

## Introduction

The testicles are two egg-shaped male sex glands located inside the scrotum. They produce testosterone and sperm. Germ cells within the testicles produce immature sperm that travel through a network of tubules (tiny tubes) and a larger tubule called the epididymis where the sperm mature and are stored.

Testicular cancer is the most common solid cancer in men ages 20-40 years old and has a high cure rate. The average age of diagnosis is 33 years old. The average 5-year survival rate is 95%. It accounts for less than one percent of all tumors found in men.

## Testicular Cancer is Classified in One of Two Ways

- **Seminoma:** This type of testicular cancer is more common and usually occurs in men between their late 30s and early 50s.
- **Nonseminoma:** This group of testicular cancer tends to grow and spread faster and includes four types: choriocarcinoma, embryonal carcinoma, teratoma, and yolk sac tumors. These types of tumors occur earlier in life than seminomas, usually occurring in men between their late teens and early 40s.

The incidence rate is highest among Caucasian males, lowest among African Americans, and is rapidly increasing in the Hispanic population.

## Risk Factors for Developing Testicular Cancer

- History of an undescended testicle.
- History of an abnormal development of the testicles.
- A personal or family history of testicular cancer.
- A diagnosis of Klinefelter syndrome.

## Signs or Symptoms to Watch for:

- A painless lump or swelling in either testicle.
- A change in how the testicle feels.
- A dull ache in the lower abdomen or groin.
- A sudden build-up of fluid in the scrotum
- Pain or discomfort in a testicle or in the scrotum.
- Enlarged lymph nodes (lower neck, upper chest, groin).
- Breast enlargement.
- Clots in the lung or veins.

## Tests and Procedures Used to Diagnose Testicular Cancer May Include:

- **Ultrasound:** A painless test that passes sound waves through your scrotum to make an image of your testicles.
- Chest x-ray and /or chest CT scan.
- Abdominal/Pelvic CT scan or CT-PET scan with IV contrast.
- Abdominal/Pelvic MRI only if CT scans are contraindicated.
- Blood tests include a chemistry panel and serum tumor markers. Serum tumor markers are used to measure the amount of specific proteins released into the blood by organs, tissues, or tumor cells. These protein levels may be increased with testicular cancer.

There are three types of tumor markers used to detect testicular cancer:

- Alpha-fetoprotein (AFP)
- Beta-human chorionic gonadotropin (B-hCG)
- Lactate dehydrogenase (LDH)

## Treatment Options:

- Radical inguinal orchiectomy: A surgical procedure that involves removing one or both testicles through a cut in the groin. The tumor will be sent to the lab and, if cancer is found, the cell type will be determined (seminoma or non-seminoma) to help plan treatment.
- Retroperitoneal lymph node dissection: A surgical procedure that involves removing lymph nodes at the back of the abdomen. This may be a necessary procedure depending on the pathology and imaging results, and any tumor spread that may have occurred. It can be suggested either before or after radiation/chemotherapy.
- Testis-sparing surgery is reserved for highly selected patients.
- External beam radiation therapy: This treatment uses high-dose x-rays or other high-energy radiation to destroy cancer cells.
- Chemotherapy: Used to destroy cancer cells that have spread outside of the testicle. This drug therapy is usually given by infusions into your veins, which is typically done on an outpatient basis.

Surgery may be used in combination with radiation therapy or chemotherapy or both. This depends on the type and stage of the cancer.

## Post-Treatment Implications

- Certain treatments for testicular cancer can cause permanent infertility and low testosterone levels. If desired, sperm banking is an option to freeze and store sperm for later use.
- After the surgical removal of a testicle, an artificial testicle (prosthesis) can be placed inside the scrotum. The artificial implant has the weight and feel of a normal testicle. This procedure can be completed at the time your testicle is removed.

## Prevention

Testicular cancer is not preventable. Testicular self-examination (TSE) can improve your chances of finding a mass. Examine your testicles regularly beginning in your mid-teenage years and continuing throughout life. A good time to examine your testicles is after a warm bath or shower. The heat from the water relaxes your scrotum, making it easier to find anything unusual. Do this once a month.

To perform a TSE, follow these steps, as recommended by the American Cancer Society:

- Stand in front of a mirror. Look for any swelling on the skin of the scrotum.
- Examine each testicle with both hands. Place the index and middle fingers under the testicle while placing your thumbs on top.
- Gently roll the testicle between the thumbs and fingers. The testicles are usually smooth, oval shaped and somewhat firm. It's normal for one testicle to be slightly larger than the other.
- If you find a lump, seek prompt medical evaluation and treatment.

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## References

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- National Comprehensive Cancer Network. (2019). *NCCN flash updates: NCCN Guidelines®, NCCN Compendium®, and NCCN Templates® for testicular cancer*. Plymouth Meeting, PA: Author.

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