

# CHAPTER 6: MALE REPRODUCTIVE SYSTEM

*Building a Medical Terminology Foundation 2e* by Kimberlee Carter; Marie Rutherford; and Connie Stevens

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- 6.2 – Anatomy (Structures) of the Male Reproductive System
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# 6.1 - Introduction to the Male Reproductive System

## Learning Objectives

- Identify the anatomy and describe the main functions of the male reproductive system
- Analyze, translate, and define medical terms and common abbreviations of the male reproductive system
- Practice the spelling and pronunciation of male reproductive system medical terminology
- Identify the medical specialties associated with the male reproductive system and explore common diseases, disorders, diagnostic tests and procedures

## Male Reproductive System Word Parts

Click on prefixes, combining forms, and suffixes to reveal a list of word parts to memorize for the male reproductive system.

### Male Reproductive System Word Parts

#### Prefix

- **a-** (absence of, without)
- **an-** (absence of, without)
- **crypt-** (hidden)
- **dys-** (painful, difficult)
- **en-** (in)
- **epi-** (above)
- **hyper-** (above, excessive)
- **hypo-** (below)

- **par-** (near)
- **trans-** (through, across, beyond)

### Combining Forms

- **andr/o** (male)
- **balan/o** (glans penis)
- **epididym/o** (epididymis)
- **gonad/o** (gonad)
- **orch/o** (testis, testicle)
- **orchi/o** (testis, testicle)
- **orchid/o** (testis, testicle)
- **pen/o** (penis)
- **pen/i** (penis)
- **phall/o** (penis)
- **preputi/o** (prepuce, foreskin)
- **posth/o** (prepuce, foreskin)
- **prostat/o** (prostate gland)
- **scrot/o** (scrotum)
- **semin/i** (semen)
- **sperm/o** (sperm, spermatozoon)
- **spermat/o** (sperm, spermatozoon)
- **test/o** (testis, testicle)
- **testicul/o** (testis, testicle)
- **vas/o** (vas deferens, vessel, duct)
- **vesicul/o** (seminal vesicle)
- **urethr/o** (urethra)

### Suffix

- **-al** (pertaining to)
- **-algia** (pain)
- **-ar** (pertaining to)
- **-atic** (pertaining to)
- **-cision** (processing of cutting)
- **-ectomy** (excision or surgical removal)
- **-ferous** (pertaining to)
- **-genesis** (production)
- **-gram** (record)
- **-graphy** (process of recording)
- **-ia** (diseased state, abnormal state, condition of, condition)
- **-ic** (pertaining to)
- **-ile** (pertaining to)
- **-ism** (state of, condition)

- **-itis** (inflammation)
- **-logy** (study of)
- **-lysis** (loosening, dissolution, separating)
- **-oma** (tumour, mass)
- **-ous** (pertaining to)
- **-pathy** (disease)
- **-pexy** (surgical fixation, suspension)
- **-plasia** (development, growth)
- **-plasty** (surgical repair)
- **-rrhea** (flow, discharge)
- **-sis** (condition, abnormal condition)
- **-stomy** (creation of new opening, process of new opening)
- **-tion** (process of)
- **-tomy** (cut into, incision)

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Converted to text.

## Introduction to the Male Reproductive System

**Gametes** are the reproductive cells that combine to form a fetus. Organs called **gonads** produce the gametes, along with the hormones that regulate human reproduction. The male gametes are called sperm. **Spermatogenesis** occurs within the **seminiferous tubules** that make up most of the testis (singular). The **scrotum** is a sac that holds the testes (plural) outside of the body cavity.

**Watch Reproductive System, Part 2 - Male Reproductive System: Crash Course Anatomy & Physiology #41 (11 min) on YouTube**

### Male Reproductive Medical Terms

**Male Reproductive System terms not easily broken down into word parts (Text version)**

1. **ablation**

- a-BLĀ-shǒn (Original Term)
- destruction of abnormal or excessive tissue by eroding, vaporizing or melting

2. **acquired immunodeficiency syndrome (AIDS)**

- ǎ-KWĪRD im-yū-nō-dě-FISH-ěn-sē SĪN-drōm
- advanced, chronic immune system suppression caused by human immunodeficiency virus (HIV) infection.

3. **artificial insemination**

- art-ī-FISH-ǎl in-sem-ī-NĀ-shǒn
- the medical procedure of injecting concentrated sperm into the vagina or uterus.

4. **azoospermia**

- ā-zō-ō-SPĚR-mē-ǎ
- absence of viable sperm in the semen.

5. **chlamydia**

- klǎ-MID-ē-ǎ
- sexually transmitted disease caused by a very small parasitic bacterium (also known as the silent STD).

6. **circumcision**

- sĭr-kŭm-SIZH-ǒn (Original Term)
- surgical removal of the prepuce (foreskin)

7. **coitus**

- KŌ-ī-tús (Original Term)
- sexual intercourse

8. **condom**

- KON-dǒm (Original Term)
- sheath (cover) for penis, worn during coitus to prevent conception and spread of sexually transmitted infection

9. **ejaculation**

- i-jak-yŭ-LĀ-shǒn
- the action of ejecting semen from the body.

10. **enucleation**

- ē-nū-klē-Ā-shŭn (Original Term)

- excision of a whole organ or mass without cutting into it
11. **erectile dysfunction (ED)**
    - ě-RĚK-tĭl dis-FŮNGK-shŏn
    - the inability of a male to attain or maintain an erection sufficient to perform sexual intercourse
  12. **genital herpes**
    - JEN-ĭt-āl HĚRP-ĕz
    - a sexually transmitted disease characterized by blisters in the genital area, caused by the herpes simplex virus type 2.
  13. **gonorrhea**
    - gon-ŏ-RĚ-ǎ
    - a sexually transmitted disease involving inflammatory discharge from the urethra or vagina.
  14. **human immunodeficiency virus (HIV)**
    - hu-man im-yŭ-nŏ-dĕ-FISH-ĕn-sĕ VĪ-rŭs
    - a retrovirus that attacks the T-helper cells of the immune system. If HIV is not treated, it can lead to AIDS (acquired immunodeficiency syndrome)
  15. **human papillomavirus (HPV)**
    - hu-man PAP-ĭ-LŌ-mǎ-VĪ-rŭs
    - a sexually transmitted disease with over 40 subtypes that cause diseases in humans ranging from common warts to cervical cancer.
  16. **hydrocele**
    - HĪ-drŏ-sĕl (Original Term)
    - fluid-filled sac around the testicle
  17. **hydrocelectomy**
    - hĪ-drŏ-sĕ-LĚK-tŏ-mĕ (Original Term)
    - surgical removal of a fluid-filled sac around the testicle causing scrotal swelling (hydrocele)
  18. **infertility**
    - in-fĕr-TIL-ĭt-ĕ (Original Term)
    - inability to achieve pregnancy
  19. **metastasis**
    - mĕ-TAS-tǎ-sĭs
    - cancer spreading from one part of the body into another.

20. **morcellation**

- mor-sě-LĀ-shǒn
- cutting or grinding solid tissue into smaller pieces for removal

21. **MRI ultrasound fusion biopsy**

- FŪ-zhǒn BĪ-op-sē
- combination of magnetic resonance imaging with transrectal ultrasound (TRUS) to obtain a tissue from a prostate lesion. The combined MRI-TRUS image is used to direct the biopsy needle into the area of the prostate that looked suspicious on MRI.

22. **orgasm**

- OR-gazm
- a climax of sexual stimulation

23. **phimosis**

- fī-MŌ-sis
- a tightness of the prepuce (foreskin of the penis) that prevents its retraction over the glans penis. It may be congenital or the result of balanitis. Circumcision is the usual treatment.

24. **priapism**

- PRĪ-ǎ-pizm
- persistent, abnormal erection of the penis accompanied by pain and tenderness

25. **prostate cancer**

- PROS-tāt KAN-sěr
- cancer of the prostate gland

26. **puberty**

- PŪ-běrt-ē
- the period during which adolescents develop secondary sex characteristics and become capable of reproduction.

27. **robotic surgery**

- rō-BŌ- tīk SŪRJ-ě-rē
- use of small surgical instruments attached to a computer and operated by the surgeon from a console several feet from the operating table

28. **sexually transmitted disease (STD)**

- SEKS-ū-ǎ-lē trǎns-MĪT-ed diz-ĒZ
- infection spread through sexual contact; also known as sexually transmitted infection (STI)

29. **spermatocele**

- spěr-MĀT-ō-sēl
- distention of the epididymis containing an abnormal cyst-like collection of fluid and sperm cells

30. **sterility**

- stě-RIL-īt-ē (Original Term)
- a condition of being unable to conceive or reproduce the species

31. **sterilization**

- ster-ī-lī-ZĀ-shŏn
- procedure that prevents pregnancy, either a female's ability to conceive or a male's ability to induce conception

32. **syphilis**

- SIF-ī-līs
- a chronic bacterial disease spread primarily through sexual intercourse, but also congenitally by infection of a developing fetus. Rapidly spreads through the body and if left untreated becomes systemic.

33. **testicular cancer**

- tēs-TĪK-ū-lār KAN-sěr
- cancer of the testicle

34. **testicular torsion**

- tēs-TĪK-ū-lār TOR-shŏn
- twisting of the spermatic cord causing decreased blood flow to the testis. Considered a surgical emergency and accompanied by sudden onset of severe scrotal pain.

35. **transurethral**

- trans-ū-RE-thrāl
- pertaining to through the urethra

36. **transurethral incision of the prostate gland (TUIP)**

- surgical procedure that widens the urethra by making a few small incisions in the bladder neck and the prostate gland.

37. **transurethral resection of the prostate gland (TURP)**

- surgical removal of pieces of the prostate gland tissue by using an instrument inserted through the urethra.



38. **transurethral microwave thermotherapy (TUMT)**

- treatment that eliminates excess tissue present in benign prostatic hyperplasia by using heat generated by microwave.

39. **trichomoniasis**

- trīk-ō-mō-NĪ-ă-sīs
- sexually transmitted disease caused by the one-cell organism *Trichomonas*. Chiefly affects the urinary tract, vagina, or digestive system.

40. **varicocele**

- VAR-īō-sēl (Original Term)
- enlarged veins of the spermatic cord, which may cause scrotal swelling

**Activity Source:** Male Reproductive System terms not easily broken down into word parts from *Medical Terminology*. by Grimm et al., licensed under CC BY 4.0. / Some H5P audio re-recorded by Tania Deane and David McCuaig and text version added.

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## 6.2 - Anatomy (Structures) of the Male Reproductive System

The structures of the male reproductive system include the **testes**, the epididymis, the penis, and the ducts and glands that produce and carry semen. Sperm exit the scrotum through the vas deferens. The spermatic cord is an enclosed sheath which includes the vas deferens, **arteries**, **veins** and **nerves**. The seminal vesicles and **prostate gland** add fluids to the **sperm** to create **semen**.

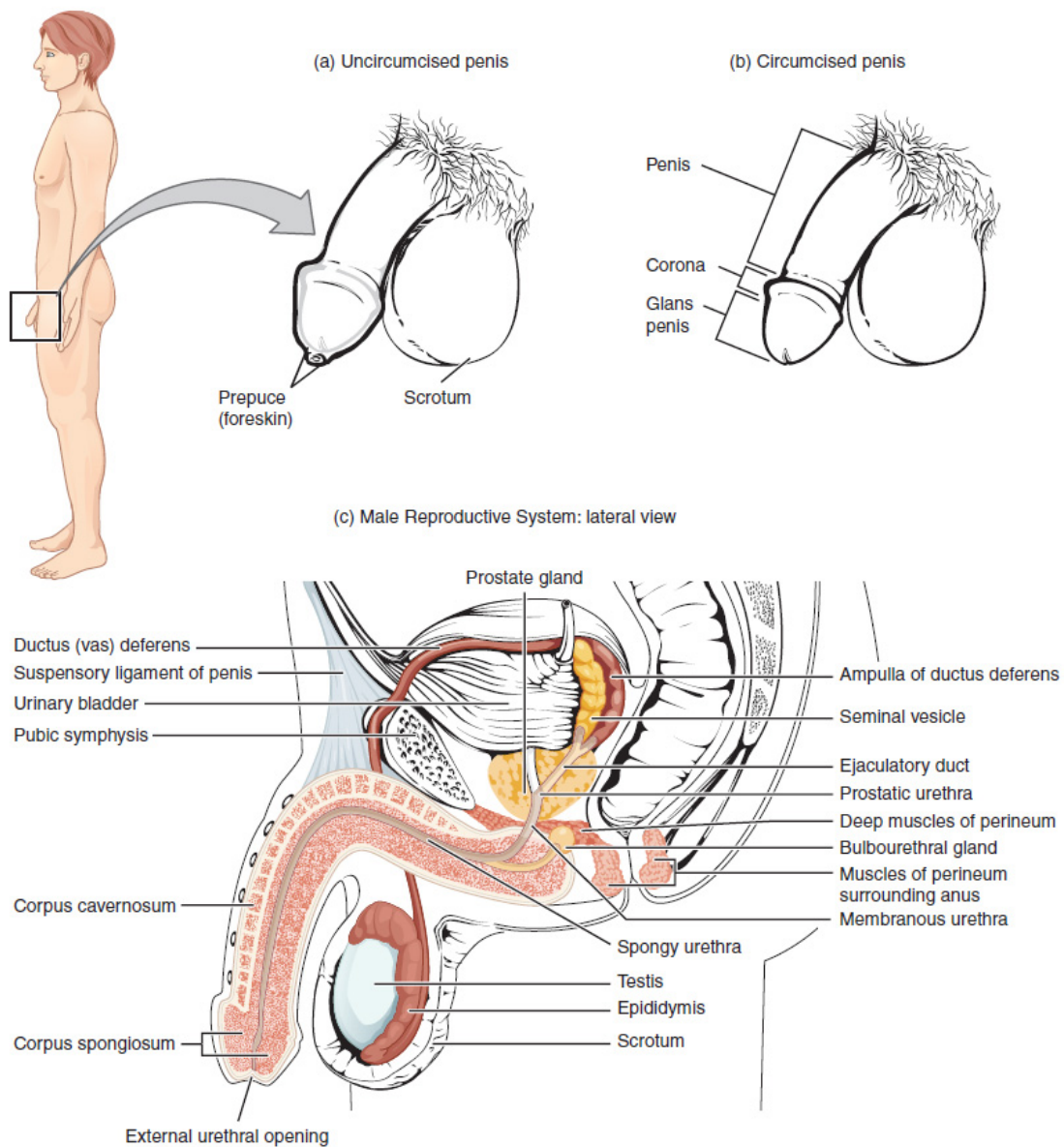


Figure 6.1. Male Reproductive System. From Betts, et al., 2013. Licensed under CC BY 4.0. [Fig. 6.1 Image description.]

## Image Descriptions

**Figure 6.1 image description:** This figure shows the different organs in the male reproductive system. The top panel shows the side view of a man and an uncircumcised and a circumcised penis. The bottom panel shows the lateral view of the male reproductive system and the major parts are labeled. [Return to Figure 6.1].

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## 6.3 - Physiology (Function) of the Male Reproductive System

### Reproductive System

#### Spermatogenesis

**Spermatogenesis** occurs in the **seminiferous tubules** that form the bulk of each testis. The process begins at puberty, after which time sperm are produced constantly throughout a man's life. One production cycle takes approximately 64 days. One production cycle is considered from **spermatogonia** through to formed sperm. A new cycle starts approximately every 16 days, although this timing is not synchronous across the **seminiferous tubules**.

#### Did You Know?

Sperm counts slowly decline after age 35, and some studies suggest that smoking can lower sperm counts irrespective of age.

#### Sperm

**Sperm** are smaller than most cells in the body; in fact, the volume of a sperm cell is 85,000 times smaller than that of the female gamete. Approximately 100 to 300 million sperm are produced each day, whereas women typically ovulate only one **oocyte** per month. As is true for most cells in the body, the structure of sperm cells speaks to their function. Sperm have a distinctive head, mid-piece, and tail region (see Figure 6.2).

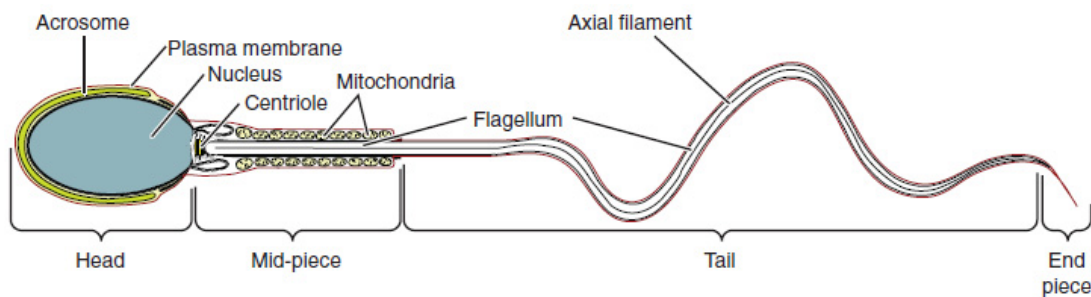


Figure 6.2. Structure of Sperm. Sperm cells are divided into a head, containing DNA; a mid-piece, containing mitochondria; and a tail, providing motility. The acrosome is oval and somewhat flattened. From Betts, et al., 2013. Licensed under CC BY 4.0. [Fig. 6.2 Image description.]

## *Sperm Transport*

To fertilize an egg, sperm must be moved from the **seminiferous tubules** in the testes, through the **epididymis**, and—later during ejaculation—along the length of the penis and out into the female reproductive tract. It takes an average of 12 days for sperm to move through the coils of the **epididymis**, with the shortest recorded transit time in humans being one day.

## Epididymis

Sperm enter the head of the epididymis and are moved by the contraction of smooth muscles lining the **epididymal** tubes. As the sperm mature they acquire the ability to move under their own power. Once inside the female reproductive tract, they will use this ability to move independently toward the unfertilized egg. The more mature sperm are then stored in the tail of the epididymis until ejaculation occurs.

## Ducts

During ejaculation, sperm exit the tail of the epididymis and are pushed by smooth muscle contraction to the **vas deferens** (also called the ductus deferens). The **vas deferens** is a thick, muscular tube that is bundled together inside the scrotum with connective tissue, blood vessels, and nerves into a structure called the **spermatic cord**. From each epididymis, each vas deferens extends through the inguinal canal in the abdominal wall and continues to a region called the ampulla. The sperm is mixed with fluid from the paired seminal vesicles and moves into its associated ejaculatory duct. The ejaculatory ducts transport the seminal fluid to the prostate gland.

## Prostate Gland

The **prostate gland** secretes an alkaline, milky fluid to the passing seminal fluid (referred to as semen) to first coagulate and then decoagulate the semen following ejaculation. The temporary thickening of semen helps retain it within the female reproductive tract and once decoagulated the sperm can pass farther into the female reproductive tract.

## Bulbourethral Glands

**Bulbourethral** glands release a thick, salty fluid that lubricates the end of the urethra and vagina, and helps to clean urine residues from the penile urethra.

## Check Your Knowledge of the Male Reproductive System

### Concept Check

- Write or draw out the components of the **pathway** that sperm takes from beginning until the end.
- Consider fertility challenges that may be experienced if a large number of defective sperm are produced.

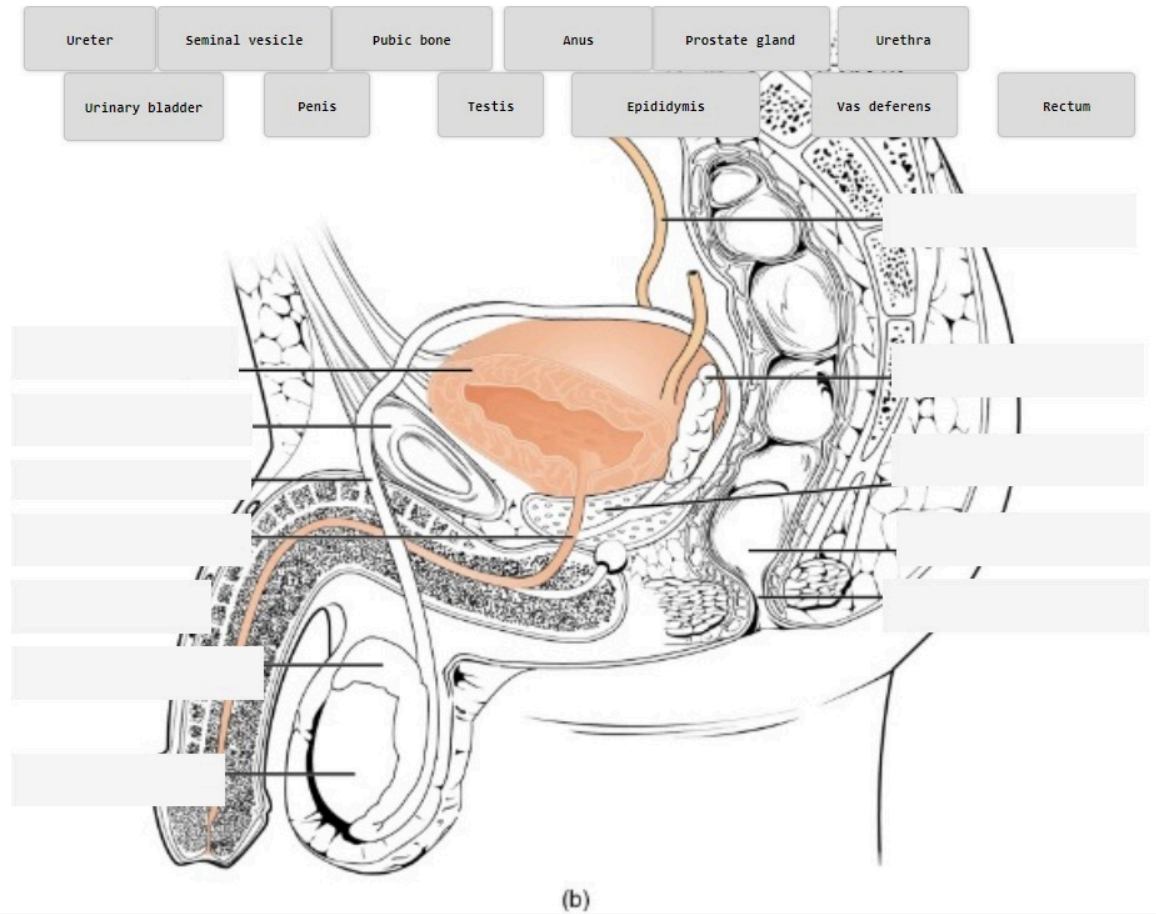
### Anatomy Labeling Activity

#### **Anatomy Labeling Activity (Text Version)**

Label the following diagram correctly with words:

- |                    |                    |                  |
|--------------------|--------------------|------------------|
| 1. Ureter          | 5. Prostate Gland  | 9. Testis        |
| 2. Seminal Vesicle | 6. Urethra         | 10. Epididymis   |
| 3. Pubic Bone      | 7. Urinary Bladder | 11. Vas Deferens |
| 4. Anus            | 8. Penis           | 12. Rectum       |

## Male Reproductive System Anatomy



### Anatomy Labeling Activity Diagram (Text Version)

Detailed anatomical diagram of the male reproductive system from a lateral viewpoint. The diagram highlights the location of key components from top of the diagram is the \_\_\_\_\_[Blank 1]. Then from right to left is the \_\_\_\_\_[Blank 2] followed by the \_\_\_\_\_[Blank 3] which are a pair of glands that secrete fluid making up a substantial portion of seminal fluid. The \_\_\_\_\_[Blank 4] is one of the three bones making up the pelvis. The \_\_\_\_\_[Blank 5] is a carrying vessel that transports sperm from the testes to the urethra. Located at the base of the bladder is \_\_\_\_\_[Blank 6], this gland secretes nourishing fluid for sperm and becomes a component of semen. The \_\_\_\_\_[Blank 7] extends from the urinary bladder and carries the semen towards the penis. The \_\_\_\_\_[Blank 8], the external male sex organ used to inseminate a female during reproduction. The \_\_\_\_\_[Blank 9] is the straight portion of the lower large intestines, and the \_\_\_\_\_[Blank 10] expels fecal matter. Located under the penis is the \_\_\_\_\_[Blank 11] and extending from the testes is a cordlike structure known as the \_\_\_\_\_[Blank 12].

**Check your answers:** <sup>1</sup>

**Activity source:** Male Reproductive System Anatomy by Gisele Tuzon, from *Building a Medical*

## Male Reproductive Terms Not Easily Broken into Word Parts

### Male Reproductive System terms not easily broken down into word parts (Text Version)

1. **hydrocele**
  - fluid-filled sac around the testicle
2. **varicocele**
  - enlarged veins of the spermatic cord
3. **ablation**
  - destruction of abnormal or excessive tissue by eroding, vaporizing or melting
4. **circumcision**
  - surgical removal of the prepuce (foreskin)
5. **enucleation**
  - excision of a whole organ or mass without cutting into it
6. **hydrocelectomy**
  - surgical removal of a fluid-filled sac around the testicle causing scrotal swelling (hydrocele)
7. **coitus**
  - sexual intercourse between male and female
8. **condom**
  - sheath (cover) for penis worn during coitus to prevent conception and spread of sexually transmitted infection
9. **infertility**



- inability to achieve pregnancy

#### 10. **sterility**

- a condition of being unable to conceive or reproduce the species

**Activity Source:** Male Reproductive System terms not easily broken down into word parts by Kimberlee Carter, from *Building a Medical Terminology Foundation* by Kimberlee Carter and Marie Rutherford, licensed under CC BY 4.0./ Text version added.

## Common Male Reproductive System Abbreviations

### Common Male Reproductive System Abbreviations

- **AIDS** (acquired immunodeficiency syndrome)
- **BPH** (benign prostatic hyperplasia, benign prostatic hypertrophy)
- **Bx** (biopsy)
- **CT** (chlamydia)
- **DRE** (digital rectal examination)
- **ED** (erectile dysfunction)
- **FTA-ABS** (florescent treponemal antibody absorption test)
- **GC** (gonococcus)
- **GU** (genitourinary)
- **HIV** (human immunodeficiency virus)
- **HoLEP** (holmium laser enucleation of the prostate gland)
- **HPV** (human papillomavirus)
- **HSV-2** (herpes simplex virus 2)
- **LUTS** (lower urinary tract symptoms)
- **NGU** (nongonococcal urethritis)
- **PSA** (prostate-specific antigen)
- **PVP** (photoselective vaporization of the prostate gland)
- **RP** (radical prostatectomy)
- **STD** (sexually transmitted disease)
- **STI** (sexually transmitted infection)
- **TRUS** (transrectal ultrasound)
- **TSE** (testicular self-examination)

- **TUIP** (transurethral incision of the prostate gland)
- **TUMT** (transurethral microwave thermotherapy)
- **TURP** (transurethral resection of the prostate gland)
- **VD** (venereal disease)
- **VDRL** (Venereal Disease Research Laboratory)

**Activity source:** Male Reproductive System Common Abbreviations by Kimberlee Carter, from *Building a Medical Terminology Foundation* by Kimberlee Carter and Marie Rutherford licensed under CC BY 4.0./ Text version.

## Image Descriptions

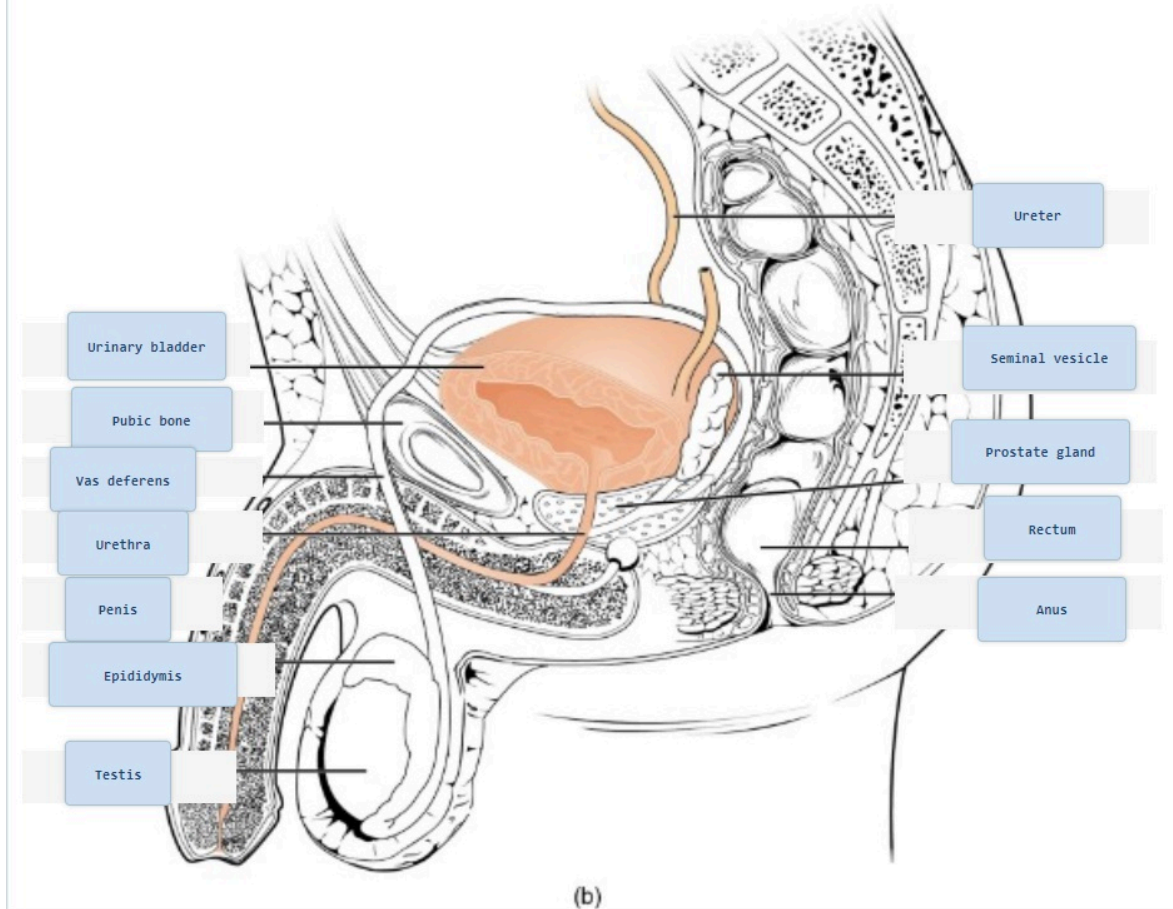
**Figure 6.2 image description:** This diagram shows the structure of sperm; the major parts are labeled (from left to right): head section (acrosome, plasma membrane, nucleus), mid-piece (centriole, mitochondria, flagellum), tail (flagellum, axial filament), end piece (end piece). [Return to Figure 6.2].

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## Notes

### Male Reproductive System Anatomy



1.

**Check your answer: Anatomy Labeling Activity Diagram (Text Version)** Detailed anatomical diagram of the male reproductive system from a lateral viewpoint. The diagram highlights the location of key components from top of the diagram is the **ureter**. Then from right to left is the **urinary bladder** followed by the **seminal vesicles** which are a pair of glands that secrete fluid making up a substantial portion of seminal fluid. The **pubic bone** is one of the three bones making up the pelvis. The **vas deferens** is a carrying vessel that transports sperm from the testes to the urethra. Located at the base of the bladder is **prostate gland**, this gland secretes nourishing fluid for sperm and becomes a component of semen. The **urethra** extends from the urinary bladder and carries the semen towards the penis. The **penis**, the external male sex organ used to inseminate a female during reproduction. The **rectum** is the straight portion of the lower large intestines, and the **anus** expels fecal matter. Located under the penis is the **testes** and extending from the testes is a cordlike structure known as the **epididymis**.

## 6.4 - Male Reproductive Diseases, Disorders and Diagnostic Testing

### Erectile Dysfunction Disorder (EDD)

**Erectile dysfunction** (ED) is a condition in which a male has difficulty either initiating or maintaining an erection. The combined prevalence of minimal, moderate, and complete ED is approximately 40% in men at age 40 and reaches nearly 70% by 70 years of age. In addition to aging, ED is associated with diabetes, vascular disease, psychiatric disorders, prostate disorders, the use of some drugs such as certain antidepressants, and problems with the testes resulting in low testosterone concentrations. These physical and emotional conditions can lead to disruptions in the vasodilation pathway and result in an inability to achieve an erection (Betts, et al., 2013).

### Cancer

#### Prostate Cancer

According to the Centers for Disease Control and Prevention (CDC), prostate cancer is the second most common cancer occurring in men. However, some forms of prostate cancer grow very slowly and may not require treatment. In contrast, aggressive forms of prostate cancer involve **metastasis** to organs like the lungs and brain. There is no link between Benign Prostatic Hyperplasia and prostate cancer, but the symptoms are similar. Prostate cancer is detected by medical history, a blood test, and a digital rectal exam that allows physicians to palpate the prostate and check for unusual masses. If a mass is detected, the cancer diagnosis is confirmed by biopsy of the cells (Betts, et al., 2013).

#### Did You Know?

Family history is a common risk factor for testicular cancer.

## Testicular Cancer

Testicular cancer begins in the **testicle** or testis. It is most often found in men age 15 to 44 years, although it can be diagnosed at any age (Canadian Cancer Society, 2020). Testicular cancer is rare and treatable when diagnosed early. Common signs and symptoms include a painless lump in the testicle, swelling, a heavy feeling in the **scrotum** or abdomen, amongst others. Sometimes, testicular cancer is found during infertility testing. An **orchiectomy** is the most common procedure for diagnosing and treating testicular cancer (Canadian Cancer Society, 2020). To learn more about testicular cancer, diagnosis, and treatments, please go to the Canadian Cancer Society's web page on testicular cancer [New Tab] (<https://www.cancer.ca/en/cancer-information/cancer-type/testicular/testicular-cancer/?region=on>).

## Sexually Transmitted Infections (STIs)

The terms for sexually transmitted infections (STI) and sexuality transmitted diseases (STD) are often used interchangeably. Sexuality transmitted disease (STD) implies the disease was acquired through sexual transmission. A disease is a disorder of structure or function in a human, which produces specific signs or symptoms. A disease must be managed, as with the case of human immunodeficiency virus (which can also be acquired through the transmission of other bodily fluids; thus not solely sexual transmission). The treatment may include **antiretrovirals** or **anti-virals** (Urology Care Foundation, 2019).

## Chlamydia (CT)

Chlamydia is one of the most common sexually transmitted infections (STIs) caused by bacteria that infect the cervix, urethra, and other reproductive organs. Chlamydia is easy to treat and can be cured. Many people with chlamydia do not have any symptoms and unknowingly pass the infection to their sexual partner(s). If symptoms develop, they usually appear two to six weeks after sexual contact with an infected person. Males may have penial discharge and itching around the urethra. The urethra is the opening in the penis. Males may also experience **dysuria**, **polyuria**, urethral pain and **urethritis** (Ontario Agency for Health Protection and Promotion, 2019; Region of Peel, 2007).

Chlamydia spreads through unprotected oral, anal or vaginal sex with an infected person. Chlamydia can be spread to the eyes via the hands with direct contact of infected fluids. Until a patient finishes their treatment, they continue to have the infection and can continue to pass it to others. Chlamydia is treated with antibiotic pills. If the patient has **epididymitis**, they may need to be hospitalized and be treated with intravenous (IV) antibiotics. All sexual partners within the past 60 days should be examined, treated, and informed that having no symptoms does not mean there is no infection (Ontario Agency for Health Protection and Promotion, 2019; Region of Peel, 2007).

## Gonorrhea (Gonococcus) – (GC)

Gonorrhea is a sexually transmitted infection (STI) caused by bacteria that infects the cervix, urethra, and other reproductive organs. Infections can also infect the throat and anus. Gonorrhea can be treated and cured. Many people infected with gonorrhea have no symptoms and can unknowingly pass the infection on to their sexual partner(s). If symptoms develop, they may appear two to seven days after sexual contact with an infected person. Symptoms vary depending on which part of the body is infected. Males may have yellowish-white discharge from the penis. They may also have **dysuria**, **polyuria**, testicular pain and **testitis**. Gonorrhea infection from oral sex may lead to sore throat and swollen glands. Gonorrhea infection from anal sex may cause itchiness and discharge from the anus. Gonorrhea is spread through unprotected oral, vaginal or anal sex with an infected person. Until the patient finishes their treatment, they continue to have the infection and can pass it to others (Ontario Agency for Health Protection and Promotion, 2019a; Region of Peel, 2007).

Gonorrhea is treated with oral **antibiotics** in combination with an **intramuscular** (IM) injection. It is important that one completes the treatment and abstain from unprotected sexual activity for at least seven days following treatment. If the patient develops **epididymitis**, the patient may need to go to a hospital and be treated with intravenous antibiotics. All sexual partners within the past 60 days should be examined, treated, and informed that having no symptoms does not mean there is no infection (Ontario Agency for Health Protection and Promotion, 2019a; Region of Peel, 2007).

## Reportable Diseases

Both chlamydia and gonorrhea are reportable diseases to the Ministry of Health and Long Term Care. Therefore, the local health department will be calling the doctor's office or patient to ensure correct treatment was received and sexual partners have been followed up with testing and treatment (Ontario Agency for Health Protection and Promotion, 2019a; Region of Peel, 2007). To learn more about STIs and STDs such as chlamydia and gonorrhea, please go to the Public Health Ontario website [New Tab] (<https://www.publichealthontario.ca/en/diseases-and-conditions/infectious-diseases/sexually-transmitted-infections>).

## Human Papillomavirus- HPV

HPV is another common sexually transmitted infection (STI). Both males and females can be infected with HPV. Around three quarters of sexually active individuals have been exposed to HPV during their lifetime. There are over 100 strains of HPV and some strains of HPV can cause visible genital warts. The warts are usually painless but may be itchy, uncomfortable, and hard to treat. Some strains of HPV cause genital, anal, throat, and cervical cancers. HPV spreads through sexual activity and skin-to-skin contact in the genital area with an infected person. Since some people are **asymptomatic**, they don't know they have the virus and consequently pass the virus to their sexual partners. Treatments are available for genital warts but there is no cure for HPV (York Region Health Connect, n.d.). To learn more about HPV symptoms, treatments, and prognosis, visit the CDC Fact Sheet on HPV [PDF] (<https://www.cdc.gov/std/hpv/hpv-Fs-July-2017.pdf>).

## HPV Vaccine

A vaccine called Gardasil® 9 is available for 9 HPV strains. This vaccine assists the immune system in protecting the body against infections and diseases caused by HPV (York Region Health Connection, n.d.). To learn more about Gardasil® 9 treatments, please visit the Gardasil® 9 website [New Tab] (<https://www.gardasil9.ca/>).

## Herpes Simplex Virus (HSV)

Genital herpes is a sexually transmitted infection (STI) that is caused by a virus called herpes simplex virus (HSV). There are two types of herpes simplex viruses:

- Type 1- oral herpes or cold sores (HSV-1)
- Type 2- genital herpes (HSV-2)

These viruses are very similar and either type can cause genital herpes or cold sores. Symptoms might include **dysuria**, enlarged glands, **myalgia**, **arthralgia** and fever. Once a patient is infected with HSV, the virus remains in their body even after the symptoms are gone and can cause recurring outbreaks. When the virus becomes active again, the symptoms return but are usually less painful and heal faster. Recurring outbreaks vary from person-to-person, however they can be triggered by emotional or physical stress, exposure to sunlight, hormonal changes, poor nutrition, sexual intercourse, lack of sleep or a low immune system.

Herpes is spread through direct contact with the sores or blisters of an infected person. Contact (and transfer of the virus) can occur from genitals-to-genitals, mouth-to-genitals or mouth-to-mouth. Herpes can also be passed to the anal area. Herpes spreads easily during sexual contact while symptoms are present, or just before an outbreak of symptoms. An infected person may spread herpes even when they have *no* symptoms; this is called **asymptomatic** shedding. One can spread the herpes virus to other parts of their body after touching the sores, which is referred to as **autoinoculation**. The fingers, eyes, and other body areas can accidentally become infected in this way. Hand washing after touching sores and blisters is recommended to prevent spreading the virus.

There is no cure for herpes. Antiviral pills help to reduce symptoms and speed the healing of blisters or sores and are prescribed by a doctor. Treatment of symptoms may be managed with medication for pain, bath salts, cold compresses, and urinating in water may help to relieve discomfort. Keep the infected area clean and dry, wear cotton underwear and loose clothing to reduce discomfort. All sexual partner(s) should be informed. The only way to reduce the risk, of transmission of herpes is to avoid direct contact with the sores and to use condoms. Condoms will reduce but not eliminate risk as the virus can be present and shed from the skin in the genital area (Ontario Ministry of Health and Long-Term Care, 2015).

To learn more about the symptoms, complications, treatments and prognosis of HSV, please visit the Mayo Clinic's page on Genital Herpes [New Tab] (<https://www.mayoclinic.org/diseases-conditions/genital-herpes/symptoms-causes/syc-20356161>) website or Public Health Ontario's Testing Index [New Tab] (<https://www.publichealthontario.ca/en/laboratory-services/test-information-index/>).

## STI Medical Abbreviations

### Reproductive Sexually Transmitted Infections (STIs) Abbreviations

- **AB** (Antibiotic)
- **CT** (Chlamydia)
- **GC** (Gonorrhea)
- **HPV** (Human Papillomavirus)
- **HSV** (Herpes Simplex Virus)
- **PID** (Pelvic Inflammatory Disease)
- **STD** (Sexually Transmitted Diseases)
- **STI** (Sexually Transmitted Infections)

**Activity source:** Reproductive Sexually Transmitted Infections (STIs) Abbreviations by Kimberlee Carter, licensed under CC BY 4.0./Text version added.

## Medical Terms in Context

### Male Reproductive System Medical Report (Text Version)

Fill in the consultation report with correct words listed below:

- Urethral
- Prostatitis
- Complete
- by mouth
- circumcised

MALE REPRODUCTIVE SYSTEM – MEDICAL REPORT

PATIENT NAME: George SMITH

AGE: 57

SEX: Male

HISTORY (Hx): George Smith is a 57-year-old male who was referred to the urologist for a vasectomy.

FAMILY HISTORY: Has three living children. Occasional condom use for birth control.

PAST HISTORY



1. Herpes Simples Virus-2 (HSV-2) diagnosis (Dx) in 2002 and treated sexually transmitted infection (STI) in 2014.
2. Transurethral resection of the prostate (TURP) in 2019.
3. Current prostate specific antigen (PSA) is 15.6, with a previous result of 4.2.

PHYSICAL EXAMINATION/ASSESSMENT: Upon examination, normal male anatomy with \_\_\_\_\_[Blank 1] penis, normal foreskin and one testicle is descended. Leukorrhea is evident from the tip of the urethral os.

Complains of (c/o) urinary retention, nocturia and dysuria. He has had unprotected sexual intercourse four days ago. Digital rectal exam (DRE) indicated \_\_\_\_\_[Blank 2] with proctalgia.

#### DIAGNOSIS (Dx)

1. Urethral swab for gonorrhea/chlamydia (GC/CT).
2. Serology: PSA, \_\_\_\_\_[Blank 3] blood count (CBC).
3. Urine: Urinalysis, GC/CT, culture, and sensitivity (C&S).
4. Sonography for the undescended testicle.

#### MEDICATIONS (Rx)

1. Ceftriaxone 250 mg intramuscular immediately (IM STAT)
2. Azithromycin 1 g \_\_\_\_\_[Blank 4] immediately (po STAT)

#### PRELIMINARY CONCERNS

1. Rising PSA.
2. \_\_\_\_\_[Blank 5] discharge.
3. Undescended.

FOLLOW UP: Call office in 5 days for test results and follow up appointment in 2 weeks to discuss further booking of vasectomy and potential Bx (biopsy) of prostate.

-----  
Steve Fosters, MD, Urology

**Note:** Report samples (H5P and Pressbooks) are to encourage learners to identify correct medical terminology and do not represent the Association for Health Documentation Integrity (AHDI) formatting standards.

#### Check your answers: <sup>1</sup>

**Activity source:** Male Reproduction – Medical Report by Connie Stevens and Heather Scudder, licensed under CC BY 4.0./Text version added.

# Medical Specialties and Procedures related to the Male Reproductive System

## Vasectomy

### Watch the video:

Watch the **Animated Dissection of Anatomy for Medicine's (A.D.A.M.) [Video]** (<https://medlineplus.gov/ency/anatomyvideos/000139.htm>) to learn about a vasectomy. As described in this video, a vasectomy is a procedure in which a small section of the ductus (vas) deferens is removed from the scrotum. This cuts off the path taken by sperm through the ductus deferens (as cited in Betts, et al., 2013).

## No-Scalpel Vasectomy (NSV)

An alternative to a traditional vasectomy is the no-scalpel vasectomy (NSV). This is a minimally invasive procedure and an added benefit is that the recovery time is shorter. All vasectomies are completed by a urologist (Gentle Procedures Clinic, n.d.). To learn more about the NSV procedure, visit No-Scalpel Vasectomy Procedure Info [New Tab] (<https://gentleproceduresontario.ca/vasectomy/no-scalpel-no-needle/>) by the Gentle Procedures Clinic in Toronto, Ontario.

## Urology

Urology is a surgical subspecialty in which the surgeon has additional training in the treatments of diseases and disorders of the male and female urogenital systems (Canadian Medical Association, 2018). To learn more about urology and the training involved to become a urologist, visit the Canadian Medical Association's Urology Profile [New Tab] (<https://www.cma.ca/sites/default/files/2019-01/urology-e.pdf>).

## Attribution

Except where otherwise noted, this chapter is adapted from “Male Reproductive System (<https://ecampusontario.pressbooks.pub/medicalterminology/chapter/male-reproductive-system/>)” in *Building a Medical Terminology Foundation* by Kimberlee Carter and Marie Rutherford licensed under CC BY 4.0. / A derivative of Betts et al., which can be accessed for free from *Anatomy and Physiology (OpenStax)*

(<https://openstax.org/books/anatomy-and-physiology/pages/1-introduction>). Adaptations: dividing Male Reproductive System chapter content into sub-chapters.

## Notes

1. Circumcised, 2. Prostatitis, 3. Complete, 4. By mouth, 5. Urethral

# Vocabulary & Check Your Knowledge

## Male Reproductive Vocabulary

### **Arthralgia**

Joint pain.

### **Bulbourethral glands**

(Also, Cowper's glands) glands that secrete a lubricating mucus that cleans and lubricates the urethra prior to and during ejaculation.

### **Corpus cavernosum**

Either of two columns of erectile tissue in the penis that fill with blood during an erection.

### **Corpus spongiosum**

(Plural = corpora cavernosa) column of erectile tissue in the penis that fills with blood during an erection and surrounds the penile urethra on the ventral portion of the penis.

### **Ductus deferens**

(also, vas deferens) duct that transports sperm from the epididymis through the spermatic cord and into the ejaculatory duct; also referred as the vas deferens.

### **Dysuria**

Painful urination.

### **Ejaculatory duct**

Duct that connects the ampulla of the ductus deferens with the duct of the seminal vesicle at the prostatic urethra.

### **Epididymis**

(plural = epididymides) coiled tubular structure in which sperm start to mature and are stored until ejaculation.

### **Epididymitis**

Inflammation/swelling of the epididymis.

### **Gamete**

Haploid reproductive cell that contributes genetic material to form an offspring.

### **Glans penis**

Bulbous end of the penis that contains a large number of nerve endings.

**Gonadotropin-releasing hormone (GnRH)**

Hormone released by the hypothalamus that regulates the production of follicle-stimulating hormone and luteinizing hormone from the pituitary gland.

**Gonads**

Reproductive organs (testes in men and ovaries in women) that produce gametes and reproductive hormones.

**Inguinal canal**

Opening in abdominal wall that connects the testes to the abdominal cavity.

**Leydig cells**

Cells between the seminiferous tubules of the testes that produce testosterone, a type of interstitial cell.

**Myalgia**

Muscle pain.

**Penis**

Male organ of copulation.

**Polyuria**

Frequent urination.

**Prepuce**

(Also, foreskin) flap of skin that forms a collar around, and thus protects and lubricates, the glans penis; also referred as the foreskin.

**Prostate gland**

Doughnut-shaped gland at the base of the bladder surrounding the urethra and contributing fluid to semen during ejaculation.

**Scrotum**

External pouch of skin and muscle that houses the testes.

**Semen**

Ejaculatory fluid composed of sperm and secretions from the seminal vesicles, prostate, and bulbourethral glands.

**Seminal vesicle**

Gland that produces seminal fluid, which contributes to semen.

**Seminiferous tubules**

Tube structures within the testes where spermatogenesis occurs.

**Sertoli cells**

Cells that support germ cells through the process of spermatogenesis; a type of sustentacular cell.

**Sperm**

(Also, spermatozoon) male gamete.

**Spermatic cord**

Bundle of nerves and blood vessels that supplies the testes; contains ductus deferens.

**Spermatid**

Immature sperm cells produced by meiosis II of secondary spermatocytes.

**Spermatocyte**

Cell that results from the division of spermatogonium and undergoes meiosis I and meiosis II to form spermatids.

**Spermatogenesis**

Formation of new sperm, occurs in the seminiferous tubules of the testes.

**Spermatogonia**

Diploid precursor cells that become sperm (singular = spermatogonium).

**Spermiogenesis**

Transformation of spermatids to spermatozoa during spermatogenesis.

**Testes**

Male gonads (singular = testis).

**Testitis**

Inflammation of the testicles.

**Urethritis**

Inflammation of the urethra.

## Test Yourself

### Male Reproductive System Glossary Reinforcement Activity (Text Version)

1. The reproductive organs (testes in men and ovaries in women) that produce gametes and reproductive hormones is called the \_\_\_\_\_[Blank 1].
  - a. Penis
  - b. Semen
  - c. Gonads
2. The transformation of spermatids to spermatozoa during spermatogenesis is called \_\_\_\_\_[Blank 2].
  - a. Spermatogenesis
  - b. Prepuce
  - c. Ductus deferens
3. Glands that secrete a lubricating mucus that cleans and lubricates the urethra prior to and during ejaculation are called \_\_\_\_\_[Blank 3].
  - a. Testes
  - b. Bulbourethral glands
  - c. Scrotum
4. A doughnut-shaped gland at the base of the bladder surrounding the urethra and contributing fluid to semen during ejaculation is called the \_\_\_\_\_[Blank 4].
  - a. Seminal vesicle
  - b. Epididymis
  - c. Prostate gland
5. Opening in the abdominal wall that connects the testes to the abdominal cavity is called the \_\_\_\_\_[Blank 5].
  - a. Inguinal canal
  - b. Sertoli cells
  - c. Gamete

**Check your answers:** <sup>1</sup>

**Activity source:** Male Reproductive System Glossary Reinforcement Activity by Gisele Tuzon, licensed under CC BY 4.0.

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## Notes

1. 1. Gonads, 2. Spermatogenesis, 3. Bulbourethral glands, 4. Prostate gland, 5. Inguinal Canal



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