

The Male Reproductive System

The role of the male reproductive system is:

- To produce sperm
- To discharge sperm into a woman's vagina during sex
- To produce sex hormones which maintain the male reproductive organs

Figure 1 - The Anatomy of the Male Reproductive System

The external reproductive structures

Most of the male reproductive system is located outside of the man's body. The external structures of the male reproductive system are the penis, the scrotum and the testicles.

Penis

The penis is the male organ for sexual intercourse. It has three parts:

- The root, which attaches to the wall of the abdomen
- The body or shaft
- The glans which is the cone-shaped end of the penis
 - The glans, which also is called the head of the penis, is covered with a loose layer of skin called foreskin. (This skin is sometimes removed in a procedure called circumcision.)

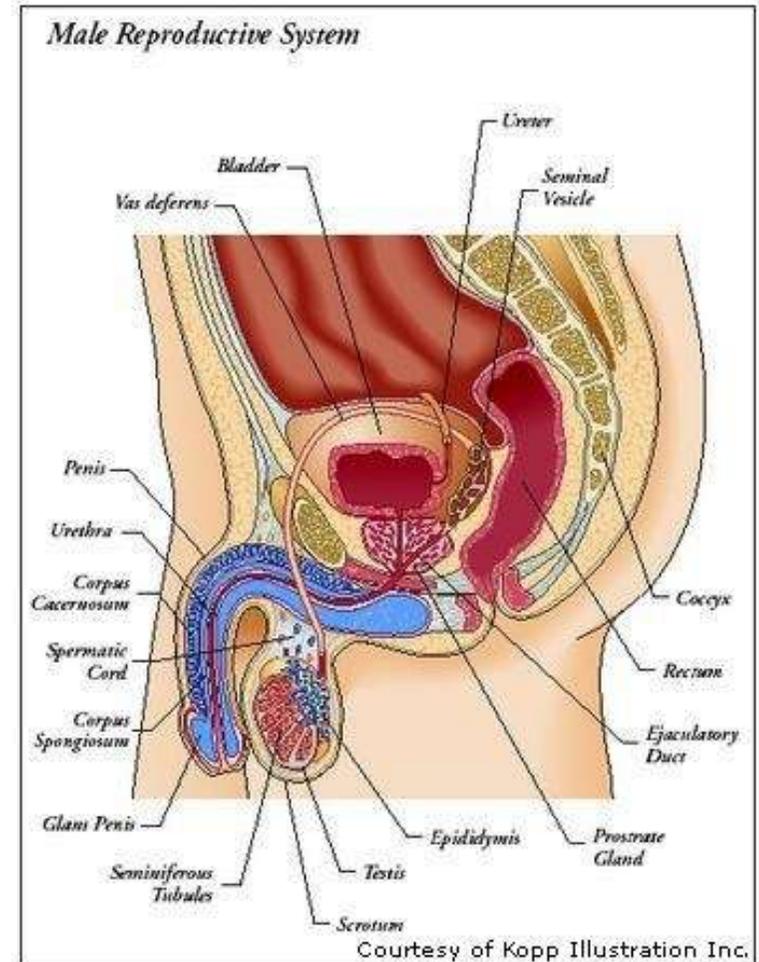
Figure 2 - Male Reproductive System

The opening of the urethra, the tube that transports semen and urine, is at the tip of the glans penis. The penis also contains a number of sensitive nerve endings.

The body of the penis is cylindrical in shape and consists of three internal chambers.

These chambers are made up of special, sponge-like erectile tissue. This tissue contains thousands of large spaces that fill with blood when the man is sexually aroused. As the penis fills with blood, it becomes rigid and erect, which allows for penetration during sexual intercourse. The skin of the penis is loose and elastic to accommodate changes in penis size during an erection.

Semen, which contains sperm, is expelled (ejaculated) through the end of the penis when the man reaches sexual climax (orgasm). When the penis is erect, the flow of urine is blocked from the urethra, allowing only semen to be ejaculated at orgasm.



Scrotum

The scrotum is the loose pouch-like sac of skin that hangs behind the penis. It contains the testicles (also called testes), as well as many nerves and blood vessels. The scrotum has a protective function and acts as a climate control system for the testes. For normal sperm development, the testes must be at a temperature 1-4°C cooler than the body temperature. Special muscles in the wall of the scrotum allow it to contract and relax, moving the testicles closer to the body for warmth and protection or farther away from the body to cool the temperature.

Testicles (testes)

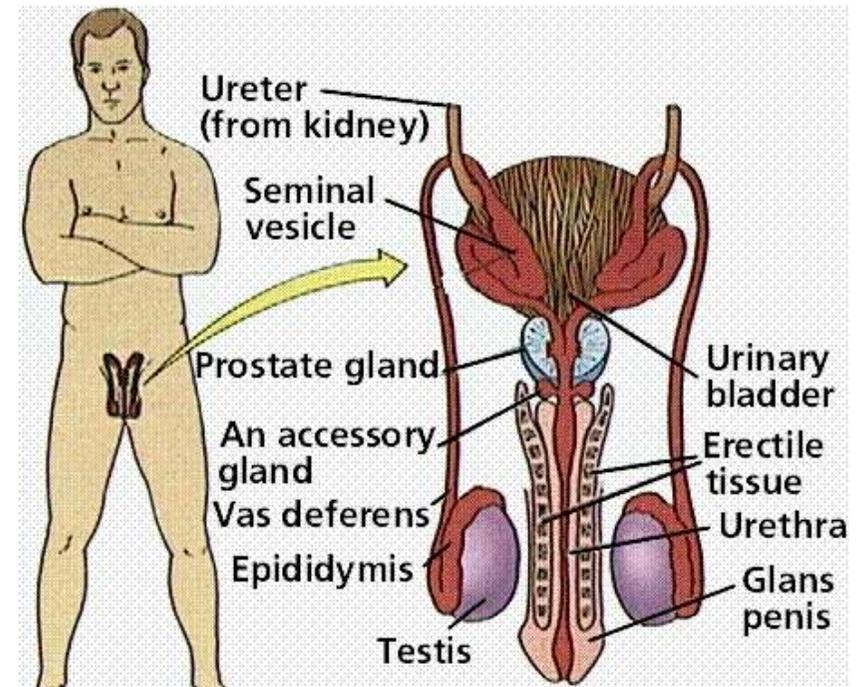
The testes are oval organs about the size of large olives that lie in the scrotum, secured at either end by a structure called the spermatic cord. Most men have two testes. The testes are responsible for making testosterone, the primary male sex hormone, and for generating sperm. Within the testes are 250-300 lobules, each containing coiled masses of tubes called seminiferous tubules. These tubules are responsible for producing the sperm cells through a process called spermatogenesis. The sperm that are formed here are immature and immotile. The passage of these sperm through the epididymis will cause them to mature and become fertile.

Epididymis

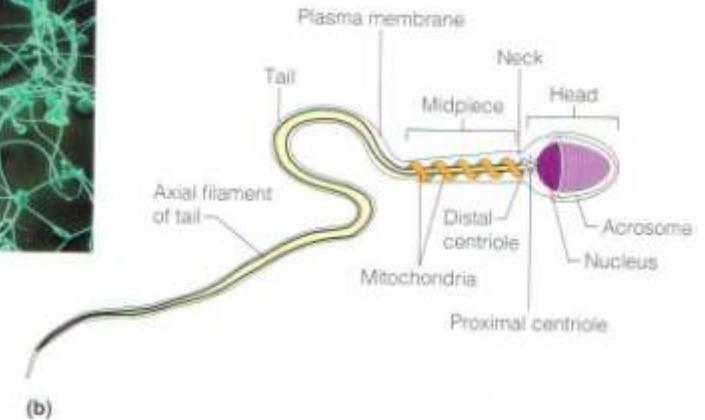
The epididymis is a long, coiled tube (about 6m long) that rests on the backside of each testicle. Its functions are:

- The transport and storage of the sperm cells that are produced in the testes.
- It also helps bringing the sperm to maturity, since the sperm that emerge from the testes are immature and incapable of fertilization.

During sexual arousal, contractions force the sperm into the vas deferens and along its length to the outside



(a)



(b)

Figure 3 - Spermatozoa

Structure of sperm. (a) Scanning electron micrograph of mature sperm (4303×). (b) Diagrammatic view of a sperm.

What are the internal reproductive organs?

The internal organs of the male reproductive system, also called accessory organs, include the following:

- **Vas deferens**—The vas deferens is a long, muscular tube that travels from the epididymis into the pelvic cavity, to just behind the bladder. The vas deferens transports mature sperm to the urethra in preparation for ejaculation
- **Ejaculatory ducts**—These are formed by the fusion of the vas deferens and the seminal vesicles. The ejaculatory ducts empty into the urethra.
- **Urethra**—The urethra is the tube that carries urine from the bladder to outside of the body. In males, it has the additional function of expelling (ejaculating) semen when the man reaches orgasm. When the penis is erect during sex, the flow of urine is blocked from the urethra, allowing only semen to be ejaculated at orgasm.
- **Seminal vesicles**—The seminal vesicles are sac-like pouches that attach to the vas deferens near the base of the bladder. The seminal vesicles produce a sugar-rich fluid (fructose) that provides sperm with a source of energy and helps with the sperms' motility (ability to move). The fluid of the seminal vesicles makes up most of the volume of a man's ejaculatory fluid, or ejaculate.
- **Prostate gland**—The prostate gland is a walnut-sized structure that is located below the urinary bladder in front of the rectum. The prostate gland contributes additional fluid to the ejaculate. Prostate fluids also help to nourish the sperm. The urethra, which carries the ejaculate to be expelled during orgasm, runs through the centre of the prostate gland.
- **Bulbourethral glands**—The bulbourethral glands, or Cowper's glands, are pea-sized structures located on the sides of the urethra just below the prostate gland. These glands produce a clear, slippery fluid that empties directly into the urethra. This fluid serves to lubricate the urethra and to neutralize any acidity that may be present due to residual drops of urine in the urethra. How does the male reproductive system function?

The entire male reproductive system is dependent on hormones, which are chemicals that stimulate or regulate the activity of cells or organs. The primary hormones involved in the functioning of the male reproductive system are follicle-stimulating hormone (FSH), luteinizing hormone (LH) and testosterone.

FSH and LH are produced by the pituitary gland located at the base of the brain. FSH is necessary for sperm production (spermatogenesis), and LH stimulates the production of testosterone, which is necessary to continue the process of spermatogenesis. Testosterone also is important in the development of secondary sex characteristics, including muscle mass and strength, fat distribution, and sex drive.

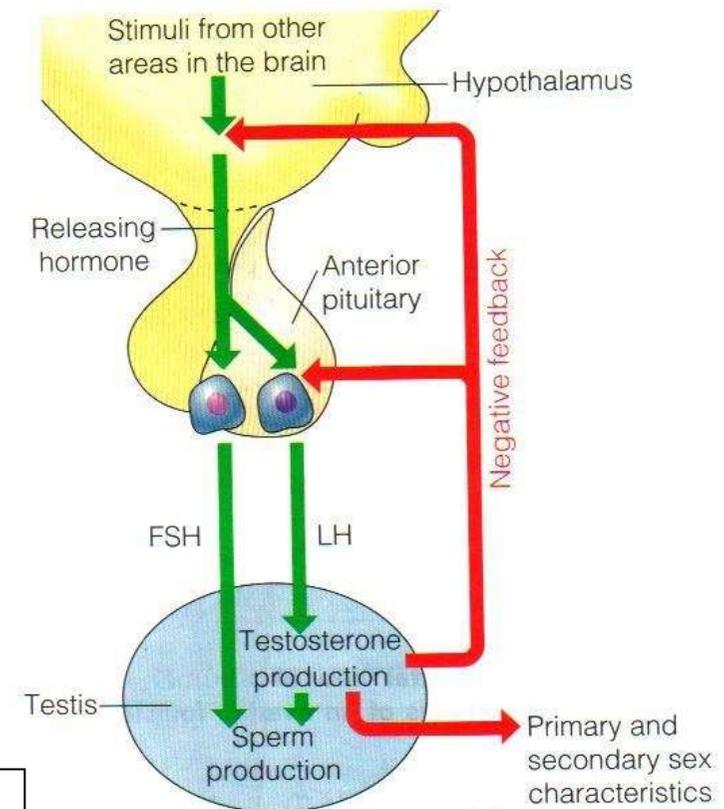


Figure 4 Hormonal Control of the Testes

Hormonal control of the testis.

Disorders

Infertility is a term doctors use if a man hasn't been able to get a woman pregnant after at least one year of trying. Male infertility can result from physical problems, hormone problems, and lifestyle or environmental factors. About a third of the time, infertility is because of a problem with the man. One third of the time, it is a problem with the woman. Sometimes no cause can be found.

Approximately 15 percent of couples are infertile. This means they aren't able to conceive a child even though they've had frequent, unprotected sexual intercourse for a year or longer. In about half of these cases, male infertility plays a role.

Male infertility is due to low sperm production, misshapen or immobile sperm, or blockages that prevent the delivery of sperm. Illnesses, injuries, chronic

health problems, lifestyle choices and other factors can play a role in causing male infertility.

- Not being able to conceive a child can be stressful and frustrating, but a number of male infertility treatments are available. Approaches can include treatment for the male partner, the female partner, or both.

Symptoms

The main sign of male infertility is the inability to conceive a child. Often, there are no other obvious signs or symptoms. In some cases, however, an underlying problem such as an inherited hormonal imbalance or a condition that blocks the passage of sperm may cause signs and symptoms. Male infertility symptoms may include:

Problems with sexual function —for example, difficulty reaching orgasm (delayed ejaculation) or difficulty maintaining an erection (erectile dysfunction)

Pain, swelling or a lump in the testicle area.

Decreased facial or body hair or other signs of a chromosomal or hormonal abnormality

Causes of infertility

Male fertility is a complex process. For the partner pregnant, the male be able to produce healthy sperm that can reach, penetrate and fertilize the partner's egg. For this to occur:

- They must produce healthy sperm. Initially, this involves the growth and formation of the male reproductive organs during puberty. At least one of the testicles must be functioning correctly, and the body must produce testosterone and other hormones to trigger and maintain sperm production.
- Sperm have to be carried into the semen. Once sperm are produced in the testicles, delicate tubes transport them until they mix with semen and are ejaculated out of the penis.
- There needs to be enough sperm in the semen. If the number of sperm in semen (sperm count) is low, it decreases the odds that one of the sperm will fertilize the partner's egg. A low sperm count is fewer than 20 million sperm per millilitre of semen.

- Sperm must be shaped correctly and able to move. If the movement (motility) or shape (morphology) of the sperm is abnormal, the sperm may not be able to reach or penetrate the partner's egg.

Medical causes

Problems with male fertility can be caused by a number of health issues and medical treatments. Some of these include:

- **Varicocele.** - A varicocele is a swelling of the veins that drain the testicle. This may prevent normal cooling of the testicle, leading to reduced sperm count and fewer moving sperm.
- **Infection.** Some infections can interfere with sperm production or sperm health, or can cause scarring that blocks the passage of sperm. These include some sexually transmitted diseases (STDs), including Chlamydia and gonorrhoea; inflammation of the prostate (prostatitis); inflamed testicles due to mumps (mumps orchitis); and other infections of the urinary tract or reproductive organs.
- **Retrograde ejaculation.** This occurs when semen enters the bladder during orgasm instead of emerging out the tip of the penis. Various health conditions can cause retrograde ejaculation, including diabetes, multiple sclerosis, spinal injuries, and surgery of the bladder, prostate or urethra. Retrograde ejaculation can also be caused by certain medications — particularly medications for enlarged prostate, such as terazosin (Hytrin), tamsulosin (Flomax) and olealfuzosin (Uroxatral).
- **Lack of ejaculation.** Some men with spinal cord injuries or certain diseases can't ejaculate semen, even though they still produce sperm.
- **Antibodies that attack sperm.** Anti-sperm antibodies are immune system cells that mistakenly identify sperm as harmful invaders and attempt to eliminate them. This is especially common in men who've had a vasectomy.
- **Tumours.** Cancers and non-malignant tumours can affect the male reproductive organs directly, or can affect the glands that release hormones related to reproduction (such as the pituitary gland). In some cases, surgery to treat tumours can affect male fertility.
- **Undescended testicles.** In some males, during foetal development one or both testicles fail to descend from the abdomen into the sac that usually contains the testicles (scrotum).
- **Hormone imbalances.** Infertility can result from disorders of the testicles themselves or an abnormality affecting the glands in the brain that produce testosterone and other hormones that control the testicles (the hypothalamus or pituitary glands). Low testosterone (male hypogonadism) and other hormonal problems have a number of possible underlying causes.
- **Sperm duct defects.** The tubes that carry sperm (sperm ducts) can be damaged by illness or injury. Some men are born with a blockage in the part of the testicle that stores sperm (epididymis) or a blockage of one or both of the tubes that carry sperm out of the testicles. Men with cystic fibrosis and some other inherited conditions may be born without sperm ducts altogether.
- **Chromosome defects.** Inherited disorders such as Klinefelter's syndrome — in which a male is born with two XXY chromosomes instead of XY — cause abnormal development of the male reproductive organs.
- **Problems with sexual intercourse.** These can include trouble keeping or maintaining an erection sufficient for sex (erectile dysfunction), premature ejaculation, painful intercourse, or psychological or relationship problems that interfere with sex.
- **Celiac disease.** A digestive disorder caused by sensitivity to gluten, celiac disease can cause male infertility. Fertility may improve after adopting a gluten-free diet.
- **Certain medications.** Testosterone replacement therapy, long-term anabolic steroid use, cancer medications (chemotherapy), certain antibiotics, some ulcer medications and certain other medications can impair sperm production and decrease male fertility.

- Impotence - the inability to gain or maintain an erection. This can be psychological from pudendal nerve lesions (long distance cyclists), or maybe a symptom of obesity or type II diabetes.

Prostate disorders

- Prostatitis – Inflammation of the prostate, frequently from an infection, usually caused by bacteria
- Benign prostatic hyperplasia, or BPH - an enlarged prostate, which may cause dribbling after urination or a need to go often, especially at night. Usually occurs in older men.
- Prostate cancer - a common cancer that responds best to treatment when detected early. Can manifest as an enlarged prostate or as blood in urine

Disorders:

- **STDs** – sexually transmitted diseases are a group of conditions spread by sexual contact, e.g. Chlamydia, gonorrhoea, syphilis, and genital herpes.
 - **Chlamydia** – caused by the bacterium Chlamydia Trachomatis and is the most prevalent STD (20,000 young men and women are rendered sterile by this annually in the USA). This cannot reproduce outside the body, and can only do so inside cells. Symptoms in men are urethritis (with pain on urination), and frequency. In females symptoms are inflammation of the cervix with mucous and pus discharge; it
 - **Gonorrhoea** – caused by Neisseria Gonorrhoea, it causes painful urination with pus.
 - **Syphilis** – caused by Treponema Pallidum, it has various stages beginning with the chancre at the point of infection. This heals within 5 weeks, and from 6 – 24 weeks there is a rash, fever and aches and pains in muscles and joints. Then it enters a 'latent period' that can last for 20 years, during which it invades the organ systems of the body, causing degeneration – the tertiary stage.
 - **Genital herpes** – caused by type II herpes simplex virus; causes painful blistering at point of infection. It appears and disappears recurrently several times a year.

Male disorders:

- **Testicular cancer** – occurs between the ages of 15 and 34 and is of commoner cancers in young men. Cause is unknown; and arises in the sperm producing cells. Early signs are a mass in the testis, associated with pain.
- **Prostate disorders** – these are inflammatory, benign or malignant and all can obstruct the flow of urine (because it wrap around the urethra).
- **Impotence** – inability to maintain an erection or to ejaculate. Causes are many :insufficient neurotransmitters, diabetes mellitus, syphilis, vascular problems, testosterone deficiency, drugs, and psychological factors.

- **Sterility** – inability to fertilize egg; not impotence. Fertility requires sufficient numbers of viable sperm, unobstructed transport of them through ducts and safe deposition in the vagina. The tubules are the most sensitive to x-rays, infections, toxins, malnutrition and high scrotal temperatures.

The Female Reproductive System

Figure 5 - Anatomy of Female Reproductive System

The female reproductive system is designed to carry out several functions. It produces the female egg cells necessary for reproduction, called the ova or oocytes. The system is designed to transport the ova to the site of fertilization. Conception, the fertilization of an egg by a sperm, normally occurs in the fallopian tubes. After conception, the uterus offers a safe and favourable environment for a baby to develop before it is time for it to make its way into the outside world. If fertilization does not take place, the system is designed to menstruate (the monthly shedding of the uterine lining). In addition, the female reproductive system produces female sex hormones that maintain the reproductive cycle.

During menopause the female reproductive system gradually stops making the female hormones necessary for the reproductive cycle to work. When the body no longer produces these hormones a woman is considered to be menopausal.

The female anatomy

The female reproductive anatomy includes internal and external structures.

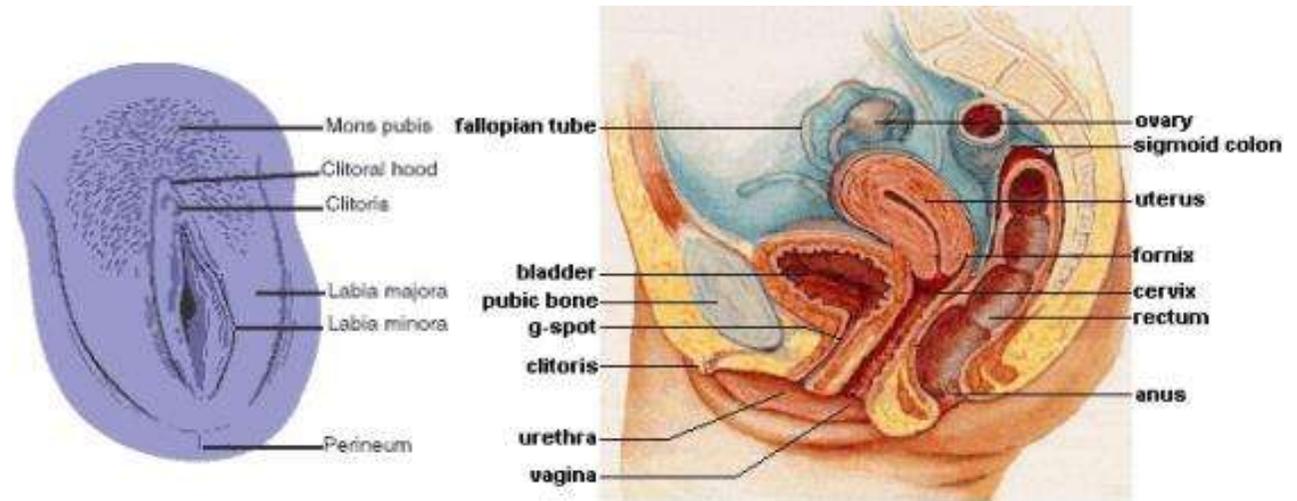
The function of the external female reproductive structures is twofold: To enable sperm to enter the body and to protect the internal genital organs from infectious organisms. The main external structures of the female reproductive system include:

- **Labia majora:** The labia majora enclose and protect the other external reproductive organs. Literally translated as "large lips," the labia majora are relatively large and fleshy, and are comparable to the scrotum in males. The labia majora contain sweat and oil-secreting glands. After puberty, the labia majora are covered with hair.
- **Labia minora:** Literally translated as "small lips," the labia minora can be very small or up to 2 inches wide. They lie just inside the labia majora, and surround the openings to the vagina (the canal that joins the lower part of the uterus to the outside of the body) and urethra (the tube that carries urine from the bladder to the outside of the body).
- **Bartholin's glands:** These glands are located next to the vaginal opening and produce a fluid (mucus) secretion
- **Clitoris:** The two labia minora meet at the clitoris, a small, sensitive protrusion that is comparable to the penis in males. The clitoris is covered by a fold of skin, called the prepuce, which is similar to the foreskin at the end of the penis. Like the penis, the clitoris is very sensitive to stimulation and can become erect.

The internal reproductive organs include

Figure 6 - Female Reproductive System - External and Internal

- **Vagina:** The vagina is a canal that joins the cervix (the lower part of uterus) to the outside of the body. It also is known as the birth canal.
- **Uterus (womb):** The uterus is a hollow, pear-shaped organ that is the home to a developing fetus. The uterus is divided into two parts: the cervix, which is the lower part that opens into the vagina, and the main body of the uterus, called the corpus. The corpus can easily expand to hold a developing baby. A channel through the cervix allows sperm to enter and menstrual blood to exit.
- **Ovaries:** The ovaries are small, oval-shaped glands that are located on either side of the uterus. The ovaries produce eggs and hormones.
- **Fallopian tubes:** These are narrow tubes that are attached to the upper part of the uterus and serve as tunnels for the ova (egg cells) to travel from the ovaries to the uterus. Conception, the fertilization of an egg by a sperm, normally occurs in the fallopian tubes. The fertilized egg then moves to the uterus, where it implants to the uterine wall.



What happens during the menstrual cycle?

Females of reproductive age (anywhere from 11-16 years) experience cycles of hormonal activity that repeat at about one-month intervals. (Menstru means "monthly"; hence the term menstrual cycle.) With every cycle, a woman's body prepares for a potential pregnancy, whether or not that is the woman's intention. The term menstruation refers to the periodic shedding of the uterine lining.

The average menstrual cycle takes about 28 days and occurs in phases: the follicular phase, the ovulatory phase (ovulation), and the luteal phase.

There are four major hormones (chemicals that stimulate or regulate the activity of cells or organs) involved in the menstrual cycle: follicle-stimulating hormone, luteinizing hormone, oestrogen, and progesterone.

Follicular phase

Follicular Phase of the Menstrual Cycle

This phase starts on the first day of your period. During the follicular phase of the menstrual cycle, the following events occur:

- Two hormones, follicle stimulating hormone (FSH) and luteinizing hormone (LH), are released from the [brain](#) and travel in the blood to the ovaries.
- The hormones stimulate the growth of about 15 to 20 eggs in the ovaries, each in its own "shell," called a follicle.
- These hormones (FSH and LH) also trigger an increase in the production of the female hormone estrogen.
- As estrogen levels rise, like a switch, it turns off the production of follicle-stimulating hormone. This careful balance of hormones allows the body to limit the number of follicles that mature.
- As the follicular phase progresses, one follicle in one ovary becomes dominant and continues to mature. This dominant follicle suppresses all of the other follicles in the group. As a result, they stop growing and die. The dominant follicle continues to produce estrogen.

Ovulatory Phase of the Menstrual Cycle

The ovulatory phase, or ovulation, starts about 14 days after the follicular phase started. The ovulatory phase is the midpoint of the menstrual cycle, with the next menstrual period starting about two weeks later. During this phase, the following events occur:

- The rise in estrogen from the dominant follicle triggers a surge in the amount of luteinizing hormone that is produced by the brain.
- This causes the dominant follicle to release its egg from the ovary.
- As the egg is released (a process called ovulation), it is captured by finger-like projections on the end of the fallopian tubes (fimbriae). The fimbriae sweep the egg into the tube.
- Also during this phase, there is an increase in the amount and thickness of mucus produced by the cervix (lower part of the uterus). If a woman were to have intercourse during this time, the thick mucus captures the man's sperm, nourishes it, and helps it to move towards the egg for fertilization.

Luteal Phase of the Menstrual Cycle

The luteal phase of the menstrual cycle begins right after ovulation and involves the following processes:

- Once it releases its egg, the empty follicle develops into a new structure called the corpus luteum.
- The corpus luteum secretes the hormone progesterone. Progesterone prepares the uterus for a fertilized egg to implant.
- If intercourse has taken place and a man's sperm has fertilized the egg (a process called conception), the fertilized egg (embryo) will travel through the fallopian tube to implant in the uterus. The woman is now considered pregnant.
- If the egg is not fertilized, it passes through the uterus. Not needed to support a pregnancy, the lining of the uterus breaks down and sheds, and the next menstrual period begins.

How many eggs does a woman have?

During foetal life, there are about 6 million to 7 million eggs. From this time, no new eggs are produced.

The vast majority of the eggs within the ovaries steadily die, until they are depleted at menopause. At birth, there are approximately 1 million eggs; and by the time of puberty, only about 300,000 remain. Of these, 300 to 400 will be ovulated during a woman's reproductive lifetime. The eggs continue to degenerate during pregnancy, with the use of birth control pills, and in the presence or absence of regular menstrual cycles.

Disorders of the female reproductive system

Menstruation, or period, is a woman's monthly bleeding. Every month, your body prepares for pregnancy. If no pregnancy occurs, the uterus sheds its lining. The menstrual blood is partly blood and partly tissue from inside the uterus, or womb. It passes out of the body through the vagina. Periods usually start around age 12 and continue until menopause, at about age 51. Most periods last from three to five days.

A female should consult your health care provider if

- They haven't started menstruating by age 16
- Their periods stop suddenly
- They have bled excessively, or for more days than usual
- They suddenly feel sick after using tampons
- They bleed between periods
- They have severe pain during your period
- Premenstrual syndrome, or PMS, is a group of symptoms that start before the period. It can include emotional and physical symptoms
- Amenorrhoea—a complete absence of periods
- Primary amenorrhea is when a young woman has not yet had a period by age 16.
- Secondary amenorrhea describes someone who used to have a regular period but then it stopped for at least three months (this can include pregnancy).
- This problem is much more common than primary amenorrhea. Common causes include many of those listed for primary amenorrhea, as well as pregnancy, certain contraceptives, breastfeeding, mental stress, and certain medications.
- Hormonal problems involving the hypothalamus, pituitary, thyroid, ovary, or adrenal glands can also cause amenorrhea.
- Women who have very low body weight sometimes stop getting their periods as well.
- Women with premature ovarian failure stop getting regular their periods before natural menopause.
- Endometriosis is a problem affecting a woman's uterus -the place where a baby grows when she's pregnant. Endometriosis is when the kind of tissue that normally lines the uterus grows somewhere else. It can grow on the ovaries, behind the uterus or on the bowels or bladder. Rarely, it grows in other parts of the body.

- The primary symptom of endometriosis is pelvic pain, often associated with your menstrual period. Although many women may experience cramping during their menstrual period, women with endometriosis typically describe menstrual pain that's far worse than usual. They also tend to report that the pain has increased over time.

Symptoms of dysmenorrhoea

Common signs and symptoms of endometriosis may include:

- Painful periods (dysmenorrhoea). Pelvic pain and cramping may begin before and extend several days into your period and may include lower back and abdominal pain.
- Pain with intercourse. Pain during or after sex is common with endometriosis.
- Pain with bowel movements or urination. You're most likely to experience these symptoms during your period.
- Excessive bleeding. You may experience occasional heavy periods (menorrhagia) or bleeding between periods (menometrorrhagia).
- Infertility. Endometriosis is first diagnosed in some women who are seeking treatment for infertility.
- Other symptoms. You may also experience fatigue, diarrhoea, constipation, bloating or nausea, especially during menstrual periods.

Menorrhagia (heavy menstrual bleeding)

Definition

Menorrhagia is the medical term for menstrual periods in which bleeding is abnormally heavy or prolonged. Although heavy menstrual bleeding is a common concern among premenopausal women, most women don't experience blood loss severe enough to be defined as menorrhagia.

With menorrhagia, every period you have causes enough blood loss and cramping that you can't maintain your usual activities. If you have menstrual bleeding so heavy that you dread your period, talk with your doctor. There are many effective treatments for menorrhagia.

Symptoms of menorrhagia

- Soaking through one or more sanitary pads or tampons every hour for several consecutive hours
- Needing to use double sanitary protection to control your menstrual flow
- Needing to wake up to change sanitary protection during the night
- Bleeding for a week or longer
- Passing large blood clots with menstrual flow
- Restricting daily activities due to heavy menstrual flow
- Symptoms of anaemia, such as tiredness, fatigue or shortness of breath

Causes

In some cases, the cause of heavy menstrual bleeding is unknown, but a number of conditions may cause menorrhagia. Common causes include:

- **Hormonal imbalance.** In a normal menstrual cycle, a balance between the hormones oestrogen and progesterone regulates the build up of the lining of the uterus (endometrium), which is shed during menstruation. If a hormonal imbalance occurs, the endometrium develops in excess and eventually sheds by way of heavy menstrual bleeding.
- **Dysfunction of the ovaries.** If ovulation does not occur in a menstrual cycle (anovulation), progesterone is not produced. This causes hormonal imbalance and may result in menorrhagia.
- **Uterine fibroids.** These noncancerous (benign) tumours of the uterus appear during your childbearing years. Uterine fibroids may cause heavier than normal or prolonged menstrual bleeding.
- **Polyps.** Small, benign growths on the lining of the uterine wall (uterine polyps) may cause heavy or prolonged menstrual bleeding. Polyps of the uterus most commonly occur in women of reproductive age as the result of high hormone levels.
- **Adenomyosis.** This condition occurs when glands from the endometrium become embedded in the uterine muscle, often causing heavy bleeding and painful menses. Adenomyosis is most likely to develop if you're a middle-aged woman who has had children.
- **Intrauterine device (IUD).** Menorrhagia is a well-known side effect of using a non-hormonal intrauterine device for birth control. When an IUD is the cause of excessive menstrual bleeding, you may need to remove it.
- **Pregnancy complications.** A single, heavy, late period may be due to a miscarriage. If bleeding occurs at the usual time of menstruation, however, miscarriage is unlikely to be the cause. An ectopic pregnancy —implantation of a fertilized egg within the fallopian tube instead of the uterus —also may cause menorrhagia.
- **Cancer.** Rarely, uterine cancer, ovarian cancer and cervical cancer can cause excessive menstrual bleeding.
- **Inherited bleeding disorders.** Some blood coagulation disorders —such as von Willebrand's disease, a condition in which an important blood-clotting factor is deficient or impaired —can cause abnormal menstrual bleeding
- **Medications.** Certain drugs, including anti-inflammatory medications and anticoagulants, can contribute to heavy or prolonged menstrual bleeding. Improper use of hormone medications also can cause menorrhagia.
- **Other medical conditions.** A number of other medical conditions, including pelvic inflammatory disease (PID), thyroid problems, endometriosis, and liver or kidney disease, may be associated with menorrhagia
- **Pelvic Inflammatory Disease (PID)**—a collective term for any extensive infection of the pelvic organs; causes abdominal tenderness, cervical tenderness, and ovarian or fallopian tube tenderness, fever, pelvic abscess, and purulent discharge
- **Thrush** -Candida is the scientific name for yeast. Candidiasis, also known as a "yeast infection", is a common fungal infection that occurs when there is overgrowth of the fungus called Candida. Candida is always present in the body in small amounts. Usually, your immune system keeps yeast under control. If you are sick or taking antibiotics, it can multiply and cause an infection. However, when an imbalance occurs, such as when the normal acidity of the vagina changes or when hormonal balance changes, or even excess feminine hygiene, Candida can multiply. When that happens, symptoms of candidiasis appear.

Symptoms of genital candidiasis

- Women with VVC usually experience genital itching or burning, with or without a "cottage cheese-like" vaginal discharge.
- Candida yeasts usually live in the mouth, gastrointestinal tract, and vagina without causing symptoms. Symptoms develop only when Candida becomes overgrown in these sites.

Rarely, Candida can be passed from person to person, such as through sexual intercourse.



Figure 7 - Candida Infection

Fibroids

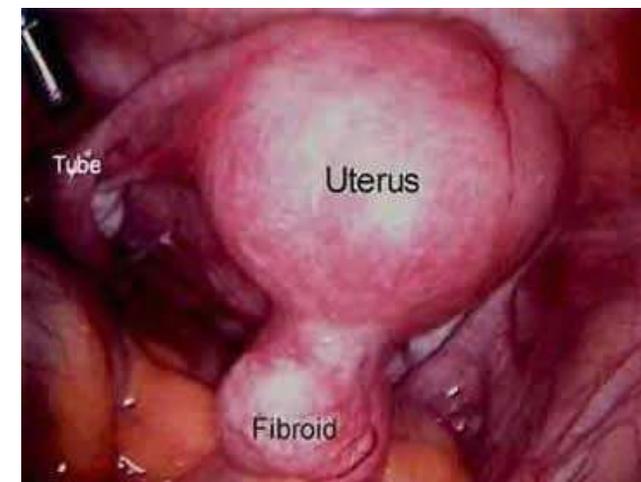
Uterine fibroids are the most common non-cancerous (benign) tumours in women of childbearing age. Fibroids are made of muscle cells and other tissues that grow in and around the wall of the uterus, or womb. The cause of fibroids is unknown. Risk factors include being African-American or being overweight.

Many women with uterine fibroids have no symptoms. If you have symptoms, they may include

- Heavy or painful periods or bleeding between periods
- Feeling "full" in the lower abdomen
- Urinating often
- Pain during sex
- Lower back pain
- Reproductive problems, such as infertility, multiple miscarriages or early labour

Most women with fibroids can get pregnant naturally. For those who cannot, infertility treatments may help. Treatment for uterine fibroids includes medicines that can slow or stop their growth, or surgery. If you have no symptoms, you may not even need treatment.

Figure 8 - Large Fibroid



Ovarian cysts

A cyst is a fluid-filled sac. In most cases a cyst on the ovary does no harm and goes away by itself. Most women have them sometime during their lives. Cysts are rarely cancerous in women under 50. Cysts sometimes hurt -but not always. Often, a woman finds out about a cyst when she has a pelvic exam.

If you're in your childbearing years or past menopause, have no symptoms, and have a fluid-filled cyst, you may choose to monitor the cyst. You may need surgery if you have pain, are past menopause or if the cyst does not go away. Birth control pills can help prevent new cysts.

Figure 9 - Surgical Removal of Large Ovarian Cyst



A health problem that may involve ovarian cysts is polycystic ovarian syndrome (PCOS). Women with PCOS can have high levels of male hormones, irregular or no periods and small ovarian cysts.

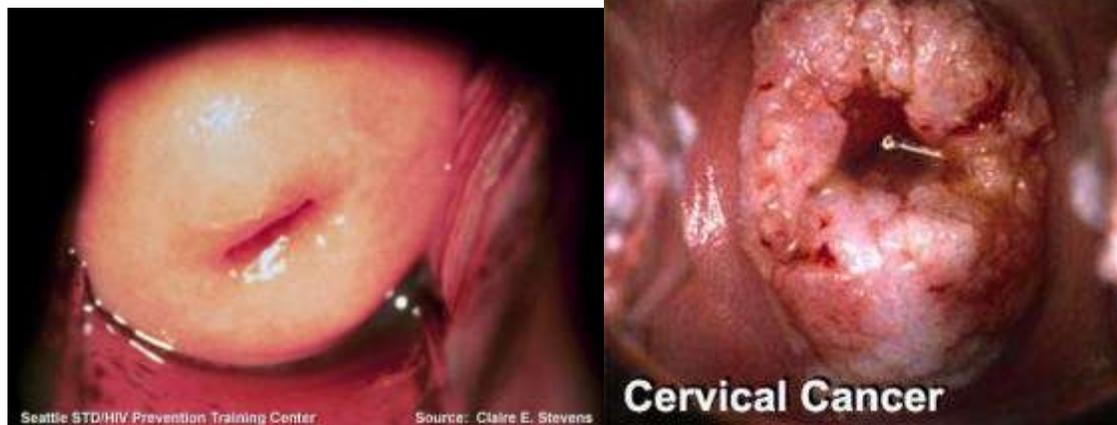
Cervical Cancer

The cervix is the lower part of the uterus, the place where a baby grows during pregnancy.

Cervical cancer is caused by several types of a virus called human

papillomaviruses (HPV). The virus spreads through sexual contact. Most women's bodies are able to fight HPV infection. But sometimes the virus leads to cancer. You're at higher risk if you smoke, have many children, use birth control pills for a long time, or have HIV infection.

Figure 10 - Photos Showing A normal Cervix (Left) and Cancer of the Cervix (Right)



Cervical cancer may not cause any symptoms at first, but later, you may have pelvic pain or bleeding from the vagina. It usually takes several years for normal cells in the cervix to turn into cancer cells. Your health care provider can find abnormal cells by doing a Pap test - examining cells from the cervix under a microscope. By getting regular Pap tests and pelvic exams you can find and treat changing cells before they turn into cancer.

A vaccine for girls and young women protects against the four types of HPV that cause most cervical cancers.

Ovarian cancer usually happens in women over age 50, but it can also affect younger women. Its cause is unknown. Ovarian cancer is hard to detect early.

The sooner ovarian cancer is found and treated, the better your chance for recovery. But ovarian cancer is hard to detect early. Many times, women with ovarian cancer have no symptoms or just mild symptoms until the disease is in an advanced stage and hard to treat.

Symptoms of ovarian cancer may include:

- Heavy feeling in pelvis
- Pain in lower abdomen
- Bleeding from the vagina
- Weight gain or loss
- Abnormal periods
- Unexplained back pain that gets worse
- Gas, nausea, vomiting, or loss of appetite

Treatment is usually surgery followed by treatment with medicines called chemotherapy.

Breast cancer affects one in eight women during their lives. Breast cancer kills more women in the United States than any cancer except lung cancer. No one knows why some women get breast cancer, but there are a number of risk factors. Risks that you cannot change include

- **Age** - the chance of getting breast cancer rises as a woman gets older
 - Genes - there are two genes, BRCA1 and BRCA2, that greatly increase the risk.
- **Personal factors** - beginning periods before age 12 or going through menopause

Women who have family members with breast or ovarian cancer may wish to be tested. after age 55

Other risks include being overweight, using hormone replacement therapy (also called menopausal hormone therapy), taking birth control pills, drinking alcohol, not having children or having your first child after age 35 or having dense breasts.

Symptoms of breast cancer may include a lump in the breast, a change in size or shape of the breast or discharge from a nipple. Breast self-exam and mammography can help find breast cancer early when it is most treatable. Treatment may consist of radiation, lumpectomy, mastectomy, chemotherapy and hormone therapy.



Figure 11 - Late Stage Breast Cancer

Men can have breast cancer, too, but the number of cases is small.