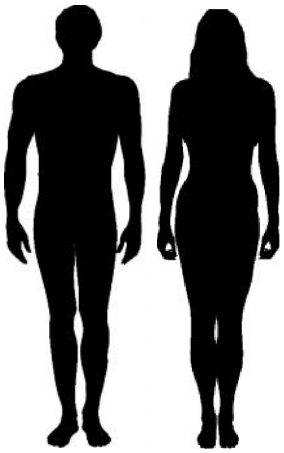
Unit 9: The Reproductive System

Introduction

The list of all the similarities between males' and females' bodies would fill page after page. They both breathe and use oxygen in the same way. Their stomachs digest food in the same way. Both males' and females' bodies have hearts that pump blood. Their bodies fight diseases and grow tissues and bone in exactly the same way. So what is it that makes boys and men *males*, and girls and women *females*? It's obviously more than just the masculine or feminine names we were given at birth.



What is it that makes boys males, *and girls* females*?*

It is our **reproductive system** that makes us either a male or female. Our reproductive system includes all the parts in our body we use to create life—our children. Each sex has different reproductive parts. The female produces the egg cell and carries the growing **fetus** until she gives birth. The male adds the **sperm**, or male reproductive cell, that joins with the egg cell. Once a sperm cell and egg cell join, the female will usually begin pregnancy.

This joint contribution of the male and female to produce life is called *sexual reproduction*. Some insects and animals reproduce **asexually**. That is, they produce life without sexual action. *Asexual* reproduction has some drawbacks. The single parent can only produce exact copies of itself. In sexual reproduction, the children get traits from both the mother and father. This mix of the parents' traits creates a baby that is unique from all other babies. Even identical twins have some differences.

Why Study the Reproductive Systems?

Anyone can have sex. During vaginal **sexual intercourse** a male inserts his **penis** into a female's **vagina**. However, educating ourselves about sex and the reproductive systems will help us be responsible about sexual activity. Anytime a male and female have vaginal sexual intercourse, there is a chance of pregnancy. Unless we understand reproduction, we cannot choose if and when to have children. Choosing when we will try to have

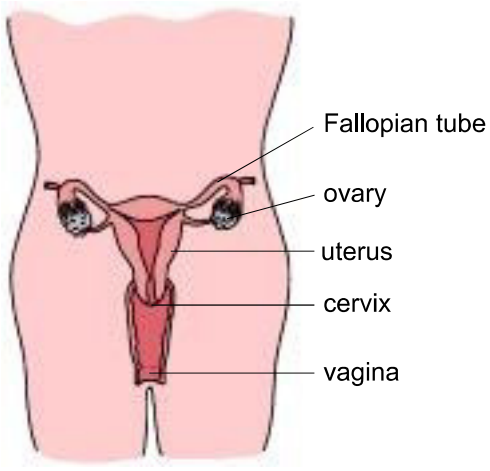
children is called **family planning.** Family planning also means choosing when and how to take precautions *not* to have children. *Family planning* is the responsibility of both males and females. Couples who are most successful in family planning are educated about the reproductive systems. Males need to understand both the male and female reproductive systems. Females also need to understand the systems of both sexes.

Caring for and supporting a baby can be a full-time job.

Ignorance often leads to unwanted pregnancies. Unwanted births usually interrupt the parents' plans for their futures. It's not easy for teenage parents to finish school or find a satisfying job. Caring for and supporting a baby can be a full-time job. And many babies whose parents are teenagers end up as victims of a bad situation. Parenthood is for mature adults. Counselors in family planning help teenagers and adults learn about the body and decide if and when to have children.

The Female Reproductive System: Parts and Organs

The female reproductive system accomplishes three key steps in creating new life. First, the female's system *produces an egg cell* that can develop into a baby if it is fertilized by a male's sperm. If the *egg is fertilized,* it begins to divide and grow. The female's system protects and feeds the egg until it grows into a fully formed fetus. And finally, the woman's reproductive system will *give birth* to this new life.



Female Parts and Organs

The female reproductive system is shaped like the letter *Y*. The tips of the two arms that point in different directions represent the **ovaries**. The **Fallopian tubes** descend from the ovaries to the point where the two arms intersect. At this point they join into the **uterus**. Just below the uterus is the **cervix**, the neck of the uterus. And at the base of the *Y* is the *vagina*.

The Vagina

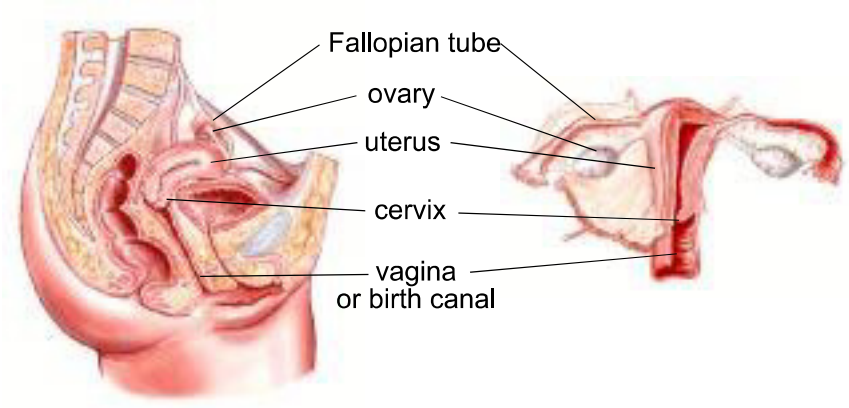
Most of the female reproductive system is within the body and not visible. Only the vaginal opening can be seen from the outside. The *vaginal opening* leads to the rest of the reproductive system, including the vagina.

The vagina plays a key role in the beginning and end of the reproductive cycle. It is the vagina that first receives the male's sperm. It is also the vagina, often called the *birth canal*, from which a fetus exits the uterus during birth.

The Ovaries: Storehouse of Egg Cells

Ovaries are two reproductive sex glands in the female. They are located on each side of the body below the waist. Ovaries have two functions. They produce the hormone **estrogen**. Estrogen triggers development of the female reproductive system. As her system develops, the female becomes capable of having children.

Ovaries also contain hundreds of thousands of eggs. If fertilized, each egg could develop into a baby. At puberty, the ovaries will begin to release one mature egg each month. In most cases, the ovaries will alternate. One month the left one will release an egg. The next month the right one will release an egg. This process is called **ovulation**. Mature eggs will travel from the ovaries to the Fallopian tubes.

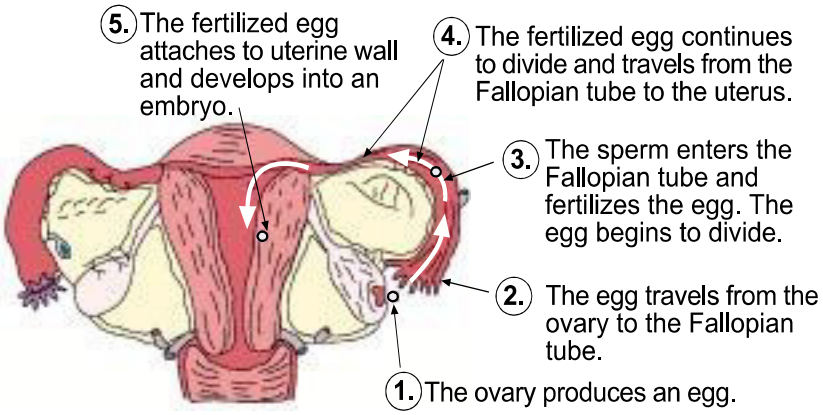


Female Parts and Organs

The Fallopian Tubes: The Place of Fertilization

The Fallopian tubes lead away from the ovaries. One of the tubes will draw the mature egg inside itself. If a sperm cell meets the egg cell in a Fallopian tube, **fertilization** may take place. *Fertilization* is the joining of the egg cell and a sperm cell. This joining of the egg and sperm is also called **conception**.

The fertilized egg begins to divide and develop. It then travels down the Fallopian tube. This journey from the Fallopian tube to the uterus takes about three days. The fertilized egg may then attach itself to the wall of the uterus.



The Fallopian Tubes: The Place of Fertilization

The Uterus: Home to the Fertilized Egg

The uterus, also called a *womb*, becomes the home of the fertilized egg. Here the egg will be nourished and grow. Through the second month, this dividing and developing fertilized egg is called an **embryo**. From the third month on, this life form is called a *fetus*. The fetus has the beginnings of its vital organs. In about nine months a baby will be born. A baby may exit through the vagina, or *birth canal*. If delivery through the birth canal is considered to be risky, an operation called a *Cesarean section* is performed.

Each time the ovaries release an egg, the uterus prepares itself to carry a fertilized egg. The uterus does this by lining its walls with nutrient-rich blood and tissue that can protect the embryo and fetus.

Personal Health Issues and Prevention: Females

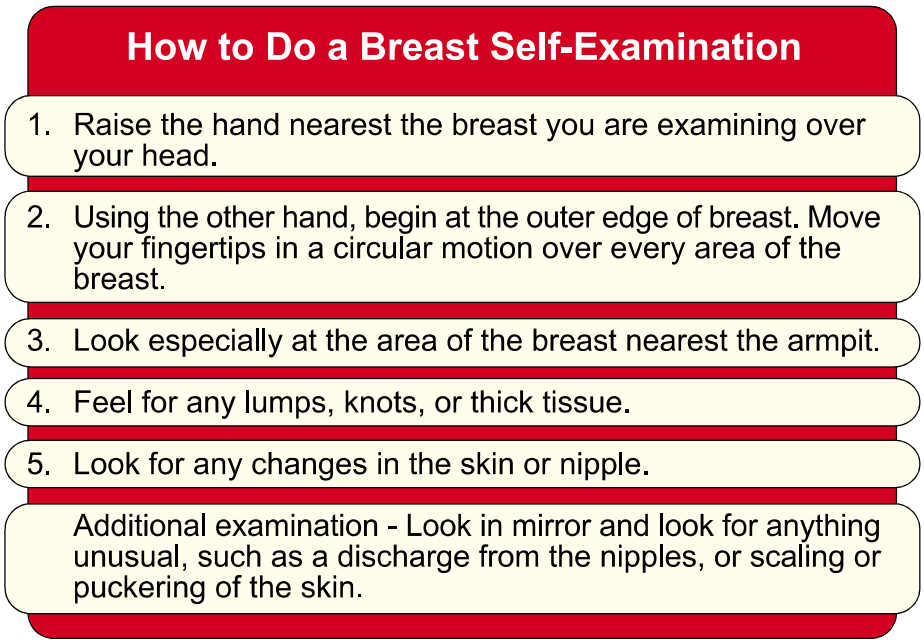
Breast Cancer: Look for Lumps, Knots, and Thick Tissue

Cancer is a disease that can attack any part of the body. Cancer causes cells in the body to grow abnormally. If left unchecked, cancer can spread through the body quickly. About one woman out of eleven will get breast cancer. Male breast cancer is not common, but males can also get breast cancer. For every 100 women who get breast cancer, one man will, too.

In all forms of cancer, early detection can often lead to a cure. This is especially true of breast cancer. If breast cancer is detected early, most females will go on to live normal lives.

The American Cancer Society suggests that women do self-examinations of their breasts. The best time for self-examination is one week after the menstrual period ends. At that time, a woman's breasts are the least tender and swollen.

Self-examination is quite easy. Raise the hand nearest the breast you're examining over your head. Using the other hand, begin at the outer edge of your breast. Move your finger tips in a circular motion over every area of the breast. Look especially at the area of the breast nearest the armpit. Feel for any lumps, knots, or thick tissue. Look for any changes in the skin or nipple.



If any hard tissue or changes are discovered, contact your doctor immediately. Fortunately, 80 percent of all suspicious lumps found in breasts are benign, or harmless.

Some women put off seeing a doctor because of what they fear. They are afraid of losing a part of a breast, or even of losing the entire breast. This fear is natural. Few of us can say that our appearance isn't important to us. Many of us fear medical procedures. But with early detection and new methods, we can limit the effects of breast cancer. **Remember:** Ignoring cancer will not make it go away—only treatment can.

The mammogram is an X-ray of the breasts.

Doctors recommend that all women after about age 40 have a yearly test called a **mammogram**. The mammogram is an X-ray of the breasts. It is quick and painless. If your family has a history of breast cancer, your doctor may request that you begin having mammograms at an earlier age or more than once a year.

For more information on breast cancer, phone your local American Cancer Society or talk to your doctor or nurse.

Cervical and Uterine Cancer

These diseases occur when cancerous cells begin growing in the cervix or uterus. Early detection is the key to treating and curing cervical and uterine cancer. The American Cancer Society recommends that all women over 20, and sexually active women of any age, have a yearly pelvic examination. During this exam, the doctor will do a **Pap test** to check cells from the cervix.

During a Pap test, the female will lie down. A doctor will insert an instrument called a *speculum* into the vagina. With this instrument, a doctor can see inside the vagina up to the cervix. The doctor will scrape cells off of the cervix to be tested. A Pap test is usually painless. A female might feel some slight discomfort—and perhaps some embarrassment. Results are usually available in a day or two.

Disorders of the Female Reproductive System

Premenstrual Syndrome (PMS): Discomfort before Menstrual Periods

Premenstrual syndrome (PMS) is a disorder some women experience from several days to two weeks before their menstrual period. The majority of women never experience PMS. PMS includes many different symptoms: bloating, weight gain, fatigue, mood swings, nausea, and nervousness.

Scientists don't know what causes PMS. Some believe PMS is caused by hormonal imbalance. Most doctors do agree, however, that most females experiencing the symptoms of PMS can lessen their discomfort. Regular exercise and reducing stress are two ways to help reduce some or all of the symptoms of PMS. Other ways include eliminating or reducing sugar, caffeine, nicotine, and alcohol.

If PMS becomes severe, a female may need to see a doctor. Extreme discomfort may be a sign of something that needs medical treatment. A female should always consult a doctor if she is uncertain about health problems.

Vaginitis: Infections in the Vagina

Vaginitis. **Vaginitis** refers to a variety of infections that occur in the vagina. Most women have vaginitis at some time in their lives. Most forms of vaginitis can easily be treated by a doctor. Vaginitis can be caused by a fungus, bacteria, or protozoa. Each vaginitis requires a different kind of treatment. The earlier the treatment begins, the easier it is to cure any of these infections. Although two forms of vaginitis are described below, there are many "nonspecific" forms. Any time that a woman experiences itching and unusual **discharge** from the vagina, she should see a doctor or nurse.

Yeast infections. Signs of a **yeast infection** include a thick, white discharge from the vagina and genital itching. It is a common infection and easily treatable by a doctor.

Trichomoniasis. Women tend to be most vulnerable to this infection near the end of their menstrual period. The signs of **trichomoniasis'** symptoms include an odorous discharge, itching near the genitals, and a burning sensation during urination.

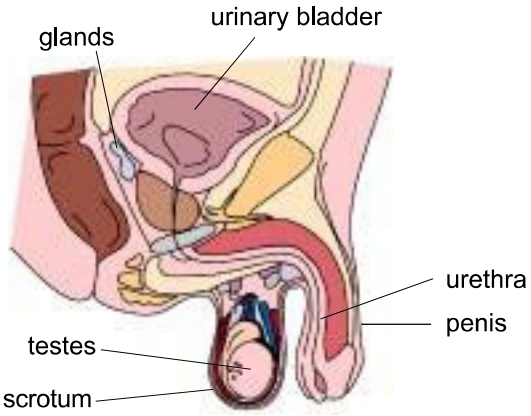
Sterility: An Inability to Reproduce

A common cause of **sterility** in women, or the inability to reproduce, is **endometriosis**. This disorder is an abnormal growth of the lining of the uterus. Surgery can often correct this problem. Endometriosis can cause extremely painful menstrual periods.

Another common cause of sterility in females is the inability to ovulate, or successfully release egg cells. Another cause of sterility is a blocked Fallopian tube. If a Fallopian tube is blocked, the egg cell cannot pass to the uterus.

The Male Reproductive System: Parts and Organs

The entire male reproductive system functions to produce *sperm*, the male reproductive cells, and **ejaculate** them into the female's vagina. Sperm, which look much like tiny tadpoles, will attempt to swim through the vagina. The head of the sperm has the actual male reproductive cell. The tail of the sperm whips back and forth and moves the sperm forward. The sperm swim through the cervix, through the uterus, and finally to the Fallopian tubes. Sperm travel at about one-half inch a minute. There are 300 million to 400 million sperm in each ejaculation, but only one can fertilize an egg cell. If a sperm is strong enough to reach the female egg in the Fallopian tube, fertilization may occur. The egg cell will then begin to divide. A single sperm cell is very small. Lined up end-to-end, 500 sperm would only measure one inch.



Male Parts and Organs

The male reproductive system is made up of glands and a series of tubes. As sperm travel through these tubes, they mix with different fluids that will help them in their journey.

The Testicles

The **testicles**, or *testes*, are two small reproductive glands in males. These glands have two important functions. Testicles produce the male hormone **testosterone**. Like estrogen in girls, *testosterone* begins to change boys into sexually mature adults.

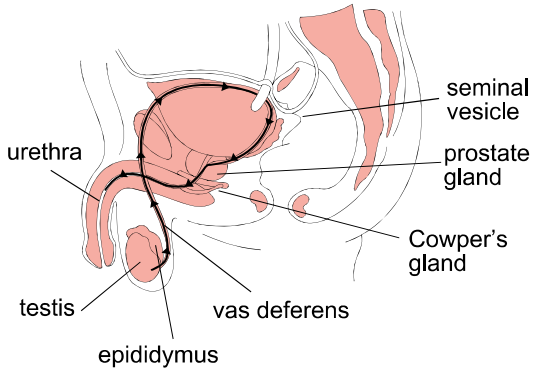
Testicles also produce millions of sperm. In fact, healthy testicles will produce about 100 million sperm a day. Sperm will only survive at a constant temperature of 98.2 degrees Fahrenheit (°F), slightly below the normal body temperature of 98.6°F. If the testicles become colder or hotter, the sperm will die. The **scrotum** is the external sac that holds the testicles and keeps them at the right temperature. When the body is cold, the scrotum will pull the testicles into the body for warmth. When the body is hot, the scrotum will drop a bit to move the testicles away from the body's heat.

The Epididymis: Storehouse for Sperm

Connected to the outer surface of the testicles are large coiled tubes called the **epididymis**. The epididymis functions as a kind of storage house for sperm. Sperm remain there about two to 10 days, until they mature and are ready to be ejaculated.

The Vas Deferens: Passageway for Sperm

When the sperm leave the epididymis, they swim through another long tube. This tube is called the **vas deferens**. Next, the sperm enter the *seminal vesicles*, where they mix with fluid. This fluid both nourishes sperm and helps them continue swimming on their journey.



Passageway for Sperm

From the seminal vesicles, sperm travel through the ejaculatory ducts. Sperm then enter two different glands where they are mixed with two important fluids. The **prostate gland** adds fluid to the sperm that helps them continue moving. The Cowper's gland adds a fluid to clear the urethra of any acidity. If the sperm were to contact acidity, they would die. This new mixture is called **semen**, or *seminal fluid*.

The Urethra: Passageway for Sperm and Urine

The **urethra** is a narrow tube that passes through the *penis*. It has two important functions. Males and females pass urine through the urethra. In males, seminal fluid also passes through the urethra and out of the penis. The male cannot, however, release semen and urine at the same time. When the male ejaculates semen, a muscle blocks the bladder from releasing urine. The high acidic content of urine would kill sperm.

The Penis

During most times, the penis remains soft and hangs down. But when the penis fills with blood, it becomes erect. When erect, the penis can ejaculate semen. As you can see, the reproductive system, in both males and females, is kind of like a factory. First the reproductive system produces a sperm cell or egg cell. Then the system moves the cell through tubes and organs towards its destination.

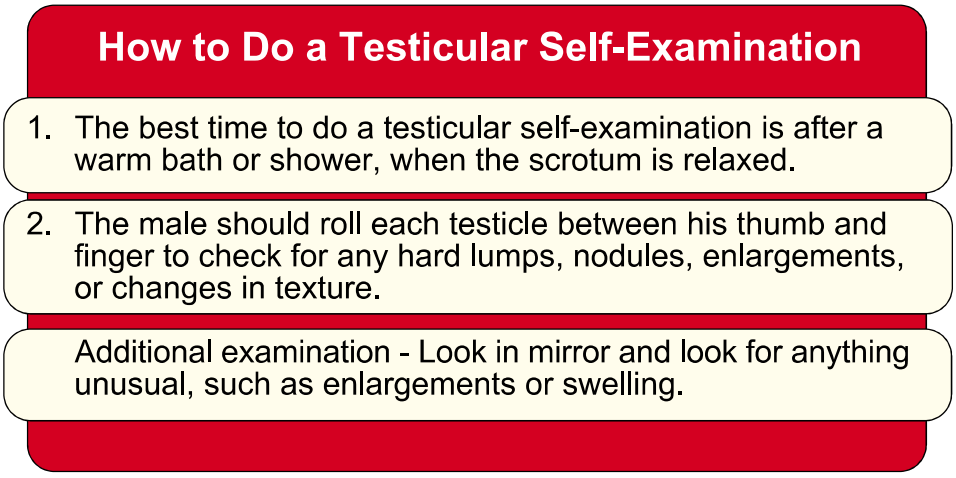
Caring for the Male Reproductive System

Daily cleaning will help keep the genitals—the penis and scrotum—free of rashes and infections. While playing sports, males should support and protect the genitals with athletic supporters or "cups." If a male is hit in the testicles and pain or swelling develops, he should see a doctor.

Diseases of the Male Reproductive System

Testicular Cancer: The Most Common Cancer of Young Males

Testicular cancer is probably the most common cancer in younger males. Early detection almost insures the patient's survival. All males should do a self-examination at least once a month. After a warm bath or shower, the male should roll each testicle between his thumb and fingers to check for any hard lumps or nodules. He should become familiar with the shape and feel of his testicles so he will notice any changes. If a male detects any growths, he should see a doctor.



Cancer of the Prostate Gland: Curable Cancer in Older Males

Cancer of the prostate gland tends to develop in older males. Finding the cancer early can mean the difference between life and death for a patient. If discovered before the cancer spreads from the prostate gland, most patients will survive this disease. At about the age of 40, men should be checked each year for prostate cancer.

Disorders of the Male Reproductive System

Hernia: A Rupture

Hernias happen when a part of the body actually pushes through the wall holding it in place. Hernias are also called *ruptures*. The most common hernia in men is an *inguinal hernia*. An inguinal hernia is a weak spot in the lower abdomen wall near the top of the scrotum. Sometimes straining the abdominal muscles can cause a tear in this spot. A part of the intestines can then push through the scrotum. An inguinal hernia can usually be repaired in out-patient surgery.

Sterility

Sterility in males is caused by weak or poorly formed sperm. These sperm cannot fertilize a female's egg. Sterility can also be caused by too few sperm being produced. Sterility is often caused by smoking; certain sexually transmitted diseases; and problems with the urethra, vas deferens, or epididymis.

Pregnancy, Birth Control, and Prenatal Care

As human beings, we share similarities with many other animals. Humans and many other animals have similar reproductive systems. Humans and many other animals sexually reproduce.

Humans and other animals also have the desire to have sexual intercourse. But unlike other animals, we have one important ability. We can choose *not* to have sexual intercourse. And if we do have vaginal sexual intercourse, we can take precautions to avoid a pregnancy.

Any time a male and female have vaginal sexual intercourse, there is a chance of pregnancy. In fact, there is a 90 percent chance that a couple practicing sex without any form of **birth control** will produce a pregnancy within one year. Anyone who has reached sexual maturity is physically able to have sex. However, most teenagers are not ready to bring a baby into the world and care for it. They are not mature enough or financially ready.

Too often love is used as the test for whether people should have sex. If two people love each other, they sometimes believe that they are ready for sexual intercourse. But there are other questions to be asked and answered. For instance, are they able to be responsible for another life? Could they devote every hour of the day to taking care of a baby? Are they willing and able to give up the free time they now enjoy? Would they be able to complete their education and begin a career? Raising a baby can be a very satisfying experience—if a couple is ready.

Birth Control: Avoiding Pregnancy

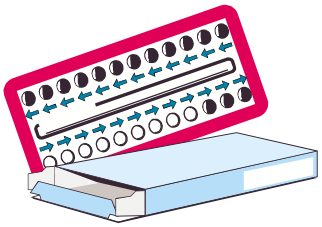
Birth control, or **contraception**, includes all the methods a couple can use to avoid pregnancy. Devices for preventing pregnancy are called **contraceptives**. Many people who have sex use birth control. They may want to see a doctor, nurse, or family planning counselor for information and guidance concerning contraception. When a couple is ready to begin a family and are able to be parents, they stop using birth control. Contraceptives only work when used correctly!

Sexual abstinence. The only contraceptive that is 100 percent effective at preventing pregnancy is **sexual abstinence**. *Sexual abstinence* is not having sex. Practicing abstinence can be difficult. A boyfriend or a girlfriend may pressure his or her dating partner to have sex to show he or she really cares. In addition, many people have a natural desire to enjoy the pleasure of sex. But mature and responsible teenagers do practice abstinence. And remember this: Even if a person is not a **virgin**, he or she can still begin to practice abstinence right now.

Barrier methods of contraception. Some methods of birth control are called *barrier methods*. Like a barrier, they block the sperm from uniting with an egg cell.

One barrier method is the **condom**. A *condom* is a covering the male wears over the penis. A condom is also a covering the female wears in the vagina. Sperm are trapped in the condom. Latex condoms are the most effective condoms. Condoms can be effective as a contraceptive only if they are used every time and used correctly.

The *female condom*, *diaphragm*, *cervical cap*, and *contraceptive sponges* are barrier methods worn inside the female's vagina. They block sperm from fertilizing an egg. When used along with *spermicidal jelly*, diaphragms and cervical caps are very effective at blocking pregnancy. The female condom is slightly larger than the male condom. The cervical cap is a smaller version of the diaphragm. The contraceptive sponge is a small, disposable sponge that already contains spermicide.



Hormonal contraceptives. Hormonal contraceptives use hormones to prevent pregnancy. The *birth control pill* is called an *oral contraceptive* because the female swallows it. This method is nearly 100 percent effective if taken every day. The pill, however, does have possible side effects. Contraceptive injections, skin patches, implants, gels, intrauterine devices (IUDs), and vaginal rings also use hormones to prevent pregnancy.

Contraception that doesn't work. At certain times during her menstrual cycle, a female is less likely to become pregnant. People sometimes plan to have sex only during those times to avoid pregnancy. This method of birth control is called the *rhythm method*. The rhythm method *often fails for teenagers*. Teenage girls rarely have regular cycles. It's almost *impossible* for them to know when they are not likely to become pregnant.

Another sure-to-fail method is *withdrawal*. The male will try to pull his penis out of the female's vagina just before ejaculating. Often he fails. And even if he succeeds, sperm often enter the vagina before ejaculation.

Prenatal Care: Caring for the Baby during Pregnancy

Caring for a baby begins the instant a female becomes pregnant. The pregnant female should practice **prenatal care**. *Prenatal* means *before birth*. A pregnant female should begin prenatal care by seeing a doctor often. A doctor will check the mother's and fetus's condition. The doctor will also give the pregnant mother information to help her keep the fetus healthy.

Caring for a baby begins the instant a female becomes pregnant.

Pregnant females need to eat the right food. They are eating for two: themselves and their fetuses. Poor eating habits can lead to low-birth weight or deformed babies.

Pregnant females need to avoid alcohol, smoking, and drugs. If females drink alcohol during pregnancy, then their fetus takes in the alcohol. Smoking cigarettes and using drugs during pregnancy means the fetus takes in the smoke and drugs, too. Any of the three can cause premature, ill, or even deformed babies.

Pregnant females need to exercise and rest. Exercise and rest will help the fetus's health. They will also help the mother be strong during birth.

Summary

Our *reproductive system* makes us either a male or female. The male's and female's reproductive systems come together in sexual reproduction to produce a life—a baby.

The female reproductive system is capable of producing an egg cell. If the egg cell is *fertilized*, the female may become pregnant. Once she is pregnant, her system nurtures the egg. In the fertilized egg's earliest stage, it is called an *embryo*. In the eggs's later stage, it is called a *fetus*. Finally, the female will give birth to a baby.

Once someone becomes pregnant, she should begin prenatal care.

Once she becomes pregnant, she should begin *prenatal care*. She needs to eat nutritious foods and not drink alcohol, smoke, or do drugs. She also needs to exercise and rest.

Several diseases and disorders can affect the female reproductive system. Diseases include breast *cancer*, and cervical and uterine cancer. Disorders include *premenstrual syndrome (PMS)*, any of the infections generally called *vaginitis*, and the many causes of *sterility*.

The male reproductive system is a series of glands and tubes that produce *sperm cells*. The male reproductive system also makes it possible for sperm to swim to and fertilize the egg cell. Diseases and disorders of the male reproductive system include *testicular* cancer, cancer of the *prostate gland*, *hernias*, and many causes of sterility.

As humans, we have the ability to use *family planning*. We can choose whether and when to reproduce. *Birth control* can help us to avoid pregnancy. The only 100 percent effective method of birth control is *sexual abstinence*. Sexual abstinence, or not having *sexual intercourse*, is recommended for anyone who is not emotionally and physically ready to raise a child.