have taken place in the body in the earlier four weeks.

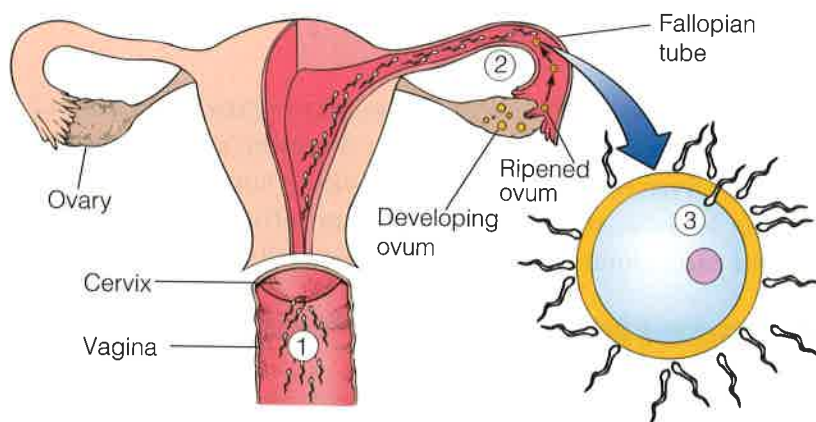
Menstruation normally varies from month to month. It may arrive late or early, with lighter or heavier flows. It may last for a longer or shorter amount of time than expected, though the typical range is 24 to 35 days. Contractions of the uterus—menstrual cramps—are also normal during menstruation. If cramping is uncomfortable, treatment with over-the-counter medicines is usually effective. Should cramping become severe, or should menstrual irregularities become extreme, a health care provider should check for problems.

## Conception

Inside the woman's ovary, an ovum becomes ready for **fertilization**, *the joining of an ovum and sperm*. During sexual intercourse, sperm swim up the vagina, through the cervix, through the uterus, and into the fallopian tubes. The ovum, now in the fallopian tubes, powerfully attracts sperm cells to its surface. One sperm finally enters the ovum, triggering an instant change in the ovum's surface so that no more sperm can penetrate (see **Figure 20.6**). The DNA of the two cells unites within the fertilized ovum to produce a zygote, which travels through the remainder of the tube and into the uterus, and implantation occurs. **Implantation** is *the process in which the ovum implants itself in the uterine wall* and begins to develop. About 60 percent of all fertilized ova either fail to implant or dislodge later, to be shed from the body.

For conception to occur, sexual intercourse must take place within a certain time frame. An ovum lives for just 12 to 24 hours, and living sperm must be present during this brief life span if they are to fertilize the ovum. Sperm can live for up to five days within the female reproductive tract, so intercourse within a few days before ovulation can easily lead to conception.





**Figure 20.6**

### Fertilization

Sperm (1) begin the journey toward a ripened ovum, released earlier from the ovary (2). The sperm work together to weaken the ovum's outer layer, but only one sperm can enter (3). Both sperm and ovum have been greatly enlarged for this illustration.)

A couple who wants to conceive can use the **fertility awareness method**, a method of charting ovulation. It is used to help a female determine the time of ovulation by tracking menstrual periods, body temperature, and types of cervical mucus. The couple can then time sexual intercourse to make sure sperm are available at the right time to fertilize the ovum.

## SECTION 3 Review

### Reviewing the Vocabulary

Review the vocabulary on page 549. Then answer these questions.

1. The union of an ovum and a sperm is called \_\_\_\_.
2. Define *menstrual cycle*.
3. The male cells of reproduction are called \_\_\_\_.
4. What is *implantation*?

### Reviewing the Facts

5. **Explain.** What is the purpose of the menstrual cycle?
6. **Describe.** What happens to the egg after one sperm penetrates it?
7. **Identify.** How long do sperm live in the female reproductive tract?

### Writing Critically

8. **Personal.** Why do you think it is important for females to understand menstruation? Why is it important for males to understand menstruation?



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# Pregnancy

Preparation for a healthy pregnancy begins far in advance. Pregnancy and childbearing takes planning and preparation. This involves medical checkups, making sure immunizations are up to date, stopping smoking and other harmful habits, proper nutritional planning, and eliminating medicines.

## Concerns Before Pregnancy

**MAIN IDEA** ► Health habits of both parents prior to pregnancy can affect the health of the baby.

Before conception, both parents should be aware that a male's health habits are just as important as the female's. It is recommended that females visit their health care provider to discuss their general health and how it may affect a pregnancy. Doctors will want to review medical history, immunization history, genetic history, and more.

At the time of possible conception, both parents should be free from drugs of all kinds—over-the-counter medications, prescription medications (with the physician's prescription), caffeine, and mind-altering drugs, including alcohol.

Both prospective parents should eat a healthful diet. Nutrition affects the ova and sperm, and good nutrition supports the hormone balance needed for conception. Before pregnancy, a healthy diet would well cover the nutrient needs of the future parents.

■ **Figure 20.7** Both parents can prepare in advance for a healthy pregnancy. What steps can pregnant females take to help ensure a healthy pregnancy and delivery?





A female who chooses a poor diet in order to lose weight or who snacks on candies and high-fat snacks may not receive the nutrients she needs to maintain nutrient stores. She may not know how to choose a good diet, or she may not have enough money to buy nourishing food. If pregnancy is in a female's future, she should develop healthy eating habits now. She should take a daily multivitamin too. She should also be physically active. Then, once pregnancy is confirmed, she can continue eating and exercising as she did before, and her baby will likely be healthy.

## Pregnancy Tests

**MAIN IDEA** ► Pregnancy tests will confirm that a child was conceived.

Long before any tests are taken, a female may suspect that she is pregnant. A typical sign is a missed menstrual period. However, periods are missed for many reasons. Vaginal bleeding similar to a period can occur, so regular bleeding does not mean a female is not pregnant. Another sign is that the breasts may become tender and full, and the nipples may darken.

A chemical test can confirm that a female is pregnant. All such tests rely on detecting one of the hormones produced by the placenta. Home pregnancy test kits are available from drugstores without a prescription. Sometimes the results are uncertain. In those cases, a blood test at the doctor's office will provide conclusive results.

## SECTION 4 Review

### Reviewing the Facts

1. **Explain.** What health habits should both parents maintain if they are considering beginning a pregnancy?
2. **Describe.** Describe the most likely reasons why women might be poorly nourished in our society.
3. **List.** List two signs of pregnancy in a female's body.

### Writing Critically

4. **Expository.** Write a paragraph to explain the importance of good health for parents before conception.



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# Fetal Development

**Gestation** is the period from the last menstrual period to birth. In each stage of gestation thereafter, the developing future infant is given a name—first zygote, next embryo, and finally fetus. **Figure 20.8** displays each stage.

## Stages of Gestation

### Vocabulary

zygote  
gestation  
embryo  
placenta  
amniotic sac  
umbilical cord  
critical periods  
miscarriage  
lactation  
morning sickness  
high-risk pregnancy  
prenatal care  
low birth weight  
premature infant  
small for date

**MAIN IDEA** ▶ There are three stages of gestation, each of which includes important fetal development.

A day after fertilization, the fertilized egg—even while it is still traveling toward the uterus through the fallopian tube—begins to divide. If the first two new cells become detached at this stage, two babies—identical twins—will begin to develop. (In contrast, if two eggs have been released and fertilized at the same time, the two babies will be fraternal twins, not identical twins.)

The fertilized egg, upon its first division, becomes a **zygote**, the product of the union of ovum and sperm, so termed for two weeks after conception. After the zygote becomes implanted in the uterine wall, cell division goes on and on. Each new set of cells divides again to create a ball of many smaller cells. These cells sort themselves into three layers that eventually form the various body systems.

From the zygote's outermost layer of cells, the nervous system and skin begin to develop. From the middle layer, the muscles and internal organ systems form. From the innermost layer, the glands and linings of the digestive, respiratory, and urinary tract systems form.

### The Embryo

An **embryo**, the developing infant during the third through the eighth week after conception, goes through many changes. The number of cells in the embryo doubles approximately every 24 hours. In comparison, this rate slows to only one doubling during the final ten weeks of pregnancy. The embryo's size changes very little. However, the events taking place are of enormous importance.

At ten weeks, the embryo is only a little more than an inch long. However, it already has a complete (although immature) central nervous system and digestive system, a beating heart, well-defined fingers and toes, and the beginnings of facial features. Anything that disrupts the embryo's rapid development at this early stage—when some females do not yet know they are pregnant—alters the structure of the body permanently.



## The Fetus

The fetus is the developing infant from the ninth week after last menstrual period until birth. The tasks of the fetus are to gain in size and weight. Each organ grows to maturity with its own timing. Each organ has certain **critical periods** during its growth—*periods during development when a body organ is especially sensitive to harmful factors*.

Outside events can affect an organ's critical period. If, during the critical period, an organ's cell division is limited by some factor, that organ will be damaged. Later recovery is impossible. Thus, exposure to a harmful chemical, a nutrient deficiency, or other injury during one stage of development might affect the heart. During another stage, it might affect the developing limbs.

The brain and central nervous system are first to reach maturity in the developing fetus. During its critical period, the fetal brain increases by 250,000 cells a minute. Problems during the brain's critical period can limit brain development permanently. Mental functioning throughout life can be subnormal. Pregnancy, then, is clearly a time for a female to take special care of her health.

## The Placenta and Other Structures

**MAIN IDEA** ► The placenta provides nutrients, other materials, oxygen, and waste disposal for the developing fetus.

After implantation, a new organ that permits exchange of materials between maternal and fetal blood called the **placenta** grows within the uterus, shown in Figure 20.9 on page 556. Two other new structures form. One is the **amniotic sac**, a fluid-filled balloon that houses the developing fetus. The other is the **umbilical cord**, a ropelike structure stretching from the fetus's "belly button" to the placenta. The umbilical cord contains blood vessels that conduct the fetus's blood to and from the placenta.

The placenta is tissue in which fetal and maternal blood flow side by side. The two bloods never mix. The mother's blood delivers nutrients and oxygen to the fetus's blood across the walls of the vessels. Fetal waste products are carried away by the mother's blood, to be excreted by the mother.

The placenta is a highly active organ. It gathers up hormones, nutrients of all descriptions, large proteins such as antibodies, and other needed items and pumps them into the fetal bloodstream. The placenta also releases hormones across a membrane into the maternal blood to maintain pregnancy.

Figure 20.8

### Stages of Gestation



Zygote: From fertilization through week 2



Embryo: From week 3 through week 8



Fetus: From week 9 through the end of pregnancy

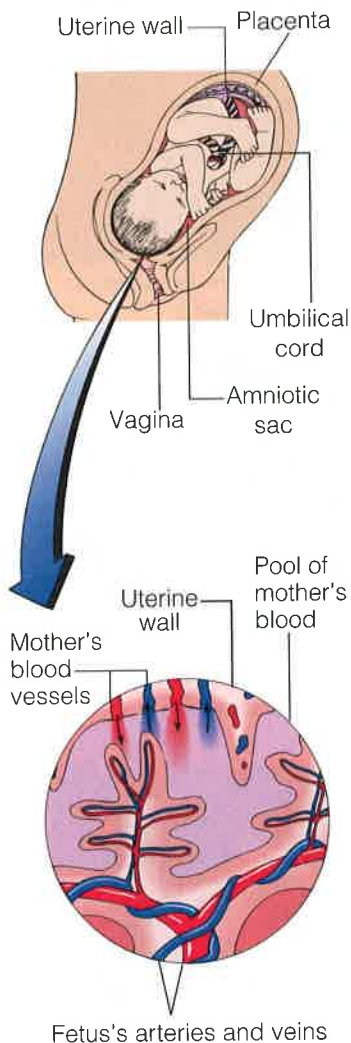


A newborn infant



**Figure 20.9**

## The Placenta



The placenta must develop normally if the future infant is to grow properly. Should the placenta break down, the fetus would be left with no source of nutrients or oxygen. One reason why nutrition before pregnancy is so important is that the placenta is built largely from nutrient stores already in the mother's body at the start of pregnancy.

## Miscarriage

**MAIN IDEA** ▶ A pregnancy may end due to miscarriage.

Not all fertilized eggs develop to become infants. About 10 percent fail to implant in the uterus and are shed without anyone's ever knowing they were there. Of those that implant, about half are shed in **miscarriage**. It is *the expelling of a zygote, embryo, or fetus from the uterus, not induced by medical means*. Miscarriage is the most common complication of early pregnancy. Many times it prevents imperfect embryos from becoming full-term infants.

Most miscarriages take place early, with no other sign than a heavy menstrual flow. A female who experiences a miscarriage late in her pregnancy may feel significant grief at the loss of her unborn child.

Many miscarriages occur because of chromosomal abnormalities or other abnormal types of development. Certain factors such as age, smoking, drugs, caffeine, and weight can increase the risk of miscarriage.

## Ectopic Pregnancy

Ectopic pregnancy results when a zygote implants not in the uterus but in the fallopian tube, abdomen, ovary, or cervix. This makes it impossible for the fetus to receive nourishment and grow. An ectopic pregnancy cannot lead to the birth of a healthy fetus. Without diagnosis and treatment, the pregnancy eventually ruptures the tube. This can be fatal to the pregnant female.

## Prenatal Care

Prenatal care ensures the health of the female and her baby. Seeing a doctor regularly throughout the pregnancy will provide a new mother with the care and nutritional advice she needs. The doctor will also monitor the development of the fetus.

A doctor is able to confirm normal growth, diagnose if there are any problems caused by the pregnancy, and discuss basic skills for caring for the newborn. An unborn baby receives nourishment from the mother. Pregnant females are encouraged to take prenatal vitamins to ensure the baby receives essential nutrients. A doctor can prescribe the right vitamins to meet the needs of the mother and her growing fetus.



# Changes During Pregnancy

**MAIN IDEA** ► Physical and emotional changes occur during pregnancy.

There are many changes that affect a female when she's pregnant. She starts to produce more blood. Her uterus and its supporting muscles increase in size and strength. Her joints become more flexible in preparation for childbirth. Her breasts grow and change in preparation for **lactation**, *the production of milk by the mammary glands of the breasts for the purpose of feeding babies*. The hormones creating all these changes may also affect her brain and change her mood. She may experience constipation, shortness of breath, frequent urination, backaches, or **morning sickness**, *the nausea a pregnant woman may suffer at any time of the day*. Morning sickness results from the many hormones needed to support pregnancy. Sometimes, eating crackers before getting out of bed or snacking on small meals helps to relieve it.

Physical activity may reduce some discomfort, and fitness helps to ensure a quick recovery from childbirth later on. Most types of physical activity are approved, as long as the abdomen is protected against injury. A pregnant female should progress slowly in an exercise routine. If a female is physically active before pregnancy, she should continue as before, so long as she is comfortable doing so.

As pregnancy stretches the skin over a female's abdomen, buttocks, and breasts, the skin's lower layers may begin to painlessly separate, forming scars. The tendency to develop "stretch marks" runs in families. During pregnancy, as at other times, a woman needs to deal healthfully with stress. Studies suggest that stress can cause changes in the nerve cells of embryos. Pregnant females should practice the relaxation techniques described in Chapter 4.



■ **Figure 20.10** Relaxation is important for the pregnant female and the developing child. List some changes pregnant females experience during pregnancy.



**Figure 20.11****Example Weight Gain During Pregnancy**

Development	Weight Gain
Infant at birth	7½ pounds
Placenta	1 pound
Mother's added blood	4 pounds
Mother's added fluid	4 pounds
Growth of uterus	2½ pounds
Growth of breasts	3 pounds
Fluid to surround infant	2 pounds
Mother's fat stores	7 pounds
Total	31 pounds

## Nutrition During Pregnancy

**MAIN IDEA** ► Nutrition in pregnancy is critical to the health of the fetus and the mother.

An earlier part of this chapter pointed out that malnutrition or obesity before pregnancy can affect the health of a future fetus. During pregnancy, malnutrition not only can reduce the infant's number of brain cells but also can impair every other body organ and system.

A female's nutrient needs during pregnancy are greater than at any other time of life. When the baby is born, its body will contain bones, muscles, blood, and other tissues made from nutrients the mother eats. For a pregnant teen, nutrient needs are extraordinary. This is because the food she eats must supply the nutrients not only to support her growing baby but also her own growth. A diet that includes a variety of foods is the best source of all the needed nutrients.

A female's nutrient needs increase tremendously in pregnancy, but her energy (calorie) needs increase just a little. A pregnant female should not "eat for two." If she does, she will gain unneeded fat and give birth to a fat baby. She needs foods with high nutrient levels but low calorie levels. That means she needs a diet about the same as the one recommended in Chapter 7, but with one more serving of vegetables daily, and one more daily serving of meat or meat alternatives.

Normal weight gain is between 25 and 35 pounds—mostly of lean tissue—during pregnancy. This weight gain supports normal growth of the placenta, the uterus, the breasts, and a 7½-pound baby, as well as an increased blood and fluid volume. **Figure 20.11** shows an example of how a weight gain of 31 pounds is distributed. Pregnant teens should strive for gains at the upper end of the range, because some of the weight gained is that of their own maturing bodies.



Obese women should gain less—about 15 pounds. Their weight gain should not be of fat, but of lean tissue built from nutrient-dense foods.

## High-Risk Pregnancies

**MAIN IDEA** ► One common outcome of a high-risk pregnancy is a low-birth-weight baby.

Some pregnancies pose risks to the life and health of the mother and fetus. **Figure 20.12** lists factors that identify a **high-risk pregnancy** or a *pregnancy more likely than others to have problems, such as premature delivery or a low birth weight*. Many of the factors that threaten pregnancy are easy to control once they are discovered. This is why early **prenatal care**, *medical and health care provided during pregnancy*, is so important. Many clues to abnormalities are present in samples of maternal blood or urine.

A pregnant teen is considered at special risk. The demands of pregnancy compete with those of her own growth. Pregnant teens also have more complications during pregnancy, including an increased likelihood to become anemic. Teen mothers are more likely than any other age group to bear premature and low-birth-weight infants. A **low-birth-weight** *infant weighs less than 5½ pounds*.

**Figure 20.12**

**Factors Affecting Pregnancy Outcome**

Factor	Effect on Risk
Maternal weight	Too low weight and too high weight increase risk.
Maternal malnutrition	Nutrient deficiencies and overdoses increase risk. Food fads increase risks of malnutrition.
Socioeconomic status	Poverty, lack of family support, and lack of education increase risk.
Lifestyle habits	Smoking, as well as drug and alcohol use and abuse, increases risk.
Age	The youngest and oldest mothers have the greatest risk.
Pregnancies Number Timing Outcomes Multiple births	The more previous pregnancies, the greater the risk. The shorter the time between pregnancies, the greater the risk. Problems during previous pregnancies increase risk. Twins or triplets increase risk.
Maternal blood pressure	High blood pressure increases risk.
Sexually transmitted diseases	Many such infections, including AIDS, can attack the fetus and greatly increase risk.
Chronic diseases	Diabetes, heart and kidney disease, certain genetic disorders, and others increase risk.



Low birth weight can arise from two causes. One is early birth. *When the infant is born early*, it is called a **premature infant** (born before the 37th week). Such babies are the right size for the number of days they have spent in the uterus, and their development is normal. They may be small, but they catch up if given proper care. The other cause of low birth weight is growth failure in the uterus. Low-birth-weight infants may face illnesses such as cerebral palsy, small head size, lung disease, and more. *Babies who are small because of underdevelopment* are called **small for date**. These infants do not catch up as well.

A pregnant female should eat balanced meals. Participating in regular physical activity is also recommended, as is avoiding tobacco, alcohol, and other drugs. Seeing a health care professional throughout a pregnancy can help a mother identify any potential issues and answer questions that may arise.

## SECTION 5 Review

### Reviewing the Vocabulary

Review the vocabulary on page 554. Then answer these questions.

1. \_\_\_\_\_ is the period from conception to birth.
2. The developing infant during the third through the eighth week after conception is called an \_\_\_\_\_.
3. The \_\_\_\_\_ is the ropelike structure through which the fetus's veins and arteries extend to and from the placenta.
4. The production of milk by the mammary glands for the purpose of feeding babies is called \_\_\_\_\_.
5. \_\_\_\_\_ is health care provided during pregnancy.

### Reviewing the Facts

6. **Explain.** What does the mother's blood deliver to the fetus?
7. **Describe.** Describe an embryo at eight weeks.
8. **Analyze.** Why is a pregnant teen at special risk?

### Writing Critically

9. **Expository.** Why is early prenatal care so important to pregnant teens?



For more vocabulary practice, play the eFlashcards game at [glencoe.com](http://glencoe.com).



# Birth Defects and Other Problems

## SECTION

# 6

Although most infants are born healthy, some have congenital abnormalities. **Congenital** means *present from birth*. Some of these conditions are diseases. Others involve abnormally formed body parts, and these are known as **birth defects**, *physical abnormalities present from birth*. Congenital abnormalities can arise from many causes. Two of them, genetic inheritance and exposure to harmful chemicals or radiation before or during the development of the fetus, are discussed here. Others include accidents during childbirth, severe nutrient imbalances, and exposure to excessive heat.

## Inherited Problems

**MAIN IDEA** ► **Congenital abnormalities can cause health issues for a lifetime.**

Certain abnormalities run in families. A **genetic counselor**, *an advisor who predicts and advises on the likelihood that congenital defects will occur in a family*, can advise a family on the odds of bearing a child with a congenital abnormality and help them choose whether to bear or adopt children.

### Down Syndrome

A risk more common in pregnancies of older females than younger ones is bearing a child with **Down syndrome**, *an inherited condition of physical deformities and mental retardation*. The condition starts at fertilization, when an error in the transfer of genetic material occurs. The error is then repeated and passed on to every cell of the child's body.

### PKU

Many other inherited conditions affect offspring. **PKU** (phenylketonuria) is *a congenital disease causing severe brain damage with mental retardation if left untreated*. This condition is the inherited inability of the cells to handle one of the amino acids (parts of protein). At birth, every baby born in the United States is tested for PKU by the medical attendant so that PKU babies may be given a special diet right away to prevent brain damage.

Many inherited problems can be prevented or controlled with special diets or drugs. Thanks to appropriate prenatal care and tests such as **amniocentesis**, *a test of fetal cells drawn by needle through the female's abdomen*, most babies are born healthy.

## Vocabulary

congenital  
birth defects  
genetic counselor  
Down syndrome  
PKU (phenylketonuria)  
amniocentesis  
spina bifida  
neural tube defects  
sudden infant death  
syndrome (SIDS)



**Figure 20.13**

## Effects of Drugs on Pregnancy

**Amphetamines** Possible nervous system damage; behavior abnormalities

**Barbiturates** Drug withdrawal in the newborn lasting up to six months

**Cocaine** Uncontrolled jerking motions; paralysis; abnormal behaviors; permanent mental and physical damage

**Marijuana** Short-term irritability at birth

**Opiates (including heroin)** Drug withdrawal in the newborn; permanent learning disability (attention-deficit/hyperactivity disorder)

## Health Skills

### How to Keep a Pregnancy Safe

1. Avoid drugs, smoking, and alcohol.
2. Engage in moderate physical activity.
3. Avoid environmental toxins.
4. Skip unnecessary X-rays.
5. Eat healthfully.

## Harmful Factors

**MAIN IDEA** ► Pregnant females should avoid several substances to protect the health of the fetus.

Chemicals, radiation, and many other factors cause birth defects. Such factors may damage developing organs directly. They also may act by limiting the supply of oxygen or nutrients to the fetus. Many attack the genetic material of the dividing cells. When the genetic material in a cell of a developing embryo or fetus is damaged, the damage multiplies with every division. The final, completed organ of which those cells are a part remains abnormal throughout life.

### Alcohol and Other Drugs

Many drugs, including alcohol, are known to damage developing fetuses. Alcohol abuse can lead to fetal alcohol syndrome. Drugs of abuse also harm developing fetuses. Some are listed in Figure 20.13.

### Nutrition and Spina Bifida

Very high doses above the medically recommended level of some nutrients can be harmful in pregnancy—especially large doses of vitamins A, B<sub>6</sub>, C, and D; the mineral iodine; and other minerals. A diet lacking fruits and vegetables can also be harmful. This diet may also lack an important vitamin, folate. Low folate levels jeopardize the nerve development of a fetus. Normal development of the brain, nerves, and spine depends on folate to prevent **spina bifida**, a birth defect often involving gaps in the bones of the spine, leaving the spinal cord unprotected in those spots, and other **neural tube defects**, a group of birth defects caused by interruption of normal development of the neural tube. These defects range from mild spine abnormalities to serious brain defects causing death shortly after birth.

About half of all neural tube defects are believed to be preventable by an adequate intake of folate before and during early pregnancy. For this reason, all cereals, breads, rice, pasta, and other foods already enriched with other nutrients must now also contain extra folate.

### Smoking and SIDS

Smoking is harmful to everyone's health, particularly pregnant females. Smoke contains carbon monoxide, which prevents the full amount of oxygen from getting to the fetus. As a result, low birth weight is possible.

In addition, **sudden infant death syndrome** (SIDS)—the sudden, unexplained death of an infant—may be linked to cigarette smoking by a pregnant female or by others in her household during pregnancy. Finally, the surgeon general has warned that maternal cigarette smoking causes death in otherwise healthy fetuses and newborns.



## Caffeine

The caffeine in a cola or two is well within safe limits for pregnant females. The Health Skills sidebar, “How to Keep a Pregnancy Safe,” sums up the risk factors most important to avoid during pregnancy.

## Environmental Hazards

Hazards from environmental contaminants are severe. A female who fears that she may have been exposed to an environmental danger should see a health care specialist to find out what to do. Ordinary household chemicals, such as insecticides or cleaning fluids, should be used with caution.

Pregnant females should avoid eating certain types of fish that are known to contain higher than average levels of mercury. These include shark, swordfish, and king mackerel.

Like chemicals, radiation can harm cells. Radiation passes through cells and disrupts their genetic material. One way a fetus might be exposed to such radiation is through X-rays. If an X-ray examination becomes necessary, the female who knows or suspects that she is pregnant should inform all medical personnel.

## SECTION 6 Review

### Reviewing the Vocabulary

Review the vocabulary on page 561. Then answer these questions.

1. \_\_\_\_ means present from birth.
2. Define *Down syndrome*.
3. What is *amniocentesis*?
4. Define *neural tube defects*.

### Reviewing the Facts

5. **Identify.** Identify some causes of abnormalities in pregnancy outcomes.
6. **Explain.** Why shouldn't pregnant females smoke?

### Writing Critically

7. **Personal.** What can you do to encourage parents to keep pregnancies safe?



For more vocabulary practice, play the Concentration game at [glencoe.com](http://glencoe.com).



## Vocabulary

lightening  
 labor  
 false labor  
 dilation stage  
 expulsion stage  
 crowning  
 episiotomy  
 placental stage  
 afterbirth  
 breech birth  
 cesarean section  
 postpartum depression

# Childbirth

As the time for birth nears, conditions become restricted in the uterus. The fetus's head then turns downward and fits snugly into the mother's pelvis. *The sensation a pregnant woman experiences when the fetus settles into the birth position is called **lightening**.* The mother feels relief from the pressure on her stomach, heart, and lungs. She can breathe and eat more easily.

## Labor and Delivery

**MAIN IDEA** ► Childbirth progresses in stages. It may be preceded by false labor.

**Labor** means *contractions of the uterus strong enough to push the fetus through the vagina for delivery.* Mild contractions known as **false labor** are *warm-up contractions that many females experience before the birth process.* These are common throughout late pregnancy. They indicate that the uterus is preparing for the work of labor to follow.

Labor begins as the female's hormones cause her uterus to contract powerfully and rhythmically. Labor proceeds in stages. The first is the **dilation stage**, *the stage of childbirth during which the cervix is opening.* The cervix dilates until the baby's head can pass through. In this stage, the contractions become more powerful and closer together.

Next is the **expulsion stage**, *the stage of childbirth during which the uterine contractions push the infant through the birth canal.* The birth canal is another name for the vagina. **Crowning** occurs; *this is the stage in which the top of the baby's head is first seen.* The amniotic sac breaks (if it has not broken already), and the baby is born. Sometimes the birth attendant performs an **episiotomy**, *a surgical cut made in the vagina during childbirth when the vagina cannot stretch enough without tearing to allow the baby to pass.* The final stage of childbirth, in which the placenta is expelled is called the **placental stage**. The placenta and membranes expelled after the birth of the child are referred to as **afterbirth**.

## Cesarean Delivery

Most births occur as a vaginal delivery. That means the infant is born with the head exiting the vagina first. Sometimes, however, a **breech birth** can occur in which *the infant is born in a position other than the normal headfirst position.* For example, the baby is born feet or buttocks first with the head last. In some cases, the attendant may decide to perform a **cesarean section**, *surgical childbirth in which the infant is lifted through an incision in the woman's abdomen.*