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Contact Hours: **6**

## Prostate Cancer

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**COURSE OBJECTIVE:** The purpose of this course is to enable healthcare professionals to understand the epidemiology, diagnosis, and treatment of prostate cancer; approaches to prostate cancer screening and prevention; and evaluation of nursing and medical interventions for patients with prostate cancer and their significant others.

### LEARNING OBJECTIVES

Upon completion of this course, you will be able to:

- Discuss the epidemiology of prostate cancer.
- Identify the anatomy and physiology of the normal, healthy prostate gland.
- Describe the pathogenesis and risk factors for development of prostate cancer.
- List protective factors for the prevention of prostatic cancer.
- Summarize diagnostic testing, grading, and staging of prostate cancer.
- Describe the surgical and nonsurgical treatment options, along with their side effects, for prostate cancer.
- Discuss nursing care both for patients undergoing prostate cancer treatment and for their significant others.
- Outline rehabilitation interventions for complications the patient with prostate cancer may experience.

## INTRODUCTION

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Prostate cancer is the most common type of cancer among men, second only to nonmelanoma skin cancer in both men and women. Prostate cancer is a slowly progressing disease, and many men die of old age without ever knowing they have it. Prostate cancer is often found when an

autopsy is performed, and studies indicate that perhaps 80% of all men in their eighties may have undiagnosed prostate cancer when they die.

Prostate cancer arises in the genital area, threatening that part of the body concerned with sexual function and body waste. Because the prostate is close to several vital structures, prostate cancer and its treatment strategies can disrupt normal bladder, bowel, and sexual functioning.

Additionally, prostate biopsies raise the risk of hospitalization in many men due to infections and flare-ups of heart failure and pneumonia. Permanent urinary incontinence and impotence may be the result of the disease and/or treatment. Thus, when the diagnosis of prostate cancer is made, it has a profound impact on both the patient and his significant others.

Most often prostate cancer grows slowly and is confined initially to the prostate gland, causing no serious harm and requiring little or no treatment. However, other types are very aggressive and spread quickly. Early treatment is usually successful. Treating prostate cancer when it is small and confined inside the prostate can often cure the disease.

Healthcare providers are critical in the management of prostate cancer throughout the disease continuum. Education, care, and emotional support to the patient, his partner, and family are vital from screening to diagnosis and throughout the treatment and management of prostate cancer.

## EPIDEMIOLOGY

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The National Cancer Institute estimates that there will be 220,800 new cases of prostate cancer diagnosed in the year 2015, and there are an estimated 2,796,000 men living with prostate cancer in the United States. Statistical models show that rates for new prostate cancer cases have been falling on average 4.3% each year over the last 10 years. NCI researchers are studying this fall in incidence, which may be related to changing PSA screening patterns.

Prostate cancer is most often diagnosed among men ages 65 to 74 (6 in 10) and is rarely diagnosed before age 40. It is estimated that 14% of men (1 in 7) will be diagnosed with prostate cancer at some point during their lifetime, with a median age of 66 at time of diagnosis (NCI, 2015).

### **Race, Nationality, Ethnicity**

The CDC (2014) reports that prostate cancer is the most common cancer in all men regardless of race or ethnicity. However prostate cancer is more common in African American men than in white men, and it is less common in Hispanic, Asian, Pacific Islander, and Native American men than in white men.

In the United States the incidence rates are highest in the South, followed by the Midwest, the West, and Northeast.



Recent global statistics show that French Martinique had the highest rate of prostate cancer, followed by Norway and France. The highest incidence of prostate cancer is in Australia and the South Pacific Islands, and the lowest in Asia and Africa. About 68% of prostate cancers occur in more developed countries, which may be due to more screening being done (WCRFI, 2015).

## Mortality

Although rates for new prostate cancer cases have been declining over the last 10 years, death rates have not changed significantly. The National Cancer Institute (2015) estimates that in 2015 about 27,540 deaths will occur due to prostate cancer, which accounts for 4.7% of all cancer deaths.

Death from prostate cancer is highest among men ages 75 to 84 years, and the median age at death is 80. It is the second-leading cause of cancer deaths in American men, second only to lung cancer. One in 38 men will die of prostate cancer. It is the second-leading cause of cancer death among white, black, American Indian/Alaskan Native, and Hispanic men. It is the fourth-leading cause of cancer death among Asian/Pacific islander men.

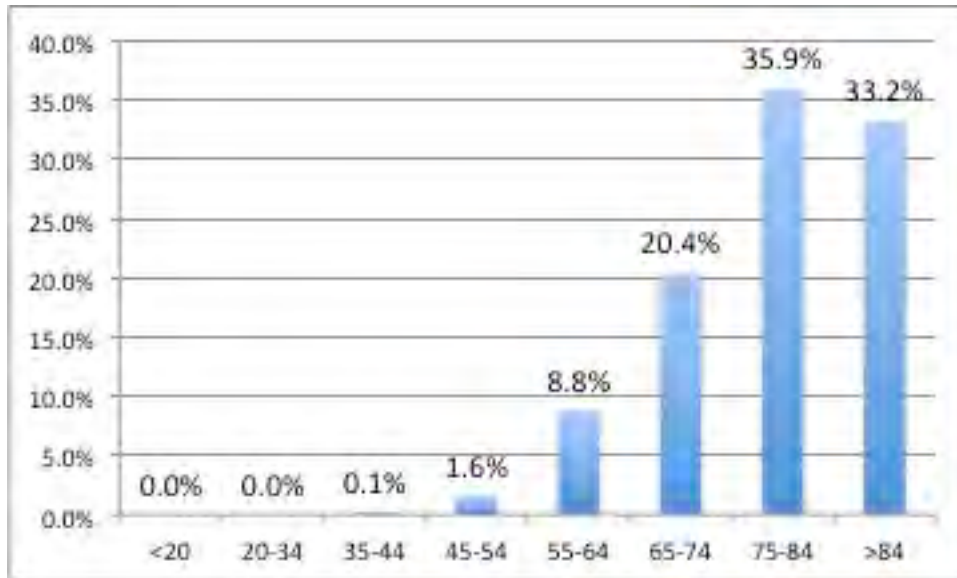
Relative **survival rates** are used when discussing a person's prognosis. The 5-year survival rate is the percentage of patients who live at least 5 years after receiving a cancer diagnosis. According to the National Cancer Institute (2015), the relative 5-year survival rate is almost 100%, the relative 10-year survival rate is 99%, and the relative 15-year survival rate is 94%.

The National Cancer Institute groups cancers into local, regional, and distant stages.

- **Local** means there is no sign that the cancer has spread outside of the prostate. About 4 out of 5 prostate cancers are found in this early stage, and the 5-year survival rate for this stage is nearly 100%.
- **Regional** cancers are those that have spread from the prostate to nearby areas, including lymph nodes. The 5-year survival rate for these cancers is also nearly 100%.
- **Distant** cancers include those that have spread to distant lymph nodes, bones, or other organs. The 5-year survival rate for these cancers is only 24% to 31% (CTCA, 2015).

The disease statistics suggest that prostate cancers are slow-growing tumors. Overall, the timespan between the median age of diagnosis (66 years) and the median age of death (80 years) suggests that even among the cases of all prostate cancer that directly cause death, the cancer tends to be a slowly progressing disease that takes more than 10 years to become fatal.





Percentage of U.S. deaths from prostate cancer by age group: 2008–2012, age-adjusted.  
(Source: National Cancer Institute, 2015.)

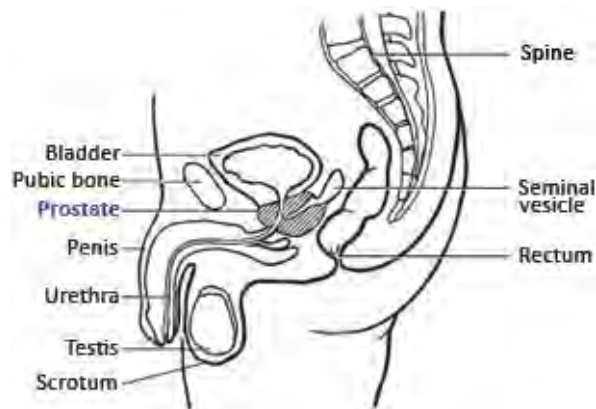
## ANATOMY, PHYSIOLOGY, AND GROWTH OF THE PROSTATE GLAND

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The prostate gland is part of the male reproductive system. Its function is to add fluid to semen. The prostate is a dense, muscular, secretory organ the size and shape of a horse chestnut that lies behind the pubic symphysis and in front of the rectum.

### **Anatomy**

The prostate surrounds the first segment of the urethra and sits between the base of the bladder and the urogenital diaphragm of the pelvic floor. The portion of the prostate against the bladder is called the base. The other end is called the apex, and this end follows the urethra, tapering toward the pelvic floor.



**Anatomy of the male urogenital system.** A figure such as this should be posted in any consulting room where patients are informed and educated about prostate cancer. (Source: Centers for Disease Control and Prevention.)

Functionally, the prostate lies along the line of travel for sperm, which leave the testes, pass through the deferens ducts, and are ejected through the urethra of the penis. Each deferens duct enters the base of the prostate laterally near the bladder. Before entering the prostate, the ducts of the neighboring seminal vesicles merge with the deferens ducts to form the ejaculatory ducts. These combined ducts open into the prostatic urethra as longitudinal slits on either side of the midline. More distally, although still inside the prostatic segment of the urethra, a number of smaller ducts empty into the urethra and carry the secretions from the glands that are a part of the prostate.

The bulk of the prostate is found behind and on both sides of the urethra. The front, or anterior, segment of the prostate is filled with transverse muscle forming a meshwork that supports the glandular tissue. The muscle is continuous with the urethral sphincter underneath. The back, or posterior, surface of the prostate is just in front of the rectum. This surface has two lateral bulges separated by a furrow, and these external landmarks and the consistency of the prostate can be felt through the anterior wall of the rectum.

## INTERNAL DIVISIONS

The lateral bulges of the prostate are sometimes called prostatic lobes, but they do not correlate with specific internal structures. Instead, the inner architecture of the prostate comprises three concentric ovoid tissues surrounding the urethra. Each of the three tissue zones contains its own characteristic type of glands.

The innermost core of prostate tissue is called the **transition zone**. This small, spherical region surrounds the urethra just proximal to the entry of the ejaculatory ducts. Normally, the transition zone makes up 5% to 10% of the prostate. In benign prostatic hypertrophy (BPH) (see below under “Growth of the Prostate”), the transition zone expands, and it often impinges on the urethra or the base of the bladder. Approximately 10% to 15% of cancers begin in the transition zone (Cheuck, 2014).



The middle tissue of the prostate is called the **central zone**. This zone is shaped like an indented cone. The central zone surrounds the ejaculatory ducts as they run behind the transition zone and empty into the urethra. Normally, the central zone makes up 25% of the prostate. Fifteen percent to 20% of prostate cancers begin in the central zone (Cheuck, 2014).

The outermost tissue of the prostate is called the **peripheral zone**. It encloses the transition and central zones. The peripheral zone tapers along the urethra and ends by merging with the surface of the external urethral sphincter. Normally, the peripheral zone makes up 65% to 70% of the prostate. Seventy percent of all prostate cancers begin in the peripheral zone (Cheuck, 2014). This explains the common presenting symptoms associated with voiding urine, such as weak urine stream, difficulty starting urination, pain, and urgency.

Most prostate cancers, however, are multifocal, with synchronous involvement of multiple zones of the prostate (Chodak, 2014).

## BLOOD VESSELS AND NERVES

Blood is supplied to the prostate mainly from a branch of the internal iliac artery. Most of the lymph nodes that drain the prostate are found along the internal iliac blood vessels and the neighboring obturator muscles.

The prostate is innervated by both sympathetic and parasympathetic autonomic axons. These axons come from the prostatic plexus, a collection of autonomic nerves and neurons that are trunks of the superior hypogastric plexus, a meshwork of nerves that lies anterior to the bifurcation of the aorta.

The prostatic glands are packed in a fibrous mesh that contains a significant amount of smooth muscle. Approximately one third of the prostate is muscle, and during ejaculation the prostate contracts, squeezing its glandular secretions into the urethra.

During sexual arousal, there is parasympathetic stimulation; then, during orgasm, there is sympathetic stimulation. Stimulation of parasympathetic axons causes the prostate gland to secrete fluid. Subsequent stimulation of the sympathetic axons causes the smooth muscle in the prostate to contract and push the fluid into the semen.

### A “TABOO” TOPIC

Sexuality, like death, is often a taboo subject, hidden from everyday social exchange because it involves complicated questions of morality and generates feelings of discomfort. Because of barriers to open discussion, most men and the public in general have limited knowledge of the anatomy and physiology of the male reproductive system, the prostate gland itself, and the diseases that can develop.



## Physiology

The prostate's main function is secretory. The prostate is composed of 30 to 50 compound tubuloalveolar glands, in which the ducts of clusters of secretory cells are arranged like branches on a tree merging into a few main trunks. In the prostate, the clusters of secretory cells create fluid that is added to other components of the seminal fluid of the ejaculate.

### PRODUCTION OF SEMINAL FLUID

An ejaculate consists of spermatozoa immersed in seminal fluid. The total volume of an average human ejaculate is approximately 3 ml. Spermatozoa make up only about 0.03 ml of the ejaculate, and the other 2.97 ml is seminal fluid.

Seminal fluid is produced in a number of glands along the male reproductive tract. The seminal vesicles contribute 2 ml to the seminal fluid of an ejaculate, the prostate contributes 0.8 ml, and the bulbourethral (Cowper's) gland and the Littre's glands together contribute less than 0.2 ml. The fluid contributed by the prostate contains citric acid, zinc, lipids, and a variety of polyamines, which are small, positively charged molecules.

Prostate-specific antigen (PSA) is a protease enzyme made in the prostate's epithelial cells. PSA is added to seminal fluid, where it helps to liquefy the ejaculate, which on its own would form a gel. In the process of producing seminal fluid, some prostate proteins, including PSA, leak into the blood stream. The amount of PSA leaking into the blood rises with increased prostatic growth, either benign or malignant, and with injury to the prostate.

### GROWTH OF THE PROSTATE

During puberty, the prostate grows rapidly. When it reaches its adult size, the normal prostate then maintains a balance of cell growth and cell death, in which the scales are tipped slightly in favor of growth. Over the years, most men have a gradual increase in their total number of prostate cells. This increase is a condition known as **benign prostatic hyperplasia**, or **BPH**. Eventually, as men reach their 60s, the slowly enlarging prostate often impinges sufficiently on the urethra and the bladder to give urinary symptoms.

The single most significant stimulant for prostate growth, differentiation, and maintenance is the sex hormone dihydrotestosterone, an androgen that the prostate produces from testosterone that has been circulating in the bloodstream. Testosterone is made by the Leydig cells in the testes, and the signals to make testosterone come from the pituitary. Requests to manufacture more testosterone are relayed from the pituitary by the luteinizing hormone.

Dihydrotestosterone is the quintessential male hormone. It plays a critical role in prostate growth and is the key stimulant of the growth of facial hair, acne, and male pattern baldness. To produce dihydrotestosterone, testosterone is modified by an intracellular enzyme called 5-alpha reductase, found mainly in the prostate, skin, and liver.



## PATHOGENESIS

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Prostate cancer is caused by changes in the DNA of a prostatic cell. Cancer is caused by mutations that turn on genes that help cells grow and divide (oncogenes) or turn off genes that slow down cell division or cause cells to die at the right time (tumor suppressor genes). DNA changes can be either inherited from a parent or can be acquired during the person's lifetime.

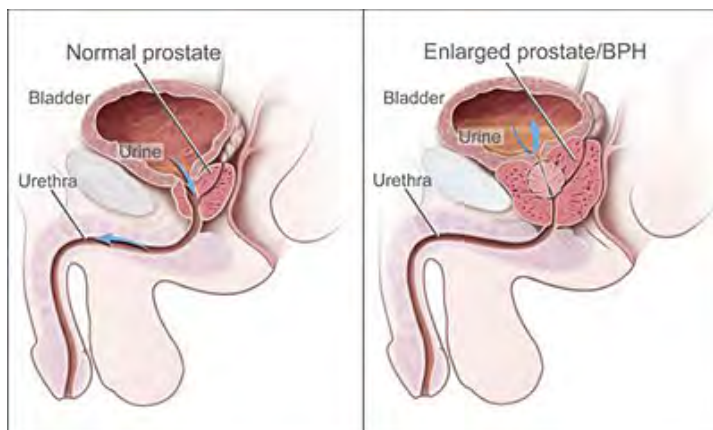
Cancers of the prostate usually develop from the secretory cells of the gland. Most prostate cancers are adenocarcinomas. Carcinomas are cancers that develop from epithelial cells, and adenocarcinomas are cancers that develop from the types of epithelial cells that form glands. Prostatic adenocarcinomas usually arise from the secretory cells at the ends of ducts in the peripheral zone of the prostate.

### Comparing Prostate Cancer and Benign Prostatic Hyperplasia (BPH)

The most common condition from which prostate cancer must be distinguished is benign prostatic hyperplasia. Both BPH and prostate cancer are prostatic diseases of the older male. Although the two conditions are distinct, it is important to remember that men diagnosed with BPH can also have prostate cancer and men diagnosed with prostate cancer often have BPH (Smith, 2015).

BPH—also called nodular prostatic hyperplasia, benign prostatic hypertrophy, and enlarged prostate—is a slowly progressing, noncancerous condition that causes enlargement of the prostate. BPH is very common after age 40, affecting about 60% of men over age 60 and 80% of men over age 80. Half of all men over age 50 develop symptoms, but only 10% need medical or surgical intervention (Gerber, 2015).

BPH is caused by the increased levels of testosterone that occur normally with increasing age. The prostate becomes enlarged and feels “boggy” on digital rectal examination. BPH usually occurs in the central portion of the prostate, and it cannot spread to other areas of the body (Smith, 2015).



Benign prostatic hyperplasia (BPH). (Source: National Cancer Institute.)





BPH can cause obstructive and irritative lower urinary tract problems, such as:

- Frequent or urgent need to urinate
- Nocturia
- Difficulty starting urination
- Weak, interrupted, or hesitant stream of urine
- Dribbling or leaking of urine
- Straining when urinating
- Incomplete emptying of the bladder
- Urinary tract infections
- Urinary retention
- Hematuria

(Mayo Clinic, 2014)

## Early Prostate Abnormalities

One early stage of abnormality seen in the prostate is called prostatic intraepithelial neoplasia (PIN). In PIN, the prostatic glands have normal architecture but the cells in the glands appear abnormal. Mild or low-grade PIN does not seem to foreshadow cancer. On the other hand, severe or high-grade PIN may be a precursor to prostatic adenocarcinomas. PIN does not cause elevated PSA blood levels, and PIN can only be diagnosed by needle biopsy.

Another abnormality seen in the prostate is proliferative inflammatory atrophy (PIA), where the prostate cells appear smaller than normal with signs of inflammation in the area. Although PIA is not cancer, it is believed that it may sometimes lead to high-grade PIN or perhaps to prostate cancer directly.

Prostate adenocarcinomas develop quietly. By the time they are discovered, adenocarcinomas can usually be found at more than one site in the prostate. Later, after a protracted asymptomatic growth, some prostatic cancers metastasize, usually to lymph nodes or bones. Lymph node metastases show up first; the most common nodes involved are in the true pelvis, which is below and behind the pelvic brim. Approximately 10% to 20% of newly diagnosed prostate cancer cases involve locally advanced disease (Terris, 2015). The most common sites for bone metastases are the lumbar spine, proximal femurs, and pelvic bones. One study found that 11.5% of newly diagnosed prostate cancers have been shown to have bone metastases (Merdan et al., 2014).

## Less Common Cancers

Prostate cancers occasionally originate from cell types other than secretory and in prostatic zones other than the peripheral.



Infrequently, prostatic carcinomas develop from duct cells. Malignant duct cells do not leak PSA into the bloodstream, and men with ductal cancers can have normal PSA blood levels. For this reason, ductal prostate cancers are not picked up by routine blood-screening tests, which measure PSA blood levels. Ductal prostate cancers are rare and represent 1.0% of all prostate cancers. They tend to be diagnosed at an advanced stage, and they have a poor prognosis (Huang & Chen, 2012).

Another type of prostate carcinoma with a relatively poor prognosis develops from cells in the transition zone. Transition zone carcinomas account for fewer than 1 in 5 prostate cancers. They tend to infiltrate the neck of the bladder and the surrounding tissues, and by the time of diagnosis, 20% of transition zone carcinomas have metastasized.

Rarely, small cell carcinomas develop in the prostate, often in conjunction with adenocarcinomas. Like the small cell carcinomas of the lung, small cell carcinomas of the prostate are aggressive, with a patient's average survival time being less than one year (Wagner, 2014).

## Natural History of Prostate Tumors

The steps leading from the development of cancerous cells to the appearance of a clinically recognizable tumor are not known for prostate cancer. Similarly, researchers still have only a sketchy idea of what actually happens as an untreated tumor progresses after it has been clinically recognized.

As a rule, prostate cancers grow slowly, with doubling times for local tumors estimated at 2 to 4 years. However, individual cancers show a wide range of progressions. Slow-growing prostate cancers present little risk to the overall health of elderly patients, but aggressive prostate cancers cause significant morbidity and mortality. Studies are currently being undertaken (Myriad Polaris Assay and Oncotype DX Genomic Prostate Score) to find a test that will identify aggressive cancers at an early stage when treatment would be most effective.

## RISK FACTORS AND PREVENTION

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Because the detailed progression from initial trigger to clinical disease appears to involve a varying number of factors, the potential contributing agents are often called risk factors rather than causes. For some of these factors, the link to prostate cancer is not yet clear.

### Risk Factors

#### AGE

The older a man is, the higher the chance of being diagnosed with prostate cancer. Prostate cancer is rare in men under age 40 but rapidly increases after age 50. About 6 in 10 cases are diagnosed in men over the age of 65 (ACS, 2015a).



## RACE

Prostate cancer occurs more often in African American men and in Caribbean men of African ancestry than in men of other races. African American men with prostate cancer are more than twice as likely to die from it as white men with the disease (PCF, 2015a; ACS, 2015a).

## FAMILY HISTORY AND GENETICS

A man with a family history of prostate cancer has a higher-than-average risk, but having a father or brother with the disease more than doubles the risk. Having a brother with prostate cancer is a higher risk than having a father with the disease. The rate is higher for men who have several affected relatives, particularly if they were young when diagnosed.

There are several inherited DNA changes in some genes that appear to increase the risk for prostate cancer, but it is considered they account for only a small number of cases overall (5% to 10%).

- An inherited mutation of specific genes that raises the risk of breast and ovarian cancer may also increase prostate cancer risk in some men.
- Men with Lynch syndrome (an inherited genetic syndrome that increases the risk of developing colon cancer) have an increased risk for a number of other cancers, including prostate.

Some genes increase mutational rates and others may predispose a man to infection or viral infections that can lead to prostate cancer (PCF, 2015).

## SOMATIC AND ENVIRONMENTAL FACTORS

Many influences have been linked to prostate cancer. Even in men with a genetic susceptibility to prostate cancer, certain somatic and environmental factors seem to play a role in causing the cancers to become clinically apparent.

### ***Geography***

Globally, men living in North America, northwestern Europe, Australia, and on Caribbean islands have a higher risk for developing prostate cancer, but the reasons for this remain unclear (ACS, 2015a).

### ***Inflammation and Infections***

Cancers tend to develop in tissues with high rates of proliferation. Chronic inflammation stimulates cell proliferation as part of its continuous repair processes, and this may be one reason that chronic inflammation increases the risk of certain types of cancer. Prostatitis may be linked to an increased risk, but not all studies have found this link. Research studies continue (PCF, 2015).



### **Oxidant Damage**

Oxidants are chemicals that injure DNA and cause mutations. Chronic exposure to oxidants appears to lead to the development of cancer, and antioxidant drugs have been suggested as protectants that may lessen a man's risk of developing prostate cancer.

Normally, the body defends against damage from oxidants through a collection of mechanisms. The protective mechanisms include antioxidant enzymes, DNA repair enzymes, and the triggered suicide (apoptosis) of cells with excessively damaged DNA. Genetic or acquired defects in these protective mechanisms are likely to be risk factors for prostate cancer.

### **Hormones**

The male hormone testosterone has been believed to play a part in the development of prostate cancer. However, new studies indicate there is no association between exogenous or endogenous sources of testosterone and the development of prostate cancer (Mulcahy, 2015).

### **Obesity**

Studies have shown no link between obesity and an overall higher risk of developing prostate cancer. They have shown, however, that obesity is a known risk factor for the development of high-risk lethal disease, and this risk is further increased in African American men. The reasons for this are unclear, but it is known that obesity affects epigenetic processes, one of which is chromatin remodeling, a major mechanism involving gene expression regulation (PCF, 2015).

## **Prevention**

Prostate cancer is a disease of older men, and it appears that the disease typically takes decades to develop. At this date, there is no sure way to prevent prostate cancer. Many studies that have been conducted conflict with one another, and most studies are not designed to provide definitive proof that something prevents prostate cancer.

Currently, no study has proven that diet and nutrition can directly cause or prevent the development of prostate cancers. Some studies suggest there may be a connection, but there are no clear recommendations about diet's role in prostate cancer. Specific changes to diet may or may not stop or slow the development of prostate cancer, and it is possible that such dietary changes would need to be started early in life to have any effect (Lin et al., 2015).

Because many studies are still underway, there are some lifestyle factors to consider that are known to have overall health benefits. These may include a diet low in fat (especially animal fat); a diet high in vegetables, fruits, and legumes; being physically active; and staying at a healthy weight (ASCO, 2014; ACS, 2015b).



Some medications are being studied to see if they may help to reduce prostate cancer risk, but it is not clear if the benefits will outweigh the risks for most men. These drugs are known as 5-alpha reductase inhibitors and are used to treat BPH. They include:

- Finasteride (Proscar)
- Dutasteride (Avodart)  
(ASC, 2015b)

### **MASCULINITY AND HEALTHCARE SEEKING**

Many men tend to seek healthcare only when they are in crisis situations. They often see themselves as strong and healthy and doctor visits as a waste of time and money. Many studies have concluded that men of all ages are less likely than women to seek help for problems. This includes both physical and emotional issues. Experts say this is learned behavior.

Many men are raised to be stoic, tough, and independent—to stay in control and hide their vulnerabilities. Sickness is viewed as a vulnerability opposite to masculinity, and men often come to view themselves as immune to disease. They learn to slough off pain or work through it. To show a need for being cared for is considered feminine. Men also may fear that others will interpret nonemergency doctor's visits as unmanly or weak, especially if the men around them also avoid preventive medical care.

Sociologists at Rutgers University noted that middle-aged men with strongly idealized masculinity are almost 50% less likely than other men to seek preventive healthcare. Job status also has an effect on whether men seek healthcare. Men with strong masculinity beliefs working in blue-collar jobs were more likely to report obtaining care. This suggests that the threat of being unable to perform their jobs was more important than their beliefs as to what is masculine. Highly educated men with the strongest-held masculinity beliefs were as unlikely to obtain preventive care as men with lower levels of education. Additional studies need to be done on more diverse sample groups to determine whether these findings also apply to other generations and ethnic groups (Springer & Mouzon, 2011).

The CDC's National Health Interview Survey indicates that married men, regardless of age, were more likely than cohabitating men and other nonmarried men to have had a healthcare visit in the past 12 months, but only if they had health insurance. The conclusion was that if men have the means to access healthcare, their spouses may play a role by "directly encouraging them to seek preventive care and indirectly causing a sense of obligation toward the family" (CDC, 2014).

Although there are many healthcare facilities geared toward women and children, there are few that are directed toward men. Although men give multiple reasons for avoiding healthcare visits, one important barrier is that they are uncomfortable in healthcare settings. Attempts to overcome this barrier can be made by creating environments where men can feel comfortable. To aid in this process, some facilities are creating a more masculine milieu utilizing interior designers.



Because women are often viewed as the gatekeepers to men's health, promoting male services to women can be helpful. Healthcare staff should be trained to recognize that it takes more effort to make men feel comfortable, and office hour schedules should accommodate working men.

## SIGNS AND SYMPTOMS OF PROSTATE CANCER

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There are no warning signs or symptoms of early prostate cancer, and not everyone experiences symptoms of prostate cancer. Most adenocarcinomas develop in the peripheral zone of the prostate, where they initially cause no symptoms. Many times, signs of prostate cancer are first detected by a primary care provider on rectal exam during routine check-up.

Once a malignant tumor causes the prostate gland to swell significantly, or once cancer spreads beyond the prostate, symptoms may occur. They include:

- A frequent need to urinate, especially at night
- Difficulty starting or stopping a stream of urine
- A weak or interrupted urinary stream
- Inability to empty the bladder completely
- Inability to urinate standing up
- A painful or burning sensation during urination or ejaculation
- Blood in the urine or semen

These are not symptoms of the cancer itself, however; they are symptoms of the blockage from the cancer growth within the prostate and surrounding tissues. These symptoms may also occur due to conditions such as BPH or prostatitis.

In their later stages, prostate cancers expand locally and often metastasize. This local infiltrative growth and the metastases are directly responsible for most of the symptoms of advanced prostate cancer.

- **Local infiltration** into the urethra or the neck of the bladder gives urinary symptoms, such as difficulty starting urination, a weak urine stream, a urine stream that starts and stops, and the feeling of needing to urinate frequently. Local growth into the trigone of the bladder can obstruct the ureters and lead to renal failure. Local growth in and around the ejaculatory ducts can cause blood in the semen. Local spread to the nearby neurovascular bundles can be a source of impotence.
- Most cancers have the ability to spread to other areas of the body, but they usually spread to one site more than others. Prostate cancer **metastasizes** to the adrenal gland, liver, and lung but is most often found in the bones. About 80% of the time, prostate cancer spreads to the bones in the proximal femurs, lumbar spine, and pelvis. These bone lesions can be



painful. Metastases growing in bone can lead to anemia by crowding out blood-forming cells. Metastases to the nearby lymph nodes can give rise to lower limb edema by obstructing lymph channels or by compressing the iliac veins.

Other symptoms of advanced prostate cancer include:

- Dull, incessant deep pain or stiffness in the pelvis, lower back, ribs, or upper thighs; arthritic pain in the bones of those areas
- Loss of weight and appetite, fatigue, nausea, or vomiting
- Weakness or paralysis in the lower limbs

### CASE

George Murray is 64 years old and has been retired for two years. He and his wife have been married for 32 years and have three grown children. George has been in excellent health all his life and has avoided seeing a physician for anything other than acute conditions despite the urging of his wife and family for him to have yearly check-ups.

For the past three years, George has had problems with frequent urination during the night and has noted difficulty starting his stream. He has heard about the changes in the prostate as you age and attributes his problem to the condition he says “every man gets when they’re old.” Over the next year, he notes a problem maintaining an erection and attributes that likewise to the “old man’s problem.”

Several months ago he and his wife engaged in sexual intercourse, and he experienced pain when he ejaculated. This, too, he attributed to the “old man’s problem,” and so he didn’t become too concerned or mention it to his wife. He continued to experience pain on the rare occasions he engaged in sexual activity.

Two months ago when he went to the bathroom, his urine appeared rusty colored and he had some discomfort voiding. He told his wife he probably had a bladder infection and would go to the walk-in clinic that afternoon for treatment. But when he voided the next time, there was no discomfort and no blood, and he never made it to the clinic, dismissing the incident as well as several others that occurred thereafter.

George did not seek medical attention until he began having pain in his right hip that was unrelieved by OTC analgesics. He made an appointment to see a physician for the complaint of “arthritis in my hip.” He was ultimately diagnosed with advanced metastatic prostate cancer.



## DIAGNOSING PROSTATE CANCER

Early prostate cancer rarely displays symptoms. If physicians wait until patients come to them with complaints, the prostate cancers will be advanced. To catch prostate cancers at early stages, physicians must proactively screen their patients.

The two widely used screening methods are digital rectal examination (DRE) and measuring blood levels of the protein prostate-specific antigen (PSA).

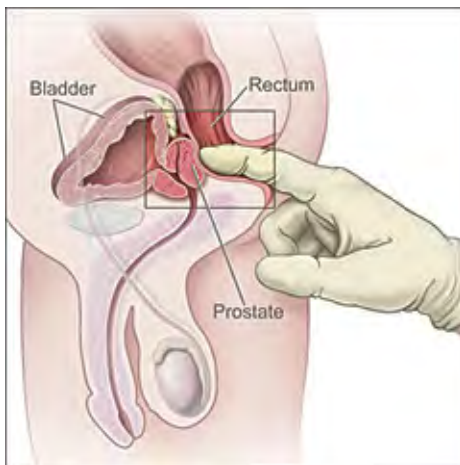
### Physical Examination: DRE

The most useful physical findings for diagnosing prostate cancers come from a digital rectal examination. By itself, DRE can detect 50% to 60% of prostate cancers, usually, however, only when the cancers are relatively advanced.

#### DIGITAL RECTAL EXAM TECHNIQUE

It is important prior to the digital rectal exam that an explanation of the procedure be given, as it can be a very traumatic experience for some.

The patient can be in a lithotomy position, a knee-chest position, a left lateral prone position, or standing and bent prone over an exam table. The forefinger of the examiner's gloved hand is lubricated, and the pad of the lubricated finger is placed on the anal opening and pressed forward gently until the anal sphincter relaxes.



Digital rectal examination (DRE). (Source: National Cancer Institute.)

The finger is eased into the anal canal, facing forward. The posterior surface of the prostate can be felt past the anal canal. It is firm and rounded. Usually, there is a lateral bulge on either side of a midline, top-to-bottom furrow.

During the exam, the patient will feel a pressure from the finger against the gland and a sensation of needing to urinate. The exam may be painful if the gland is swollen or irritated.





PHYSICAL CHARACTERISTICS OF THE PROSTATE DURING DRE	
Condition	DRE Impression
Normal	Rounded, symmetric, roughly heart-shaped
Infection (prostatitis)	Enlarged, tender, warm, surrounded by edematous tissue
BPH (benign prostatic hypertrophy)	Symmetrically enlarged, smooth, midline furrow obliterated, rubbery or firm, rectal mucosa slides over prostate smoothly
Cancer	Irregular, asymmetric, areas of hardness, stony nodules, less mobile, rectal mucosa adheres to prostate, anal sphincter may be found to be relaxed

## Laboratory Testing

### PROSTATE-SPECIFIC ANTIGEN (PSA)

Most prostate cancers are found when a prostate biopsy is performed after PSA blood testing shows elevation. PSA is a substance made by prostate cells and is found mostly in semen, but a small amount is found in the blood. A PSA test is performed as a part of a health screening program; however, its use as a screening method is controversial since there is no universally accepted threshold above which the PSA is considered abnormal.

Most men of all ages have a blood PSA level  $<2.6$  ng/ml. In the general population, the average PSA blood level increases as men age, and levels  $\geq 2.6$  are more common in older men. Due to the age-related growth of the prostate, it is helpful to use cutoff values based on age to reduce unnecessary prostate biopsies in older men. The following table indicates the suggested values based on age and race (data is for United States).

SUGGESTED AGE-SPECIFIC REFERENCE RANGES FOR SERUM PSA (measured in ng/ml)			
Age Range (years)	Asian	Black	White
40–49	0–2.0	0–2.0	0–2.5
50–59	0–3.0	0–4.0	0–3.5
60–69	0–4.0	0–4.5	0–4.5
70–79	0–5.0	0–5.5	0–6.5

Source: Zorn & Hueber, 2014. (Data is for U.S.)

The likelihood that a man has prostate cancer increases as his blood level of PSA increases. However, the information learned from a PSA level is probabilistic: some men with low PSA levels have prostate cancer, while some men with high levels do not.

For single blood readings, a total PSA blood level  $>4$  ng/ml is often used as the threshold for suspicion of prostate cancer, and a prostate biopsy is usually recommended. If the results of the



DRE and PSA testing are abnormal, further histological testing is also recommended to determine if cancer is present.

<b>PROBABILITY OF PROSTATE CANCER BEING DETECTED BY BIOPSY ACCORDING TO PSA LEVEL</b>	
<b>PSA Level (ng/ml)</b>	<b>Prostate Cancer Found on Biopsy</b>
0–2.0	10%
2.0–4.0	25%
4.0–10.0	17%–32%
>10	43%–65%
Source: Zorn & Hueber, 2014.	

There are many things other than cancer that can cause the PSA level in the blood to increase:

- Enlarged prostate
- Older age
- Prostatitis
- Ejaculation up to 2 days prior to the test
- Riding a bicycle, according to some studies
- Certain urologic procedures such as cystoscopy and perhaps digital rectal exam
- Certain medications (testosterone or other medications that raise testosterone levels) (ACS, 2015c)

There are also several things that can cause the PSA to go down even if cancer is present:

- 5-alpha reductase inhibitors used to treated BPH or urinary symptoms
- Herbal mixtures (but not saw palmetto)
- Obesity
- Aspirin taken regularly (may be greater in nonsmokers)
- Statins (but not if taken at the same time as calcium channel blockers)
- Thiazide diuretics taken for years (lowers PSA even more if taken along with a statin) (ACS, 2015c)



## PSA SCREENING CONTROVERSY

In May 2012 the **U.S. Preventive Services Task Force (USPSTF)** presented its recommendation against routine screening for prostate cancer using PSA testing. Its co-chairman stated:

Prostate cancer is a serious health problem that affects thousands of men and their families. But before getting a PSA test, all men deserve to know what the science tells us about PSA screening: there is a very small potential benefit and significant potential harms. We encourage clinicians to consider this evidence and not screen their patients with a PSA test unless the individual being screened understands what is known about PSA screening and makes the personal decision that even a small possibility of benefit outweighs the known risk of harms (USPSTF, 2012a).

The above recommendation followed the Task Force's prior findings, which said:

The common perception that PSA-based early detection of prostate cancer prolongs lives is not supported by scientific evidence. A meta-analysis of all published trials found no statistically significant reduction in prostate cancer deaths. At the same time, overdiagnosis and overtreatment of prostatic tumors that will not progress to cause illness or death are frequent consequences of PSA-based screening. Although about 90% of men are currently treated for PSA-detected prostate cancer in the United States—usually with surgery or radiotherapy—the vast majority of men who are treated do not have prostate cancer death prevented or lives extended from that treatment but are subjected to significant harms. The USPSTF concludes that there is moderate certainty that the harms of PSA-based screening for prostate cancer outweigh the benefits (USPSTF, 2012b).

The controversy regarding PSA screening continues to date and is based on discrepancies between two large studies that compared PSA screening to usual care. The European Randomized Study of Screening for Prostate Cancer found a survival benefit with screening, while the United States Prostate, Lung, Colorectal, and Ovarian Cancer Screening Trial did not. Results also differ regarding the benefit of immediate surgical intervention for PSA screen-detected prostate cancer.

It is theorized that the basis for these discrepancies may stem from differences in study design, screening protocol, and biopsy threshold.

As a result, recommendations for PSA screening and subsequent treatment guidelines vary greatly by organization. Although they differ, they do reflect overall the important findings of the studies and recommend that PSA screening should:



- Be offered only to those with a reasonable life expectancy (over 10 years)
- Be performed on a biennial or greater basis to minimize overdiagnosis
- Use additional data to provide risk adjustments to screening interval and biopsy threshold
- Involve a well-informed patient and his healthcare provider in determining whether or not screening would be of benefit

(Kim & Andriole, 2015)

The **American Cancer Society** recommends that men be given the opportunity to make an informed decision along with their healthcare provider about whether or not to be screened for PSA. They recommend these opportunities should be offered at:

- Age 50 for men who are at average risk and have a life expectancy of at least 10 more years
- Age 45 for men with a high risk of developing prostate cancer (African Americans and men with a first-degree relative with cancer diagnosed younger than age 65)
- Age 40 for men at even higher risk (more than one first-degree relative who had prostate cancer diagnosed younger than age 65)

If no prostate cancer is found on initial screening, ACS recommends future screenings should depend on the results of the initial PSA blood test. If the results showed less than 2.5 ng/ml, screening should be done every two years. If the level is 2.5 mg/ml or higher, screening should be done on a yearly basis (ACS, 2015d).

## NEW TYPES OF PSA TESTS

There are currently newer types of PSA tests to determine whether a man needs a prostate biopsy. It is not agreed upon, however, as to their usefulness or how these newer PSA tests should be used.

- **Percent-free PSA.** There are two forms of PSA in the blood, one bound to blood proteins and the other circulating freely. This test determines the ratio of how much PSA circulates freely compared to the total PSA level. The percentage of PSA that circulates freely is lower in men who have prostate cancer than in men who do not. This test is sometimes used to help determine if a prostate biopsy should be done.
- **Complexed PSA (cPSA).** This newer test measures the amount of PSA that is bound to proteins (the portion of PSA that is not free). This test is done instead of checking the total and free PSA, and it gives the same amount of information as the other tests done separately.
- **PSA Density.** This test uses transrectal ultrasound to measure the size of the prostate gland, and the ratio of prostate gland size to PSA level is calculated. A high PSA density



indicates a greater likelihood of cancer in men with larger prostate glands. This test is not as useful as percent-free PSA.  
(ACS, 2015d)

### **Mi-PROSTATE SCORE (MiPS)**

The MiPS is an early detection test for prostate cancer developed at the University of Michigan and that has been available since 2013. This test improves the accuracy of PSA testing by combining the amount of serum PSA with the amounts of two genes found in the urine. Gene fusion (TMPRSS2:ERG) is believed to cause cancer, and studies done on prostate tissue show that this RNA fragment always indicates the presence of cancer. The test measures the levels of this genetic fragment and another genetic marker (PCA3) in urine which are detectable at high levels in men who have prostate cancer.

MiPS has been shown to detect prostate cancer in men whose prostate biopsies, which typically sample less than 1% of the gland, came back negative for cancer.

The test is not meant to replace PSA as a screening tool but rather to provide information for men who have undergone PSA testing with elevated findings. It is more accurate than PSA testing alone and improves its usefulness by increasing the ability to pick out high-risk prostate tumors from low-risk tumors, which can help to avoid unnecessary biopsies (PCF, 2013a; Tomlins et al., 2015).

## **Scanning Technologies**

Imaging plays an important role in the noninvasive detection, localization, grading, and staging of prostate cancer and in performing biopsies.

### **TRANSRECTAL ULTRASOUND (TRUS)**

TRUS creates pictures using an ultrasound probe that is put in the rectum directly against the posterior surface of the prostate. The images from TRUS accurately show the locations and relative densities of parts of the prostate.

Most nonpalpable prostate cancers do not show up distinctly in TRUS images. In ultrasound images, detectable cancers of the prostate appear darker than the normal tissue of the region. The majority of such changes in the prostate, however, are not cancer. By itself, TRUS images are effective for measuring the volume of the prostate in order to facilitate the planning of treatment. TRUS is mainly used to visualize the prostate and to aid in guided needle biopsy (Shetty, 2014).

### **RADIONUCLIDE BONE SCAN**

Radionuclide bone scanning is an imaging technology widely used for detecting metastasis to the bone, the most common site of distant prostate tumor spread. Cancer cells take up certain radioactive compounds more avidly than healthy tissues do. This test involves the injection of a



radioactive tracer material that emits low levels of radioactivity, which is then detected by a gamma camera.

Bone scanning may be performed as a baseline to determine treatment response in patients with recurrent metastatic disease who have a high risk for bony metastasis or for those with symptoms suggestive of bony metastasis. A negative bone scan result, however, does not rule out metastasis (Terri, 2015).

## **CT AND MRI**

Computed tomography (CT) and magnetic resonance imaging (MRI) are used to detect extension of prostate cancer outside the capsule, seminal vesicle involvement, pelvic lymph node enlargement, liver metastases, and hydronephrosis resulting from distal ureteral obstruction. It is used in patients with suspected locally advanced disease. Repeat CT or MRI scans are used to help determine treatment response (Terri, 2015).

## **IMMUNOSCINTIGRAPHY (PROTASCINT)**

Immunoscintigraphy is a two-step procedure spanning four days that uses a radioactively labeled antibody (ProstaScint) designed specifically to travel throughout the body and bind itself to prostate cancer cells. It is used to detect the spread of prostate cancer cells to the lymph nodes in the pelvis or anywhere else in the body. A gamma camera is used to detect the antibodies' locations. When there is a large concentration of antibodies in the same site in the body, it will show up as a "hot spot" of radioactivity.

Because ProstaScint scans often yield false-negative results, it has been combined with CT scanning or single-photon emission CT (SPECT) scanning to pinpoint more precisely where in the body these hot spots are located (Terri, 2015).

## **MRI / ULTRASOUND FUSION**

A new technology recently approved by the FDA blends real-time imaging from both MRI and ultrasound devices that allows a provider to more accurately direct biopsy needles that sample suspected prostate tumors. This technique detects cancers that can be missed by standard biopsy (up to 30%) because it can guide physicians to tumors at normally overlooked regions of the prostate gland.

This technique is part of an approach that includes an MRI scan done initially for men with elevated PSA levels to determine who needs a prostate biopsy, and then use of the MRI/ultrasound fusion technique to obtain the most accurate biopsy possible in the most efficient manner.

This technique is projected to reduce the overall number of biopsies by one third (Klein, 2014; Siddiqui et al., 2015; Rastinehad et al., 2014).



## Biopsies

A biopsy provides microscopic evidence of the presence of cancer in prostate tissue. It is a procedure done by a physician or an advanced urologic nurse practitioner either in the office or in the hospital. It takes about 10 minutes to remove samples of suspicious tissue.

Prostate biopsies can be done either through the perineum or transrectally. The transrectal approach allows for improved imaging and sampling and is the preferred method. Using transrectal ultrasound to “see” the prostate gland, a thin, hollow needle is passed through the wall of the rectum into the prostate gland. When it is removed, the needle takes a small cylinder of prostate tissue. This process is repeated to obtain about 12 samples.

A pathologist examines these samples under a microscope for cell abnormalities that are a sign of cancer. If cancer cells are present, the pathologist grades them, estimates how aggressive they are, and determines the percentage of cancer in each of the core samples and whether the cancer is on one or both sides of the prostate.

### BIOPSY RISKS

Biopsies are not benign. Although it would seem that a biopsy is a simple outpatient procedure, it does stress the body and exposes the body to pathogens. Minor complications such as pain and bleeding are frequent. Other problems may include urinary frequency or retention and an allergic reaction to the anesthetic medications used during the procedures.

Although most men have minor hematuria without complications, about 1% develop severe hematuria and require admission to the hospital within 30 days (Nam et al., 2013).

With a standard biopsy via the rectum, the bowel has to be pierced to access the prostate, and infection following prostate biopsy is not uncommon. Current hospitalization rates for infections following transrectal prostate needle biopsy are as high as 6% (AUA, 2014). Infections range from asymptomatic bacteriuria, urinary tract infections, and epididymitis to more severe infections such as meningitis, vertebral osteomyelitis, sepsis, and shock.

The risk for hospitalization related to infections has increased despite the use of preprocedure antibiotics, and this is believed to reflect increasing antibody resistance of *E. coli* species (Wagenlehner et al. 2014).

### CARING FOR THE PATIENT UNDERGOING BIOPSY

Prostate biopsies are most often done as an outpatient procedure in an urologist’s office but can also be done in the hospital. In both instances, nurses care for the patient before and immediately after the procedure and prepare the patient and family for discharge. It is important that the nurse provide both written and verbal instructions in nonmedical language and that the patient and family leave with a clear understanding.



Information provided to the patient should include the following:

- Any course of prescribed antibiotics should be fully completed in order to prevent infection.
- Activities should be restricted for the first 24 hours after biopsy. (Give specific do's and don't's appropriate to the patient's usual level of activity.) Strenuous exercise such as jogging, heavy lifting, golfing, and bike riding should be avoided for at least seven days.
- Drinking at least six glasses of water a day for the first few days after surgery is important to keep the urine flowing freely.
- There can be bleeding from the rectum after the biopsy and blood in the urine. There may be a bloody discharge in the underwear and on toilet tissue that could last for 2 to 3 days.
- Sexual activity can be resumed when the patient feels ready after 7 days.
- Blood in the semen can persist for 6 weeks or more.
- A hot bath after the biopsy can help relieve the pressure and spasms that may occur.
- Acetaminophen can be taken for pain relief if approved by the physician. Do not take aspirin or anti-inflammatory products for one week.
- Prior to discharge, set up a follow-up visit for approximately one week later to discuss the biopsy results and to provide a urine sample to insure absence of infection.
- Notify the physician promptly in the case of:
  - Fever of 101 °F or greater, shaking, or chills
  - Heavy rectal bleeding, clots, or bleeding that continues longer than 2 to 3 days
  - Pure bloody stools
  - Increased urinary pain, frequency, or burning
  - Inability to urinate within 8 hours
  - Blood in the urine for longer than 2 to 3 days

### CASE

Jeffrey Gates is a 72-year-old retired accountant who had a prostate biopsy two days ago because of a moderate risk for prostate cancer and elevated PSA. Today he was with friends at the golf course clubhouse enjoying the day. The last thing he remembered was having a beer and heading for home.

Jeffrey's wife had dinner ready, but he did not come home when expected. She tried calling his cell phone but got no answer. By late evening she became very worried and called the police. At 11 p.m. he was discovered by a passerby who found him sitting in his car at the side of the road completely disoriented. The person called 911, and Jeffrey was transported to the hospital.





In the emergency department, Jeffrey was found to have signs and symptoms of a fulminant infection. He was admitted to the ICU and started on antibiotics for a presumptive gram-negative infection. Blood cultures returned positive in one day for antibiotic-resistant *E. coli*, and his antibiotic was changed to one to which the organism was susceptible.

Jeffrey was intermittently disoriented for the next two days, experiencing chills, fever, and a low blood pressure. Finally, on the third day in ICU his kidneys failed, and he died on the fourth day. He was diagnosed with sepsis.

## GRADING AND STAGING

### Grading

Cancers are graded by a pathologist according to the degree of differentiation of the tumor cells. For prostatic adenocarcinomas, the most widely used tumor grading system is the **Gleason system**.

The Gleason system assigns a grade based on the degree to which the cells in the cancerous tissue look like normal prostate tissue. The cell patterns are graded from 1 (a normal-looking glandular structure) to 5 (no recognizable glandular pattern). Most biopsied tissues are grade 3 or higher.

Since prostate cancers often have areas with different grades, a grade is assigned to the two areas that make up most of the cancer. These two grades are then added together to produce a Gleason score between 2 and 10.

GLEASON SYSTEM	
Score	Grade
≤6	Well-differentiated or low-grade
7	Moderately differentiated or intermediate-grade
8 to 10	Poorly differentiated or high-grade

The higher the Gleason score, the more likely it is that the cancer will grow and spread quickly.

### Staging: Tumor-Node-Metastasis (TNM)

The TNM staging system is a way to describe how far the cancer has spread. The stage or extent of a cancer is important to know in order to choose the best treatment for the patient and to develop a prognosis. The stage is based on the results of the prostate biopsy Gleason score, the PSA levels, and any other tests or exams done to determine how far the cancer has spread.

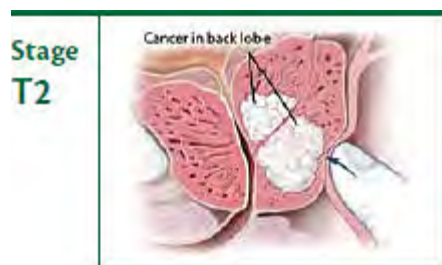


Cancers are staged according to the **size of the primary lesion (T)**, its extent of spread to regional **lymph nodes (N)**, and the presence or absence of **distant metastases (M)**. The results of these categories range from 0 to 4 for T, 0 to 3 for N, and 0 to 1 for M.

TNM STAGING SYSTEM FOR PROSTATE CANCERS	
<b>Tumor (T)</b>	
T0	No evidence of primary tumor
T1	Nonpalpable tumor that is not evident from radiographic imaging
T2	Palpable tumor confined to the prostate
T3	Palpable tumor extending beyond the prostate
T4	Palpable tumor that is fixed or that invades adjacent structures
<b>Lymph Nodes (N)</b>	
N0	No lymph node metastases
N1	Metastases in one regional lymph node that is $\leq 2$ cm wide
N2	Metastases in one or more regional lymph nodes, each $\leq 5$ cm wide
N3	Metastases in at least one regional lymph node $> 5$ cm wide
<b>Distant Metastases (M)</b>	
M0	No evidence of distant metastases
M1	At least one distant metastasis
Source: ACS, 2015e.	

For example, using the TNM nomenclature, a prostate cancer of stage T2N1M0 is a cancer in which:

- A hard tumor can be felt by DRE inside the prostate (i.e., stage T2).
- There is evidence of a tumor in one small local lymph node (i.e., stage N1).
- There is no indication of any distant metastases (i.e., stage M0).



A stage T2 tumor of the prostate. (Source: National Cancer Institute.)

## PROSTATE CANCER AND THE MULTIDISCIPLINARY HEALTHCARE TEAM

A multidisciplinary team approach to the management of patients with prostate cancer includes the following members:

- Primary care physician or nurse practitioner
- Urologist: a surgeon specializing in treating diseases of the urinary tract and the male reproductive system; plays a key role from diagnosis to treatment
- Radiation oncologist: may prescribe radiation therapy
- Medical oncologist: may prescribe chemotherapy, endocrine therapy, and other medications
- Physical therapist: teaches pelvic floor exercise pre- and post-treatment; helps restore or maintain strength, mobility and function; offsets side effects of treatment
- Occupational therapist: enables maximum functional performance, both physically and psychologically; relieves stress and anxiety; helps with energy conservation and work simplification techniques
- Nutritionist/dietitian: helps maintain overall health and strength to deal with side effects of treatment
- Social worker: provides a wide range of counseling services and support for patients and families
- Nurse: maintains continuity of care, providing education and support throughout the process of diagnosis, treatment, and post-treatment management; may include:
  - Office, clinic nurses
  - Urologic nurses
  - Oncology nurses
  - Clinical nurse specialists
  - Surgical nurses
  - Nurses specializing in male sexual medicine
  - Home care nurses
  - Geriatric and long-term care nurses
  - Radiology nurses
  - Hospice nurses



## TREATMENTS, RISKS, AND SIDE EFFECTS

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Treatments for prostate cancer are effective in most men, but they can cause both short- and long-term side effects that may be difficult to accept. The patient, his partner, and the urologist should discuss treatment options in detail. A second opinion may be sought.

The patient should make sure he understands which treatments are available, how effective each is likely to be, and what side effects can be expected. In addition, the patient should understand the option of accepting no treatment based upon statistical data and patient outcomes. All of the treatment choices should be weighed carefully before making a decision about which course to pursue.

All active treatments for prostate cancer have costs as well as benefits. Because the prostate is an integral part of the genitourinary tract, physical treatments tend to cause genitourinary problems. In addition, radiation will damage neighboring tissues, the most sensitive of which is the rectum, so radiation often gives bowel as well as genitourinary problems. In contrast, androgen-deprivation therapy (antihormone) is a systemic treatment, and its side effects can be whole-body problems, either metabolic, physiologic, or psychological.

### Conservative Management for Localized Prostate Cancer

Routine PSA screening has led to overdetection of prostate cancer, which is relatively slow growing, with doubling times for most local tumors estimated at 2 to 4 years. Some prostate cancers prove to be so small, low-grade, and noninvasive that they appear to pose little risk to a person's life. With active treatments producing a variety of discomforts and side effects, some people with low-risk prostate cancer elect conservative therapy.

#### WATCHFUL WAITING

At one end of the spectrum of conservative therapies is watchful waiting. Here, the goal is to avoid any treatments that might degrade the patient's quality of life and, if the cancer progresses, to choose treatments that maintain the patient's quality of life even when those treatments are only palliative.

Watchful waiting or observation does not imply that nothing is being done. It describes less intense follow-up with fewer tests and relies on changes in symptoms to determine if treatment is needed. During watchful waiting patients have regular appointments, blood tests, and examinations but are less likely to have a regular prostate biopsy. A bone scan may be done, and PSA testing is done at least every year. Symptomatic treatment consisting of medications is often used to reduce urinary tract problems for these patients.

Watchful waiting is most often chosen by patients who are older than 70 years or who have a life expectancy of less than 10 to 15 years and tumors that are still fairly well differentiated, with Gleason scores below 8.



There have been few large studies comparing watchful waiting and surgery for early-stage prostate cancer. In one study, men with very early-stage cancer who had surgery lived longer. In another study with about half the men with very early-stage cancer, there was no survival advantage for surgical treatment (ACS, 2015f). More studies are needed to determine how beneficial this approach is.

## ACTIVE SURVEILLANCE

At the other end of the spectrum of conservative therapies is active surveillance or active monitoring used for localized cancer that may never need treatment. Here, the goal is to avoid unnecessary treatment by delaying active intervention until a tumor has “revealed” its aggressiveness. Cancers are watched carefully, and once they begin to progress, treatments are chosen with the aim of curing the disease.

One or more prostate biopsies may be required during active surveillance, and the patient is monitored carefully for signs of cancer growth. Active surveillance takes into account PSA test results, the Gleason score, the size of the prostate gland, and the patient’s view about treatment.

During the first year of surveillance, PSA levels may be drawn every 3 to 4 months. A digital rectal examination is done every 6 to 12 months, and a prostate biopsy is done at the end of 12 months. In the second to fifth years, PSA levels are drawn every 3 to 6 months and digital rectal examinations are done every 6 to 12 months. In the fifth and following years, PSA levels are drawn every 3 to 6 months. If symptoms develop, treatment is recommended (ACS, 2015f).

Both watchful waiting and active surveillance are chosen by patients who have low-risk cancers. They are not recommended if the patient has a high-grade tumor or if the tumor has other features that make it likely to behave aggressively and therefore be harder to cure later (Klein, 2015). For men with intermediate-risk cancer, the risk of death over 15 years was nearly four times higher compared to men with low-risk disease (PCF, 2015b).

## CARING FOR THE PATIENT UNDERGOING CONSERVATIVE TREATMENT

Those patients who elect conservative treatment may be cared for in clinics, nursing homes, hospitals, and in the community. In these settings, the role of healthcare providers is to address three primary areas:

- To provide education about male anatomy and physiology, the disease process, and the signs and symptoms to watch for and report to their provider
- To help patients and families work through the emotional stress of learning of the diagnosis and finding effective methods of coping with the disease process
- To work with the patient, his partner, and the family dealing with the physical effects of the disease process, including urinary problems and alterations in sexual functioning



### **CONSERVATIVE MANAGEMENT IS NOT “DOING NOTHING”**

Observation is not an intuitive course for most men who instinctively believe cancer should be treated and cured as soon as possible. Although some men understand the rationale of watchful waiting and active surveillance as alternatives to an aggressive treatment with all the potential side effects, they still consider it too risky and fear treatment choices may be limited if the cancer progresses. Overall, studies have shown that most men consider watchful waiting or active surveillance a risk they are not willing to take.

It is important that discussions about treatment options involve language that does not imply that watchful waiting and active surveillance mean “doing nothing.”

## **Treatment Modalities for Localized Prostate Cancer**

### **RADICAL PROSTATECTOMY**

For low-grade tumors, a radical prostatectomy can often slow or stop the cancer and avoid distant metastases. In this well-tolerated procedure, the prostate, surrounding tissue, and seminal vesicles are removed. Prostatectomy has been recommended as an option for all patients with long estimated life expectancies (over 10 years) and for intermediate- and high-risk patients with life expectancies greater than 5 years.

Performing a radical prostatectomy while sparing (preserving) the adjacent erectile nerve bundles and the external urinary sphincter is a difficult operation. Surgeons will not know until the time of the procedure if nerve sparing is possible, as it will depend on whether the cancer has invaded the nerves. This procedure offers the best chance to preserve long-term erectile function.

After successful surgery, PSA levels should be undetectable in about one month. The long-term success of the operation is monitored by continuing to follow PSA blood levels. Regular digital rectal examinations will occasionally pick up recurring tumors before they are evident by their PSA values.

#### ***Types of Radical Prostatectomy***

Two approaches are used for **open prostatectomies**:

- Surgery from the bottom (the perineal approach) requires an incision between the anus and base of the scrotum and is associated with higher rates of rectal injury. This approach also makes it more difficult for the surgeon to spare the nerves around the prostate or to remove nearby lymph nodes.
- Surgery through the abdominal wall (the retropubic approach) requires an abdominal incision from naval to pubic bone and carries the risks associated with entering the abdominal cavity.



Radical prostatectomies can also be done laparoscopically, directly, or by remote control. The remote method is known as a **robotic prostatectomy**. It is a minimally invasive surgery where two cameras that produce a three-dimensional color picture are inserted through six small incisions, and miniaturized surgical instruments are operated by the surgeon using foot pedals. The cameras provide an enhanced view of the prostate gland displayed on a monitor for the surgeon.

The advantages of robotic prostatectomy over the open approach are less pain, less blood loss, and less recovery time. Postoperative catheterization time is reduced from the two or more weeks for open prostatectomy to five to seven days for robotic prostatectomy. In terms of the side effects of urinary or erection problems, however, there does not appear to be any difference between robotic and open prostatectomy (ACS, 2015g).

### **Risks and Side Effects**

There are **risks** for any type of surgery, including risks from anesthesia, heart attack, stroke, thromboses in the legs, pulmonary embolism, and infection at the surgical site. If lymph nodes are removed, a lymphocele can form and would need to be drained. Bleeding during and after surgery may require blood transfusions, which carry a small risk for allergic reactions, bloodborne infections, and immune hemolytic reactions. Inadvertent damage to the intestines can lead to infection in the abdomen, requiring more surgery.

Side effects of the procedure may include **impotence** (erectile dysfunction), **urinary incontinence**, and **infertility**.

If the cancer is growing into or very close to the nerves, the surgeon will need to remove them. If both are removed, spontaneous erections will no longer be possible without the use of some aids. If removed on one side, chances will be lower. But if neither nerve bundle is removed, normal erections may occur again at some point.

The ability to have erections that are sufficient for penetration and intercourse are lost for a few months after a nerve-sparing radical prostatectomy. The recovery of sexual function occurs slowly. Partial erections return in three to six months, and improvements continue for up to three years. When preoperative erections have been normal, younger men are more likely to recover their ability to have erections than are older men.

After prostatectomy, urinary continence returns in most men. For incontinence, Kegel (pelvic) exercises and biofeedback have helped some patients. Urinary incontinence tends to improve slowly during the first two years after a radical prostatectomy; for this reason, any invasive treatments for incontinence are usually delayed for at least one year after prostatectomy.

During prostatectomy both the prostate and the nearby seminal vesicles are removed. Together with the prostate they provide semen that carries the sperm to the urethra and out the penis during ejaculation. The loss of semen following surgery makes ejaculation



impossible. For men who wish to father children after prostate cancer treatment, the best chance for fertility is sperm banking.

### ***Caring for the Patient Undergoing Surgery***

During the preoperative period, patients and their partners and family have a need for information that will enable them to make informed decisions regarding treatment. The time between diagnosis of prostate cancer and surgery is a very stressful time. It is important that caregivers recognize the influence of stress on hearing and learning.

It is important to assess a patient's values before surgery. Once this is completed, information on the risks and benefits of various treatment options can be presented in light of the patient's values. The healthcare provider is able to take the necessary time to provide detailed explanations to patients and their partners and families. Written information on surgery and other treatment options and their potential effects is reviewed with patients to assist them in decision making.

**Preoperative** nursing interventions for patients who are admitted for prostate surgery include:

- Reduce anxiety. Clarify expected outcomes and allow verbalization of feelings.
- Relieve discomfort if present preoperatively. Offer pain relief measures, assist with voiding. Insert catheter if ordered.
- Provide instruction regarding anatomy, surgical procedure, and postoperative expectations.
- Prepare the patient for surgery. This may include application of antiembolic stockings, administering an enema, and prophylactic antibiotics.

**Intraoperatively**, the nurse's role and responsibilities include the following:

- Act as a patient advocate.
- Prioritize the needs of patients undergoing the surgical procedure.
- Keep a watchful eye on aseptic techniques and procedures to create a secure environment that will promote wound healing, recovery, and well-being.
- Apply principles of sterile technique.
- Ensure the presence of a safe environment in the OR.

**Postoperatively**, the role of the nurse is to:

- Maintain fluid balance and document intake and output, including fluid used to irrigate the catheter.





- Assess for electrolyte imbalance.
- Monitor vital signs.
- Observe for signs of confusion or respiratory distress.
- Relieve pain by administering analgesics as ordered and evaluating effectiveness.
- Increase mobility beginning with early ambulation.
- Assess for bladder spasms.
- Monitor wound drainage and provide wound care as ordered.
- Provide meticulous catheter and tube care.
- Offer prune juice and stool softeners to avoid constipation and straining.
- Provide reassurance and explanations of care to patient and significant others.
- Maintain nutritional status by monitoring intake and encouraging protein- and calorie-rich foods.
- Observe for potential complications, including:
  - Hemorrhage
  - Infection
  - DVT
  - Pulmonary embolism
  - Catheter obstruction
  - Emotional distress and/or depression
- Assess for emotional or psychological problems in patient, partner, and family.
- Educate patient and significant others regarding discharge and self-care.

(See also “Prostate Cancer Rehabilitation” later in this course.)

## **RADIATION FOR LOCALIZED PROSTATE CANCER**

Radiation therapy is another option for treatment of localized prostate cancer. Radiation treatment uses high-energy X-rays or other types of radiation to slow or kill cancer cells. Radiation kills cells mainly by damaging their DNA, and cells are most sensitive to radiation damage when they are preparing to divide or while they are dividing.

For prostate cancers, radiation is delivered in one of two forms: beams of radiation from a machine outside the patient or continuous radiation from radioactive materials implanted directly into the prostate (brachytherapy).

Nearly half of men choose surgery, and about 40% choose radiation therapy (Brooks, 2013). There is no evidence that either one these treatments is better than the other for the long-term management of prostate cancer, but studies show that most men with localized prostate cancer will do quite well over the long term no matter which option they choose. The choice is made



depending on how men think and feel about the possible short- and long-term side effects and complications of these treatments.

Both external beam radiation therapy and brachytherapy irradiate the anterior rectal wall, the prostatic urethra, and the neck of the bladder. This increases the risk of bladder and/or rectal cancer. Surgery also results in the more immediate loss of erectile function, and radiation therapy results in a slow loss of erectile function over time in those men who had good erectile function prior to treatment. By the end of five years, however, the risk appears to be fairly similar for each option (PCF, 2013b).

### **External Beam Radiation**

External beam radiation therapy shoots gamma rays at the prostate from outside the body. The ionizing gun rotates around the patient and directs a beam from many different angles that passes through adjacent normal structures, including the bladder neck, penile bulb, and anterior rectal wall, all of which receive significant doses of radiation. The prostatic urethra and the local neurovascular bundles are also irradiated. When it has been decided to irradiate the pelvic lymph nodes, the bladder, rectum, sigmoid colon, and small bowel receive extra radiation.

External beam radiation is done daily five days a week for five to eight weeks. It may or may not be combined with androgen deprivation therapy.

External beam radiation therapy can lead to problems in all the surrounding tissues, obstructive and irritative urinary symptoms, rectal urgency and bleeding, and decline of sexual abilities.

- Early effects of external beam radiation include **skin reactions** and **fatigue**, which may not go away until several months after treatment stops.
- External beam radiation therapy also causes **inflammation** and **cell destruction** at the bladder neck and inside the prostatic urethra. Symptoms of burning and frequency begin two to three weeks after treatment, when the mucosa first becomes denuded. The symptoms then continue for several weeks until the epithelium has regrown, usually by two months post treatment.
- Both irritative and obstructive **urinary symptoms** may occur, with men with large prostates more likely to develop obstructive urinary symptoms. After external beam radiation, one third of patients have dysuria or symptoms of urinary obstruction, including pain, incomplete emptying of the bladder, frequency, acute urinary retention, hesitancy, or slowed urine flow.
- Rectal tissue is quite sensitive to radiation, and **bowel symptoms** are often seen after radiation therapy. After external beam radiation, one third of patients have temporary irritable bowel syndrome and rectal bleeding. Men receiving radiation to the pelvic lymph nodes have a larger volume of bowel irradiated and,



consequently, an increased rate of side effects involving the intestines, such as cramping, diarrhea, and adhesions.

- Months or even years after external radiation, a variety of **late problems** may develop. These are the result of destructive changes in the small vessels of the irradiated tissues, resulting in chronic hypoxia, mucosal thinning, and the growth of aberrant blood vessels. The symptoms can include painless hematuria, urinary frequency, and dysuria. Serious late side effects are uncommon (Mayo Clinic, 2013).
- Patients develop **erectile dysfunction** beginning about one year after radiation treatment. By two years after treatment, half of the patients are unable to have an erection sufficient for intercourse; by five years after treatment, almost two thirds of the patients have impotence. Younger patients are less likely to develop impotence, while the problem is more likely to develop in patients who enter treatment with partial potency or diabetes or who receive even a brief course of androgen-deprivation therapy. It is thought that there are three contributors to the erectile dysfunction (impotence) that follows radiation therapy:
  - Arterial damage, leading to penile arterial insufficiency
  - Venous damage, leading to venous insufficiency at the level of the penile bulb, where less blood is then trapped during an erection
  - Nerve damage within the neurovascular bundle

### **Brachytherapy**

Brachytherapy is mainly used to treat small, low-risk prostate cancers. The treatment involves implanting radioactive sources called “seeds” into the prostate to deliver treatment directly to the cancer without the need to pass through surrounding tissues first.

There are two types of brachytherapy, both of which are done under general anesthesia. **Low-dose brachytherapy** involves placing rice-sized seeds that emit radiation into the prostate. The seeds gradually lose their radioactivity over time and are not removed.

**High-dose brachytherapy** involves temporarily implanting a radioactive source into the prostate gland and then removing it after one or two days. This procedure is done in the hospital and is usually combined with external beam radiation therapy.

Brachytherapy produces a somewhat different mix of side effects than external beam radiation therapy.

- **Acute effects** can include perineal pain and swelling, hematuria, and nocturia.
- As with external beam radiation therapy, brachytherapy has a significant risk of inducing impotency. The appearance of **erectile dysfunction** begins a few months after the procedure, and by six months after treatment, one quarter of patients will develop impotence. Approximately half of all men treated with brachytherapy will eventually become impotent.



- **Urinary problems** are common side effects of brachytherapy. Urinary symptoms include frequency, urgency, dysuria, incomplete emptying, and a weak urinary stream. The initial trauma of the implants causes some of these symptoms within 24 hours, but the direct effects of the radiation begin later, in about two to three weeks. These direct effects result from radiation-induced inflammation. Urinary incontinence or acute urinary retention occurs in approximately 1 of 5 brachytherapy patients. Either problem can occur immediately after the radioactive seeds have been implanted or two to three weeks later. These urinary complications may require catheterization. Obstructive and irritative symptoms tend to be mild after brachytherapy.
- A smaller volume of outside tissue is irradiated by brachytherapy compared to external beam radiation; therefore, **bowel problems** are much less common with brachytherapy. The more common problems are diarrhea, proctitis, and cramping. In addition, there is the risk of passing the implanted seeds.
- Potential **late effects** of brachytherapy include seed migration to the lungs and rectal ulceration.

### ***Caring for the Patient Receiving Radiation Therapy***

Radiation therapy is given to patients for treatment of their cancer and for palliative measures to relieve discomfort. Patients receiving radiation therapy are instructed to continue with regular activities but to be aware that they will experience fatigue and may need to adjust their activities because of it.

Men and significant others should be given instructions to call the physician in the case of a temperature over 100 °F, burning or difficulty with urination, excessive bleeding or clots in the urine, or rectal bleeding.

For those receiving external beam radiation therapy, instruction in **skin care** is also necessary.

- Instruct the patient to wash the skin gently with mild soap, rinse with warm water, and pat dry (do not rub) daily.
- Most radiation oncology facilities will use a marking pen for the initial treatment setup. Instruct the patient not to remove the dark ink markings that outline the radiation field, if present. However, when the field has been defined, tattoos may be placed in the corners of the field to make sure that the field is as accurate as possible.
- Instruct the patient to avoid applying any lotions, perfumes, deodorants, or powder to the treatment area.
- Instruct the patient to wear soft, nonrestrictive cotton clothing directly over the treatment area.



- Skin in the treatment area should be protected from sunlight and extreme cold.
- If skin becomes burned, topical methods can be used for relief.

Persons receiving brachytherapy may have temporary or permanent implantation of the radioactive seeds. If the patient is receiving temporary implants, he may be required to remain in the hospital for a few days. Temporary implants are high dose, and the patient's body may give off a small amount of radiation for a short time; he should thus have limited exposure to others. In particular, because of the rapid cell growth in both children and fetuses, no small children or pregnant women should be allowed to visit the patient.

Men who receive permanently placed radiation therapy are hospitalized for as long as the radiation source is considered a danger to persons around them. Principles of time, distance, and shielding need to be implemented. Care must be taken so that seeds do not become dislodged. Dressings and bed linens need to be checked by the radiation therapy department before these items are removed from the patient's room.

Nurses and radiation therapists must instruct the patient as follows:

- Observe for lost seeds in linens.
- Do not use fingers to pick up the seeds. Use tweezers or tongs to pick them up and place the lost seeds in a container of water or wrap them tightly in aluminum foil.
- Take lost seeds to the radiation oncology department at the hospital.

(See also "Patient Rehabilitation" later in this course.)

## CRYOTHERAPY (ABLATION)

Cryotherapy, also known as cryosurgery and cryoablation, can be an alternative to radical prostatectomy. It is a minimally invasive procedure that freezes tissue, causing cancer cells to die. Cryotherapy is most often used for early-stage prostate cancer, but it may also be used to treat recurrent disease.

There are two types of cryotherapy, both of which can be done under general or local anesthesia and take about one to two hours:

- **Whole cryotherapy** freezes the entire prostate gland, including healthy tissue, and may include damage to the nerve bundles.
- **Focal cryotherapy** freezes only the areas where cancer has been located. This allows for preservation of other regions of the prostate, in particular, erectile nerves and the urinary sphincter. The incidence of erectile dysfunction after focal cryotherapy is dramatically lower than for whole gland cryotherapy (Phillips et al., 2014). One disadvantage to focal therapy is that small, developing tumors in the untreated areas of the prostate gland may not be destroyed. However, the 5-year survival rates for both procedures are comparable.



The cryotherapy procedure involves placement of a catheter into the bladder to maintain urine drainage due to postprocedure swelling as well as to be used for the circulation of a warm liquid that protects the urethra from freezing. Cryoprobes (needles) are inserted into preselected areas between the scrotum and the anus, and a liquid cooling agent (commonly argon) is placed into them. This freezes the entire gland or focal areas of the gland. The frozen tissue is allowed to remain frozen for only a few minutes and then is thawed by inserting helium through the probes. This cycle may be repeated once more.

### **Advantages**

The advantages of cryotherapy are significant:

- It is a single treatment performed on an outpatient basis or requiring a one-night hospital stay.
- The short hospital stay reduces the risk for hospital-acquired infection.
- The procedure requires only a short (less than one week) recovery time.
- There is minimal or no pain and less swelling than from radical prostatectomy.
- It requires a shorter length of time for the catheter to remain in place.
- It lowers the risk for incontinence more than any other therapy.
- “Salvage cryotherapy” can be used when other treatments have failed to cure prostate cancer.
- There is a low risk of rectal damage or irritation.
- Most men who have focal cryotherapy remain potent.  
(AMC, 2015h; Mayo Clinic, 2015)

### **Risks and Side Effects**

Although cryotherapy has many advantages, there still are risks and side effects.

- Swelling of the penis and scrotum
- Soreness of the perineum
- Urinary frequency and dysuria
- Rarely (1%), development of a fistula between the rectum and the urethra that may require surgical repair
- Risk of urinary incontinence
- Risk of impotence



### **Caring for the Patient Receiving Cryotherapy**

Patients receiving cryotherapy are cared for in an outpatient setting or in the hospital overnight. Routine recovery monitoring, including vital signs, is carried out, and discomfort is relieved with pain medications.

When stabilized, ambulation should be done, and when the patient is ready for discharge, instructions should include:

- Caring for the catheter and tubing
- Caring for the needle insertion sites, keeping the areas clean and dry
- Specific bathing instructions according to the provider's protocol
- Notifying the healthcare provider if the patient experiences:
  - Fever and/or chills
  - Redness, swelling, bleeding, or other drainage from any needle insertion sites
  - Increase in pain around the insertion sites
- Avoiding driving until given approval from his provider
- Other activity restrictions

Appointment for follow-up and catheter removal should be made prior to discharge.

## **Treatments for Metastasized Prostate Cancer**

### **ANDROGEN-DEPRIVATION THERAPY (ADT)**

Throughout a man's life, androgens stimulate prostate growth, maintenance, and secretory functioning. Drugs, surgery, or other hormones are used to reduce the amount of male hormones or block them from working and stop cancer cells from growing. Androgen-deprivation therapy does not cure prostate cancer, but for many patients, it gives a long remission.

ADT is used in three situations:

- **Adjuvant** therapy to slow down the spread of cancer cells that have escaped
- **Neoadjuvant** therapy to shrink the prostate and the tumor before a procedure (prostatectomy or radiation therapy) in order to reduce the likelihood of escape
- **Palliative** therapy to ease pain caused by the spread of cancer

The androgen that has the greatest effect on the prostate is dihydrotestosterone, which is made in the prostate from circulating testosterone. The brain controls the amount of testosterone that circulates in the body by releasing a hormone to stimulate the pituitary gland to release



luteinizing hormone into circulation. When luteinizing hormone reaches the testes, it stimulates the synthesis and release of testosterone, which is then taken up by the prostate and transformed into dihydrotestosterone.

ADT is very effective at slowing the growth of prostate cancer, however after a time patients on androgen-deprivation therapy usually develop rising PSA levels. This indicates that the cancer is becoming androgen resistant.

When androgen resistance develops, discontinuing ADT will sometimes produce a PSA decline. Therefore, one therapeutic protocol involves intermittently using and discontinuing androgen-deprivation techniques. Eventually, however, this will also fail to slow the cancer's progression.

For recurrent cancer, ADT is typically continued until the patient's death, a period that may last for many years. On ADT, patients with metastatic prostate cancer live on average for two to three years. When recurrent prostate cancer becomes androgen resistant, systemic chemotherapy can be instituted.

### **Types of ADT**

Androgens can be reduced in men either 1) surgically, by removing both testes (orchiectomy), or 2) chemically, by blocking androgen synthesis, by competitive blocking of androgen receptors, or by blocking the hormonal stimulation of androgen production.

**Orchiectomy**, the “gold standard” for androgen-deprivation therapy, is a surgical procedure in which both testicles are removed. This is done under local anesthesia in an outpatient setting. Orchiectomy has a severe psychological impact due to disfigurement and the permanence of the surgery (Tidy, 2015).

**Luteinizing hormone-releasing hormone (LHRH) agonists** prevent the testicles from producing testosterone. LHRH agonists are injected or implanted under the skin and, depending on the drug used, given anywhere from once a month up to once a year. Drugs include leupronein (Lupron, Eligard), goserelin (Zoladex), triptorelin (Trelstar), and histrelin (Vantas).

They boost androgen production (tumor flare) for a short time at the beginning of treatment before they shut down testosterone production. Tumor flare can cause bone pain, acute bladder outlet obstruction, obstructive acute kidney injury, spinal cord compression, and fatal cardiovascular events related to hypercoagulation states (Tidy, 2015).

**Luteinizing hormone-releasing hormone (LHRH) antiagonists** work like agonists, but they reduce testosterone levels more quickly and do not cause tumor flare like the agonists do. Degarelix (Firmagon) is used to treat advanced prostate cancer and is given as a monthly subcutaneous injection. The most common side effects of this medication are pain, redness, and swelling at the injection site and increased liver enzyme levels.





**CPY17 inhibitor.** Although LHRH drugs can stop androgen production, other cells in the body, including the adrenal glands, can still make small amounts. Abiraterone (Zytiga) blocks CPY17 enzymes and stops these cells from making androgens. Abiraterone also blocks other hormones, and so prednisone needs to be taken during such treatment to avoid specific side effects. This drug is taken orally every day.

The **antifungal** drug ketoconazole (Nizoral) acts similarly to abiraterone by blocking production of androgens from the adrenal glands. It is used to treat men just diagnosed with advanced prostate cancer who have numerous metastases. Ketoconazole lowers testosterone levels quickly and, like abiraterone, blocks other hormones. This drug can also be prescribed when other forms of hormone therapy are no longer effective.

**Antiandrogens** block the action of androgens. Examples are flutamide (Eulexin), nilutamide (Niandron), and bicalutamide (Casodex). These drugs are often combined with orchiectomy or an LHRH agonist as first-line therapy (**combined androgen blockade** [CAB]). These drugs are taken orally every day. Serious liver toxicity is a possible side effect of taking antiandrogens.

An **androgen receptor antagonist** blocks male hormones from signaling to the cancer cells to grow. It is used for men with castrate-resistant prostate cancer in an effort to increase their lifespan. Enzalutamide (Xtandi) capsules are taken once a day.

### **Risks and Side Effects**

Although it does not cure prostate cancer, ADT is very effective at slowing tumor growth and at relieving symptoms. On the other hand, decreasing a man's androgens leads to a host of undesirable and debilitating side effects. The likelihood of developing some of these problems varies with the specific type of ADT that is used.

The changes in circulating sex hormones that are brought about by ADT lead to significant side effects that can greatly affect a patient's quality of life. These side effects include:

#### **The “Big Three”**

- Loss of libido
- Erectile dysfunction
- Vasomotor symptoms (hot flashes and sweating in about 70% of men)

#### **Physical**

- Weight gain
- Gynecomastia (enlarged breasts) (in 50% of men)
- Loss of muscle mass and strength
- Decreased size of genitals
- Changes in hair and nails



**Metabolic/Physiologic**

- Osteoporosis (skeletal fractures related to osteoporosis in up to 20% of men within 5 years of starting ADT)
- Anemia (inhibited erythropoiesis; associated with >10% decline in hemoglobin levels)
- Metabolic syndrome (insulin sensitivity, dyslipidemia, elevated blood pressure)

**Other Systemic Effects**

- Fatigue, lack of energy
- Lack of initiative
- Aches and pains
- Mastodynia (breast tenderness) (in 7% of men taking drugs and 10% following orchiectomy)
- Alterations in mood and cognition (cognitive and memory problems in 47% to 69% of men; linked with negative emotional effects)
- Short-term decreases in mental and emotional well-being (typically resolving after 2 years)
- Difficulties with attention
- Difficulties with visual processing  
(Smith & Crawford, 2015; Singla et al., 2014)

***Caring for the Patient Receiving ADT***

Caregivers must be aware of and able to discuss the reasons for and ways to deal with the multiple metabolic side effects of androgen-deprivation therapy.

Hot flashes are a common side effect. Treatment options include estrogen, progestin, antidepressants, anticonvulsant agents, hypnosis, and even acupuncture (NCI, 2014).

Other helpful measures for hot flashes include:

- Avoiding alcohol and caffeine
- Avoiding nicotine
- Avoiding spicy foods
- Avoiding eating large meals
- Exercising regularly (may lower the number of hot flashes and how long they last)
- Using a fan
- Wearing cotton clothes
- Taking warm baths or showers instead of hot



For the man with gynecomastia and mastodynia, the nurse may provide support during prophylactic breast irradiation, which is an effective physical technique for preventing breast problems. Medical therapy for gynecomastia and mastodynia can include tamoxifen. Breast reduction surgery may also be considered.

A discussion with the patient regarding lifestyle modifications to help prevent the problems associated with osteoporosis might include smoking cessation, decreased alcohol intake, resistance exercises, and supplementation with calcium and vitamin D. Bisphosphonates (zoledronic acid/Zometa and alendronate/Fosamax) increase bone mineral density. A newer drug (denosumab/XGEVA/Prolia) increases mass through a different mechanism. This drug, however, may cause a rare but serious side effect known as osteonecrosis (areas of dead bone) of the jaw, which is very painful and difficult to heal (NCI, 2014).

Exercise may also help reduce loss of muscle mass, weight gain, fatigue, and metabolic syndrome. Weight loss and diet changes can be discussed. Because these lifestyle changes are difficult, it is helpful to discuss ways to develop and maintain motivation.

Castration is a very devastating form of treatment, and emotional side effects require extensive preparation and counseling both before and after the procedure. It is difficult to accept the fact of being infertile. Psychologically, for some men, being able to impregnate a female is a very important part of their image of themselves as men. This should be discussed by the patient and his partner. Some men may elect to bank their sperm for use in the future if they believe they will want children later in life. For most men, however, because of age, this is not a great concern.

## CHEMOTHERAPY FOR METASTATIC PROSTATE CANCER

Metastatic prostate cancer is an incurable disease, and treatment goals are palliative, not curative. When intermittent androgen-deprivation therapy fails and PSA levels continue to rise, chemotherapy may be used.

Chemotherapy uses drugs to stop the growth of cancer cells, either by killing the cells or stopping them from dividing. These drugs can be taken orally or injected into a vein or muscle. The drugs will enter the bloodstream and reach cancer cells systemically. When chemotherapy is placed directly in a body cavity, an organ, or the cerebrospinal fluid, the drugs mainly affect cancer cells in those regions. The way the chemotherapy is given is determined by the type and stage of the cancer.

The most common chemotherapy drug is docetaxal (Taxotere). Cabazitaxel (Jevtana) is approved for metastatic castration-resistant prostate cancer (mCRPC), previously treated with docetaxel (NCI, 2014).

Another pharmaceutical used for treating men with mCRPC is radium 223 dichloride. This radiopharmaceutical is approved for men with mCRPC that has spread to the bones and is



causing symptoms but has not spread to other organs. It collects in certain areas in the bone and gives off radiation that kills cancer cells (NCI, 2014).

### ***Risks and Side Effects***

Chemotherapy is used for patients with advanced cancer and carries the side effects common to all forms of chemotherapy. Individuals experience sores in the mouth, nausea, vomiting, diarrhea, or constipation due to the effects on the fast-dividing cells of the digestive system. Loss of hair and infertility also occur due to the rapid division of these cells of the body. Systemically, there may be complaints of sleeplessness and fatigue.

In addition, patients receiving chemotherapy are at risk for infections, as chemotherapy agents damage the immune system, reducing the body's infection-fighting ability.

### ***Caring for the Patient Receiving Chemotherapy***

Men who are receiving chemotherapy have recurrent or advanced cancer. They receive chemotherapy on an outpatient basis administered by nurses who provide support for the patient and significant others. Nurses monitor patients for side effects and offer education to help deal with them.

At each contact, the nurse assesses the patient for nausea and vomiting, loss of appetite, hair loss, mouth sores, diarrhea, evidence of infection, pain, psychological state, and quality of life. It is extremely important to assess for emotional and spiritual issues, as recurrent and advanced cancers bring end-of-life issues to the fore. The patient, partner, and family can be referred for counseling and/or pastoral care.

Nurses and occupational therapists prepare and assist the patient and partner/family with self-care at home. The patient is taught how to maintain optimum nutrition, get adequate rest, maintain central lines, and perform good oral hygiene. They are instructed in signs of infection or subtle signs of illness. Above all, they are taught excellent handwashing and how to avoid infectious agents at home and in public.

## **BIOLOGIC THERAPY (IMMUNOTHERAPY)**

Biologic therapy uses the patient's immune system to fight cancer. Biological response modifiers work by stimulating or restoring the immune system's ability to fight infections and disease. There are two broad types of cancer "vaccines":

- **Preventive (or prophylactic)**, which are intended to prevent cancer from developing in healthy people. Examples are Gardasil and Cervarix, which protect against infection by two types of HPV that cause cervical cancer, and the HBV vaccine.
- **Treatment (or therapeutic)**, which are intended to treat an existing cancer by strengthening the body's natural defenses against cancer.



Cancer preventive vaccines target infectious agents that cause or contribute to the development of cancer. They are similar to traditional vaccines, which help prevent infectious diseases. Both preventive and traditional cancer vaccines are based on antigens that are carried by infectious agents and are relatively easy for the immune system to recognize as foreign.

Sipuleucel-T (Provenge) is the only “vaccine” clinically approved for the treatment of asymptomatic or minimally symptomatic mCRPC. It is designed to stimulate immune response to an antigen known as prostatic acid phosphatase (PAP) that is found on most prostatic cancer cells.

This vaccine is customized to each patient, created using the patient’s own blood, which is sent to the manufacturer and returned to the patient’s treatment provider for infusion. The patient receives three treatments, usually two weeks apart, each treatment requiring the same manufacturing process. Treatment with Sipuleucel-T has been shown to increase the survival of men with a certain type of metastatic prostate cancer by about four months (NCI, 2014).

There are other types of vaccines for treating prostate cancer being tested in clinical trials. One of these is PROSTVAC, which uses a virus that has been genetically modified to contain prostate-specific antigen (PSA). The patient’s immune system should respond to the virus and begin to recognize and destroy cancer cells containing PSA. Early results with this vaccine have been promising, and a larger study is now under way (ACS, 2014).

## Treatments under Study

**High-intensity focused ultrasound (HIFU)** sends ultrasound waves into prostate tumors. The procedure often begins with a transurethral incision to reduce later urinary retention. High-intensity focused ultrasound requires general or spinal anesthesia and takes one to four hours; the resultant damage continues over many days or even months. This procedure can be repeated if necessary. This treatment has been used more widely in Europe and is being studied in the United States. Outcomes appear to indicate it is safe and fairly comfortable.

**Laser prostatectomy** or **laser ablation** is a new procedure that can be performed on prostate glands that are larger. A laser releases concentrated light energy bursts of 30 to 60 seconds in length that cut through tissue with a minimum of blood loss. It can dissect away lobes on each side of the prostate, and any tissue that remains behind dissolves and passes out through the urine. It appears to be safe and effective, but its disadvantages include the requirement of a trained practitioner, a relatively long postoperative recovery over several weeks before urinary symptoms improve, and the fact that dead tissue cannot be examined for signs of cancer cells.

**Proton beam radiation therapy** is a type of high-energy, external radiation therapy that targets tumors with streams of protons (small, positively charged particles), which do not damage the tissues they pass through. Studies are in progress to determine the effectiveness of this type of therapy. Although early results are promising, studies so far have not shown that proton beam therapy is safer or more effective than other types of external beam radiation therapy for treating prostate cancer. It is not currently widely available, is very expensive, and so far has not been approved for coverage by insurance companies.



## Addressing Metastatic Cancer Issues

After the cancer has become unresponsive to androgen-deprivation therapy, prostate cancer will usually have produced metastases. Two common problems from metastases are bone pain and symptoms from spinal cord compression.

### BONE PAIN

Prostate cancer patients can develop focal or diffuse bone pain, and these are both treated with pain medication. The painful sites are also examined with plain films, and if the structural damage to the bone is not too incapacitating, the metastatic sites can be irradiated.

Studies are being done using radiofrequency ablation (RFA) to help control bone pain when prostate cancer has metastasized to one or more areas in the bones. This involves the use of CT scan or ultrasound to guide a metal probe into the area of the tumor. A high-frequency current is then passed through the probe to heat and destroy the tumor cells. This treatment has been used for many years to treat cancer in other organs such as the liver, but the use in bone pain treatment is still fairly new. Early results, however, are promising (ACS, 2014).

### CORD COMPRESSION

Along with many others in the oncology population, patients with prostate cancer are at high risk for the development of spinal cord compression by metastatic tumor protrusion into the spinal canal, which can cause compression of the spinal cord. Spinal cord compression causes edema, inflammation, and mechanical compression causing neural injury to the cord as well as damaging vasculature and impairing oxygenation. Lumbar cord compression can cause leg weakness, sensory loss, or a decrease in bowel or bladder control.

The specific anatomy of cord compression can be mapped using MRI imaging. For epidural cord compression, high-dose corticosteroids such as dexamethasone are given intravenously. After the symptoms have been reduced, the steroids are tapered, and either radiation or surgical decompression followed by radiation is the recommended treatment.

### PALLIATIVE TREATMENT

Metastatic prostate cancer usually progresses to a point where further cancer treatments only offer increased problems and discomfort. At this point, palliative care begins. Palliative treatment is not giving up on patient care; it is only shifting the care goals and tasks.

In palliative care, physical, emotional, and spiritual comfort become the healthcare team's goals, and completing unfinished tasks and resolving uncompleted relationship problems become the patient's goals. Healthcare professionals are involved in the provision of palliative care and end-of-life care either in the patient's home, a nursing home, or an inpatient hospice unit.



## THE NURSE AS EDUCATOR

At every step of a patient's interaction with the medical system, nurses are central navigators ensuring that the patient receives comprehensive care. In order for nurses to meet the educational needs of the prostate cancer patient and significant others, it is necessary for them to be well versed in the following:

- The psychological impact of the diagnosis of prostate cancer
- Male genitourinary anatomy and physiology
- Epidemiology of prostate cancer and its risk factors
- Methods used in diagnosing the cancer
- How the cancer is treated and what to expect with each treatment option
- Side effects of treatment and how they will be dealt with
- Physical and psychological issues concerning impotence
- Urinary and bowel incontinence issues
- Palliative care
- Hospice care

Education of male patients begins with each contact the nurse has with them, whether in clinics, hospitals, nursing homes, client homes, or in conversation with family members and friends. When a patient, friend, or family member is faced with the possible diagnosis of prostate cancer, the nurse is there to provide accurate information. Once a diagnosis of prostate cancer is made, the nurse is also in a unique position to offer navigational assistance for the patient, significant others, and family through the medical system and to provide necessary education regarding treatment options, outcomes, and quality of life issues.

It is important for nurses in all settings and locations to perform a **complete assessment** initially to determine the patient's:

- Knowledge about the male anatomy and physiology
- Level of understanding of the disease
- Fears and concerns about diagnosis, treatment, and prognosis
- Past experience with cancer either for self or others
- Psychological reactions to the diagnosis as well as his partner's
- Support systems and coping methods

Education should be provided using simple terms regarding diagnostic tests and treatments, how they are performed, how long they will take, and what the patient will experience during the process and afterward. It is important to allow adequate time for questions.

The goal of the nurse is to increase knowledge, decrease anxiety, and assist the patient and his partner to openly communicate their concerns. When the patient is emotionally stressed, this increases negative effects. A patient who is not anxious is able to focus on what is occurring, what is being said, and is better able to understand the instructions he should follow after leaving the office.



**CASE**

Larry has received the news that he may have prostate cancer and will need a biopsy to confirm the diagnosis. His physician gave him a brief clinical description of the biopsy and a three-day course of antibiotics to prevent infection that could be caused by the biopsy needles passing from the rectum into the prostate.

Larry is uneasy about getting a biopsy, so he shared his situation with two men at work. One of the men has had a prostate biopsy and told him it was a very painful procedure.

When Larry arrived at the urologist's office, a nurse led him to an exam room, checked his vital signs, and completed a questionnaire about his medical history.

Larry was very anxious about this procedure. He had not slept the night before and hadn't eaten anything that morning. His blood pressure, pulse, and respirations were elevated, and he was perspiring. He was relieved when the nurse asked him if he understood the biopsy procedure. He admitted he had very little knowledge about anything concerning his internal anatomy and only a limited awareness of the procedure he was going to have and what to expect afterward. All he knew was that the doctor was going to "put needles up my butt and stick them in my prostate."

The nurse was concerned that Larry had not eaten anything and provided him with orange juice and crackers while she proceeded to educate him. She described male anatomy and physiology using a laminated diagram and provided detailed information about how the procedure would be performed. She told him that he may experience pain and discomfort, but with local anesthetic, most men experience very little pain during the actual procedure. Larry felt very relieved to know what was about to happen.

After Larry undressed and put on a patient gown, he was taken to the biopsy room, and the nurse helped him sit on the table, then lie down and turn onto his left side. She instructed him to pull his knees up toward his chest and positioned pillows to help him lie on his side.

The urologist entered, and he and the nurse verified Larry's identity, allergies, and the proposed procedure. Before going further, the urologist asked Larry if he had any questions. Larry replied that the nurse had explained everything to him, and the biopsy began. Larry experienced a pinching sensation with each of the prostate samples taken but described it as only a "little uncomfortable."

When the biopsy was finished, the nurse helped him get up slowly and walk back to the exam room. There she provided materials for cleansing the rectal area and allowed him to get dressed.

When he was dressed, the nurse returned and sat down with Larry to review with him the instructions he should follow after he left the office. Larry left with his copy of home care instructions and an appointment for a follow-up.





The next day, the nurse called to see how Larry was doing. He told her that he had taken some acetaminophen for discomfort and had decided to work from home that day. He was very grateful for her teaching and reassurance and was debating sharing his positive experience with his coworkers.

The importance of education is apparent in Larry's case. Because of his fear and anxiety, he was unable to take care of his basic needs, including sleeping and eating. The role of the nurse in providing education allowed him to relax and to openly communicate his concerns. As he became more knowledgeable about what was going to happen, he began to feel calmer and his vital signs returned to normal.

## SPECIAL CONCERNS OF THE PROSTATE CANCER PATIENT

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### **Sexual Dysfunction**

Cancer treatments often hinder a patient's libido and ability to have an erection. In addition, the patient's sexual desire can be damped down by feelings of inadequacy and fear of being unable to complete sexual intercourse. Prostate cancer and its treatment therefore disrupt the relationship between a patient and his sexual partner.

### **PHYSICAL AND PSYCHOLOGICAL ISSUES**

Because many men and their partners often do not understand how the male reproductive system works, caregivers should provide detailed descriptions of the physical and psychological processes involved in obtaining an erection and ejaculation. It is important to stress that the mind is a major component of the process and can dampen the success of sexual function through anxiety and fear of failure to perform.

It is common for men to experience change in sexual desire after diagnosis and during treatment. If they are anxious, they may have less interest in sex. Others may experience tiredness and lack of energy.

Changes after hormone therapy, such as weight gain or breast swelling, may affect how a man feels about his body or appearance. If he has had an orchiectomy, he may be worried about how his body looks. Other types of hormone therapy may also change the way his testicles look. All of these factors can result in a decreased libido.

Hormone therapy can also reduce the amount of semen produced. With ejaculation the man may feel the sensations of an orgasm but not release any semen from the penis. This is sometimes called a dry orgasm. Occasionally, some men will find that a small amount of liquid comes out from the tip of the penis during orgasm.



Changes in the relationship, such as changed roles, may also affect how the person and his partner feel about sex. Some men feel like they have lost their role within the family structure. This may lower a man's self-esteem and confidence.

Men deal with changes to their sexual function in different ways. Some men find that because they no longer have a desire for sex, it is easier for them to come to terms with problems getting an erection. For some men, the ability to have sex or get an erection is an extremely important part of how they view themselves as men. Sexual activity may be a way of relaxing, working through difficult emotions, coping with difficult times, or boosting self-esteem. Thus, losing the ability to have sex or get an erection can be very hard to come to terms with for some men.

## **ADDRESSING THE ISSUES OF SEXUAL DYSFUNCTION**

Encouraging alternate forms of intimacy, facilitating open communication between partners, and discussing erectile dysfunction treatments will help alleviate many fears and concerns.

### ***Intimacy***

It must be stressed that losing interest in sex does not need to result in the loss of a loving and supportive relationship. It is helpful to talk with men and their partners about how to remain physically intimate without having sexual intercourse. Many couples manage to find new ways of being together.

Ways of being together can include hugging and kissing, snuggling, and having physical contact with each other. This maintains intimacy and provides support for each other. It is not uncommon for men to become closer to their partner after starting treatment through developing new forms of intimacy.

Some men will struggle to come to terms with changes in their body image or their ability to perform sexually. This can result in avoiding intimate situations where they may feel under pressure to have sex. Some men may distance themselves from close relationships, but this does not mean that they no longer care for their partner or loved ones.

### ***Communication***

It is important to encourage men to communicate openly with their partner about any changes that are occurring so that both of them can come to terms with the changes. Talking about problems may help reduce a patient's worry about what his partner thinks and may help the partner understand the physical or emotional changes being experienced.

It is helpful to counsel the partner of a man with prostate cancer about how treatment affects the man's sexual function. Partners can practice patience and avoid applying pressure to perform. This will help the man feel supported.



If a patient and his partner have problems talking about sex, it may help to recommend that they seek psychosexual counseling. Talking about sex can be difficult, even for partners who have known each other for a long time.

It may seem strange, but couples occasionally worry that cancer can be passed on when they have sexual intercourse. Caregivers should stress that this is not possible and that having sexual intercourse will not affect the cancer or the success of the treatment.

The nurse also needs to understand that some men try to cope with their feelings on their own because they may be too embarrassed to talk about it or are afraid of worrying their partner or loved ones.

### **Erectile Dysfunction Treatments**

Along with the patient's primary provider, a nurse can discuss what options are available to enhance sexual function. The first line of therapy is phosphodiesterase-5 inhibitors, which include sildenafil (Viagra), tadalafil (Cialis), vardenafil hydrochloride (Levitra, Staxyn), and avanafil (Stendra). Taken orally, these medications are successful in up to 80% of men who have become impotent following treatment for prostate cancer.

The vasodilator alprostadil is injected into the corpus cavernosum of the penis and has a success rate of 94%. This same medication can be given in pellet form inserted into the urethra. This is known as the Medicated Urethral System for Erections (MUSE) and has been found effective in 65% of patients.

Venous flow constriction devices may be used in combination with one of the phosphodiesterase-5 inhibitors. Vacuum pump devices have been successful in 60% to 90% of patients, and penile implants have a success rate as high as 80% (Kim, 2014).

(See also "Patient Rehabilitation" later in this course.)

#### **CASE**

Jack was diagnosed with prostate cancer last winter. He and his wife, Julie, met with his doctor and discussed treatment options. Because of their fear about the diagnosis, they decided that Jack would undergo a nerve-sparing radical prostatectomy and get rid of the cancer. A laparoscopic radical prostatectomy was done.

Julie and Jack had always had a "fantastic" sex life and were aware that there was a risk of impotence following the surgery. They did not, however, openly discuss their concerns about how this might affect their relationship after the surgery.

Six weeks after the surgery, and when they felt ready, they attempted sexual intercourse. Jack had only a partial erection, but they were hopeful things would improve. Over the next few months, his erections were still not strong enough to penetrate, and maintaining an erection was difficult.



Julie and Jack tried to share intimacy in other ways, but neither felt these were satisfactory. Finally, Julie told Jack that she was unhappy with the situation and talked him into making an appointment to ask his doctor for some help.

In the office, the nurse admitted Jack and took his vital signs. She asked him how things were going, and he told her why he made the appointment. The nurse encouraged him to talk, and he expressed how terrible he felt that he was unable to satisfy his wife. He said he was afraid she would eventually leave him. Part of his fear, he said, was that Julie was much younger than he and that he was feeling “like a useless old man.”

The nurse told Jack that his feelings were appropriate and suggested he sit down with Julie and tell her what his fears and concerns were. He agreed that he should do this. The nurse also offered to meet with them as a couple to help them with their communication. She told Jack about some of the methods that are used to help treat erectile dysfunction, how they work, and their effectiveness. She told him to discuss each one thoroughly with the physician.

When the physician talked with Jack, he described the various methods available and recommended medications. Jack was not eager to use the methods that required surgery or removed spontaneity and required preplanning. He finally elected to try Viagra.

Jack went home and discussed his visit with Julie. He told her how he had been feeling and how afraid he was of losing her. She reassured him that she had not considered leaving him. He told her about the Viagra the doctor gave him, and they made a date to have dinner and stay in a nice hotel for the weekend.

The next visit with the physician, Jack reported that the Viagra worked wonderfully and that he and Julie were back on track toward a fantastic sex life.

## Urinary Incontinence

Transient urinary incontinence is common in men who have had surgery or radiation for prostate cancer. Incontinence has serious physical, psychological, and social consequences.

Removal of the prostate through surgery or destroying it with radiation disrupts how the urinary tract functions. Radiation can reduce the capacity of the bladder and cause spasms that force urine out. Surgery can damage the nerves and sphincters that help control bladder function and the ability to control urine flow.

Men may experience different types of urinary incontinence with different degrees of severity. Some men only dribble urine, while others may experience total loss of control. Stress incontinence can occur with any physical activity, such as coughing, sneezing, laughing, and lifting. Urge incontinence can give little to no time to reach the restroom.



The return of control over urination usually occurs within a few months. Age is a factor in recovery time, as is a history of urinary problems prior to treatment. Recovery is gradual over time until only leaks or dribbling is present, and then ultimately full control may be regained.

It is important that patients, partners, and families understand that incontinence is a possibility after treatment, and nurses and primary care providers should make every effort to impart this information beforehand. Since there can be a disparity between what surgeons tell patients about their postoperative course and what patients hear, it is always helpful to provide information in writing, especially about the risk for incontinence.

## **NURSING APPROACHES TO ASSIST WITH URINARY INCONTINENCE**

Problems with incontinence begin after a catheter has been removed. Nurses can recommend that heavy pads or absorbent undergarments be used at first and until complete control returns. Also recommended is a protective plastic sheet for the bed and a plastic chair pad.

The nurse provides supportive care for urinary incontinence. This includes instructions on behavior modifications, such as:

- Urinate every 2 to 4 hours and when feeling full.
- Drink 6 to 8 glasses of fluid per day (if not contraindicated).
- Avoid caffeinated beverages such as some sodas, coffee, and tea.
- Do not wait until the last minute to void.
- Perform pelvic floor (Kegel) exercises (see below).
- Avoid smoking, which causes overactivity of the bladder.

### ***Pelvic Floor (Kegel) Exercises***

The most important way for men to regain control of urination is by performing pelvic floor exercises, also known as Kegel exercises. Physical therapists, occupational therapists, and nurses can instruct and follow up with these exercises, which are done to help strengthen the muscles that support the bladder and are involved with sexual function. It is recommended that these exercises be taught preoperatively, as they are easier to learn before rather than after surgery.

The first step in performing Kegel exercises is to ensure that the right muscles are being exercised. This can be done in one of two ways: 1) the man can sit on the toilet and try to stop and start the flow of urine several times while urinating or 2) the man can contract his buttocks and rectum as if trying to prevent the passage of gas. These sensations tell him he is exercising the correct muscles.

Once the correct muscles are identified, the next step is to squeeze these muscles, hold them for 5 seconds, and then release. Relax the muscles for 10 seconds. Contractions



should be increased gradually until they can be held for 10 seconds. Each session should involve about 10 contractions.

After the squeezing and holding exercise, the next step is to do up to 10 strong squeezes, but very quickly. This means the muscles are squeezed and let go right away, then repeated again immediately thereafter.

It is recommended that these exercises be done routinely for two to three sessions per day. They can be done while lying in bed, sitting in a chair, standing, or even walking. It may take up to six weeks before there is any noticeable change and several months to achieve the desired results (Simon Foundation for Continence, 2014).

(See also “Patient Rehabilitation” below.)

## PATIENT REHABILITATION

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**Physical therapy (PT)** and **occupational therapy (OT)** specialists may be involved in the care of prostate cancer patient from the beginning of treatment to the end of a patient’s life. They provide inpatient care, outpatient follow-up and education, and services in home care, skilled nursing, and hospice care settings.

Oncology rehabilitation encompasses a wide range of therapies designed to build strength and endurance, maintain energy for activities of daily living, reduce stress, and especially reduce the effects of cancer treatment.

### Fatigue

Fatigue is one of the most common side effects of cancer treatments such as chemotherapy and radiation therapy. Fatigue is a feeling of excessive exhaustion not relieved by rest or sleep. Physical therapy and exercise are the only evidence-based treatments for cancer-related fatigue. Physical and occupational therapists evaluate patients and develop individualized exercise regimens that increase strength, mobility, endurance, and balance as well as teach the patient energy conservation techniques.

### Incontinence

Both PTs and OTs may provide education in behavior modification for coping with incontinence. Pelvic floor muscle training (PFMT) with or without biofeedback taught prior to surgery and performed postoperatively decreases the duration and degree of urinary incontinence after prostatectomy. The purpose of PFMT is to retrain the pelvic muscles by improving strength in order to overcome the insufficiency of injured sphincters.



Other modalities may involve noninvasive pelvic floor electrical stimulation, extracorporeal magnetic innervations, behavioral modification, and external penile compression devices (Elzbieta et al, 2014; Vant, 2015).

## **Loss of Bone Mineral Density and Muscle Strength**

Androgen deprivation therapy leads to a loss of bone mineral density and lean body mass as well as an increase in body weight and fat mass, causing general debility and muscle weakness. Physical therapy can improve bone density and muscle strength through whole-body vibration exercises performed on an oscillating platform, which transmits energy to the body, forcing muscles to contract and relax (Bernardo-Filho et al., 2014).

Other modalities include modified strength-training exercises, weight-bearing exercise, and gentle exercises that focus on posture and balance. Strength training (resistance exercises) includes the use of weights or bands, push-ups, and pull-ups. These exercises increase muscle mass and help improve bone density and balance, which can prevent falls. Weight-bearing exercises such as walking, aerobics, dancing, or anything that gets the person up and moving also maintain or improve bone density. Walking in particular helps improve bone density in the spine and hips (SCCA, 2015).

## **Lymphedema Management**

Lymphedema (swelling) can occur in the prostate cancer patient following removal of lymph nodes during surgery or as a result of radiation damage to the lymph nodes and/or the lymph system. When this occurs, the body is no longer able to rid itself of excess fluid, which then collects in the lower extremities. Compression therapy promotes movement of fluid, reducing swelling and resulting in improved mobility and comfort (Vant, 2015).

Both occupational and physical therapists may determine what combination of compression therapy and manual techniques would be most effective for an individual patient.

In the early stages when swelling is minimal, lymphedema is managed well using custom-fitted compression garments, exercise, and elevation to improve lymph flow. Compression garments are worn continuously throughout the day and removed at night. They are reapplied as soon as the patient awakens in the morning.

Pneumatic pump compression may be used on an outpatient basis or in the home. This treatment provides sequential, active compression that “milks” the lymph from the extremity.

With more severe edema, complete decongestive therapy is employed, which involves manual lymphatic drainage using light massage followed by compression bandaging. Manual massage engages collateral lymph vessels, allowing accumulated lymph to be drained into nearby regions where the lymphatics are functioning normally. Throughout all forms of treatment, the size of the extremity is monitored to determine treatment effectiveness (Rossy, 2015; Shier, 2013; Boyle, 2014).



## Erectile Dysfunction

Sexuality is an activity of daily living that is addressed by both occupational and physical therapists. OTs may work with patients to allow them to express fears and concerns and offer education assistance with problem solving. PTs may work with patients on adaptations for sexual activity, especially in cases where certain sexual positions are limited or impossible due to pain, fatigue, or positioning issues.

Erectile dysfunction treatment is mainly focused on pelvic floor muscles but can also focus on the muscles at the base of the penis. After performing an initial examination and determining an intervention plan, the physical therapist may guide the patient to perform specific exercises for muscles related to the pelvic floor as well as muscles indirectly related, such as the abdominal and gluteal muscles. These exercises increase the oxygen supply to the tissues. Vacuum therapy can also be used to generate negative pressure that increases the blood flow to the penis (Bernardo-Filho, 2014).

## Peripheral Neuropathy

Along with fatigue, one of the most difficult side effects of chemotherapy is peripheral neuropathy, a tingling, burning, or shooting pain sensation in the hands and feet due to nerve damage. The patient may also experience loss of feeling, have trouble using fingers, or exhibit balance problems, tripping, and/or decreased reflexes. Rehabilitation therapy can help to improve balance and gait, fine motor skills, dexterity, and coordination. A primary goal of treatment is to reduce the risk of falls and injuries that can result from neuropathy (Grisham, 2013).

## Scar Tissue Management

Surgery and radiation therapy can create scar tissue that may become painful, decrease flexibility, or entrap nerves. Physical therapists use manual therapy and tissue techniques, stretching, and tissue and nerve mobilization to reduce pain and increase mobility in the prostate cancer patient (SCCA, 2015).

## Stress Management

Occupational therapists offer ways to help men acknowledge, express, accept, and use problem-solving techniques to address the changes that result from prostate cancer treatment. Effective stress management can include relaxation training, education, a supportive environment, and social support. Such interventions relieve treatment-related symptoms, reduce the physiological accompaniments of stress, and improve mood. Men who participate in such rehabilitation are shown to have improved mental health by feeling more in control and experiencing reduced interpersonal conflict and distress related to cancer-related intrusive thinking (Huri et al., 2015).





## Palliative Care

In palliative care, physical and occupational therapists contribute to the minimization of secondary symptom progression.

The role of the occupational therapist in palliative and hospice care is quite significant. OTs identify the roles and activities that are meaningful to the patient and address any barriers that exist that prevent performance of them. They consider both the physical and psychosocial/behavioral health needs and pay close attention to what is most important to the patient. They look at available resources, the patient's support system, and the environment in which the patient resides and participates. The central goal for occupational therapy is the improvement in quality of life as defined by the patient by maximizing functional abilities remaining (Allen, 2015).

Physical therapy offers functional training, therapeutic exercise, soft tissue mobilization, pain management, and patient/family education. The goals of therapy are to increase comfort and independence within the patient's functional abilities and to maintain and/or improve overall strength, range of motion, and endurance. Physical therapists may use heat, cold, and TENS for pain relief; teach adaptations to activities of daily living; and design exercises that improve endurance and positioning regimens that help the patient maintain functional range-of-motion (Kelly & Mendelsohn, 2013).

### CASE

Harold recently underwent a radical prostatectomy for prostate cancer. He lives in a group home for individuals with cognitive disabilities, and he has had a home care nurse visit him on a daily basis to provide wound and catheter care since his return home from the hospital. She has provided the staff with information regarding potential incontinence and told them to contact her if there are any problems.

The staff at the home has been able to assist Harold with his activities of daily living, but after his catheter was removed two days ago, Harold has been incontinent and unable to avoid soiling himself and the furniture. His caregivers requested assistance from the nurse.

The nurse assessed Harold and determined he was continually dribbling urine and was able to urinate when going to the bathroom. He was unaware that he was dribbling until others noticed it. The nurse recommended that Harold be placed in incontinence undergarments until he regained control of his urine again. She also recommended the staff purchase protective pads for his bed and his favorite chair.

The nurse then referred Harold to a physical therapist, who came to the group home to complete an evaluation and determine the best treatment approach. Because of Harold's mental limitations, teaching pelvic floor exercises would be difficult, and so the therapist elected to begin treatment using electrical stimulation to teach Harold how to coordinate his muscle contractions. The stimulation increased awareness of the pelvic floor muscles and allowed



Harold to recognize the sensation of tightening these muscles. By concentrating and joining in, he learned how to contract the pelvic floor muscles and eventually could do them without the stimulation. The therapist also offered Harold suggestions to avoid certain foods and drinks that are known bladder irritants, such as caffeine.

The physical therapist next met with staff members to provide education about the pelvic floor exercises and to explain when and how often they should encourage Harold to practice them. They were instructed to tell Harold to tighten and hold his pelvic floor muscle for five seconds and then relax them. He should be encouraged to do this 10 to 20 times three to four times each day.

Over the weeks that followed, the staff helped Harold to perform his exercises. Eventually he demonstrated the ability to stop and start his urine stream by squeezing the correct muscles.

Harold also required their assistance changing his habit of drinking four cups of coffee a day, and he gradually accepted herbal teas instead. He was able to avoid drinking liquids prior to bedtime, but it was difficult, as he did not grasp why he could not drink, and he suffered from dry mouth as a side effect of his psychiatric medications. To address this, he was often given ice chips to suck on when he was thirsty. Staff members also reminded Harold every two hours to go to the bathroom, and they checked to make sure his undergarment was changed when it became wet.

Both the physical therapist and nurse provided follow-up care. The therapist met with Harold regularly over a four-week period of time to ensure that the exercises were being performed correctly and to monitor their effectiveness. The nurse visited Harold on a weekly basis to make certain he was receiving good skin care due to incontinence.

The staff remained diligent in toileting him and working with his exercises. Within six months Harold remained dry for most of the day, with only occasional incontinence when distracted or after drinking a lot of liquids.

## CONCLUSION

Prostate cancer is a disease of the older male. In the United States, it is estimated that more than 1 man in 7 will be diagnosed with prostate cancer during his lifetime. When the diagnosis of prostate cancer is made, it has a profound impact on both the patient and his significant others.

Most prostate cancers are discovered by noninvasive screening using a digital rectal exam and PSA levels. Early stages of prostate cancer usually produce no symptoms. On the other hand, late stages of prostate cancer can present with pelvic pain, urinary obstruction, or bone pain. The definitive diagnosis is made from a biopsy, and the cancers are categorized by grade and stage.

Treatment for localized prostate cancer includes conservative measures such as watchful waiting and active surveillance, as well as curative attempts through surgery, cryotherapy, and radiation.



When prostate cancer has spread to nearby tissues or metastasized to other areas in the body, treatment measures include androgen-deprivation therapy, chemotherapy, and biologic therapy.

Early treatment of small prostate cancers brings the promise of a cure, but the treatments also cause side effects that reduce the patient's quality of life. For example, surgery and radiation therapy are often followed by urinary problems, bowel problems, or impotence.

Currently, physicians do not have the ability to identify accurately which early cancers will be most destructive, and more patients are treated than is necessary. There is some controversy surrounding whether screening for early asymptomatic cancers using the imprecise tools currently available is in the patient's best interest.

A multidisciplinary team approach is necessary in the management of prostate cancer, and nurses and therapists play a key role throughout the disease continuum, helping maintain the highest quality of life possible for each patient. Patients require supportive care and skilled nursing care from the initial process of making a diagnosis through the treatment decision making, treatment, and post-treatment periods following diagnosis.

## QUESTIONS PATIENTS MAY ASK ABOUT PROSTATE CANCER

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**Q.** What is a prostate?

**A.** The prostate is a gland located just below the bladder in men. The urethra—the tube carrying urine from the bladder and out through the penis—runs through the prostate. The prostate's job is to make some of the seminal fluid that mixes with the sperm when a man ejaculates.

**Q.** What is prostate cancer?

**A.** Prostate cancer is a disease in which new gland cells inside the prostate are made without a stop signal. The new cells are not normal, they crowd out the normal cells, and they block tubes and channels that should be open.

Sometimes these out-of-control cancer cells metastasize, which means that they break away from the prostate and spread into the body. Metastasizing cancer cells often settle in lymph nodes, where they continue to divide and crowd out the normal lymph node cells. Prostate metastases can also settle inside bones, where they cause pain and weaken the architecture, making a person prone to bone fractures.

**Q.** What does *PSA* mean?

**A.** *PSA* stands for "prostate-specific antigen," a chemical that is made in the prostate. A small amount of *PSA* normally leaks into the bloodstream, and the blood level of *PSA* can be measured using a simple blood test.



A rise in the blood level of PSA is a sign that something unusual is happening to the prostate. More PSA leaks into the bloodstream when the prostate is injured, such as when it becomes infected or when it is biopsied. More PSA also enters the bloodstream when the prostate is growing excessively, such as in benign prostatic hyperplasia (BPH) or in prostate cancer. Even small areas of prostate cancer will sometimes increase the blood level of PSA.

**Q.** What is a Gleason score?

**A.** A Gleason score, or tumor grade, is a number that ranks how aggressive a prostate cancer is. The lowest Gleason score (2) means that the prostate cells look normal, and therefore, if there is any cancer, then it is probably growing slowly. The highest Gleason score (10) means that the prostate cells look quite abnormal, and therefore, there is prostate cancer that is likely to grow quickly.

Gleason scores are given by a pathologist who has studied microscope slides of prostate tissues. Usually, the tissue has been obtained by a biopsy. Tissue can also be obtained from a prostate that has been surgically removed in a procedure called a prostatectomy.

**Q.** I have been diagnosed with prostate cancer. What should I do next?

**A.** A diagnosis of prostate cancer brings two major decisions. First, should the disease be treated immediately? Second, what form of treatment is best? At the moment, clinicians aren't sure of the best answers to either of these questions. A critical part of the decision-making process is finding out what choices you feel are best under the circumstances. In the end, you—the patient—have to be able to say, “Of all my options, this is the one that is least worrisome.” It can take time to understand your options sufficiently to make peace with one of them.

**Q.** My primary care provider just told me that I have prostate cancer but is vague about whether this is a “death sentence.” I want to know the truth: how soon am I going to die?

**A.** Being diagnosed with cancer is scary. It can cause you and your family to realize the fact that someday you are going to die. However, prostate cancer is rarely a “death sentence” because prostate cancers tend to grow slowly, and most men with prostate cancer end up dying from some other cause.

Your provider may sound vague because it is simply not possible to predict how long a person will live after being diagnosed with prostate cancer. Details about your particular cancer can give you some clues, but the available information is statistical and your cancer may behave differently than the statistical averages.

For a general perspective, here are some overall numbers:

- The 5-year survival rate for men after receiving a prostate cancer diagnosis is almost 100%.
- The relative 10-year survival rate is 99%.



- The relative 15-year survival rate is 94%.  
(NCI, 2014)

**Q.** My physician says I have BPH. What is that?

**A.** *BPH* stands for “benign prostatic hyperplasia.” A man’s prostate grows slowly throughout most of his life. By the time men are in their sixties, the continual enlargement often causes symptoms because the prostate begins to press on the bladder and the urethra. Symptoms of an enlarged prostate include having a hesitant, interrupted, or weak stream of urine; having to urinate more frequently, especially at night; and not having complete control so that urine leaks or dribbles.

BPH is a common, perhaps even normal, enlargement of the prostate in older men. It is not a form of cancer. In BPH, prostate cells do not spread (metastasize) or destroy other tissues, and BPH does not cause death.



## RESOURCES

Clinical Practice Guidelines (American Urological Association)  
<https://www.auanet.org/education/clinical-practice-guidelines.cfm>

Prostate Cancer (American Cancer Society)  
<http://www.cancer.org/cancer/prostatecancer/>

Prostate Cancer (CDC)  
<http://www.cdc.gov/cancer/prostate/>

Prostate Cancer (Mayo Clinic)  
<http://www.mayoclinic.com/health/prostate-cancer/DS00043>

Prostate Cancer (National Cancer Institute)  
<http://www.cancer.gov/types/prostate>

Prostate Cancer Foundation  
<http://www.pcf.org>



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1. In the United States, prostate cancer is most common in which racial group?
  - a. Asians
  - b. Native Americans
  - c. Whites
  - d. African Americans
  
2. According to the National Cancer Institute, the 5-year survival rate for male patients with local and regional prostate cancers is almost:
  - a. 85%.
  - b. 90%.
  - c. 95%.
  - d. 100%.
  
3. Prostate cancer that has spread to nearby areas including lymph nodes is considered to be:
  - a. Local.
  - b. Regional.
  - c. Distant.
  - d. Unencapsulated.
  
4. The highest percentage of prostate cancers begin to develop in which internal division of the gland?
  - a. The transition zone
  - b. The central zone
  - c. The peripheral zone
  - d. The capsule
  
5. The main function of the prostate gland is to:
  - a. Assist in sperm production.
  - b. Filter urine.
  - c. Create some of the seminal fluid.
  - d. Filter seminal fluid.



6. Which is a **true** statement about prostate-specific antigen (PSA)?
- PSA helps to thicken the ejaculated semen.
  - PSA is secreted directly into the bloodstream by the prostate gland.
  - PSA leaks into the bloodstream during seminal fluid production.
  - PSA levels decrease when the prostate gland enlarges or is injured.
7. Which body chemical is the most significant stimulant for prostate growth, differentiation, and maintenance?
- Dihydrotestosterone
  - Testosterone
  - 5-alpha reductase
  - Luteinizing hormone
8. A cancer that develops from the epithelial cells that form glands is called:
- Adenocarcinoma.
  - Squamous cell carcinoma.
  - Leiomyosarcoma.
  - Prolactinoma.
9. Which is a **true** statement concerning benign prostatic hyperplasia (BPH)?
- Men with prostate cancer always have BPH.
  - BPH is caused by normal age-related, increasing levels of testosterone.
  - Men with BPH will require surgical intervention after age 50.
  - BPH is a precancerous condition.
10. Which man is at higher risk for developing prostate cancer?
- A man with two cousins diagnosed with prostate cancer at ages 59 and 61.
  - A man who is obese and has a brother with prostate cancer.
  - A man taking oral testosterone to boost libido.
  - A man of normal weight with a history of sexually transmitted disease.
11. Which is a **true** statement about the prevention of prostate cancer?
- Specific changes to the diet will stop or slow prostate cancer.
  - Taking multivitamins will slow prostate cancer growth.
  - Taking 5-alpha reductase inhibitors will prevent cancer development.
  - Currently there is no sure way to prevent prostate cancer.



- 12.** Which is a **true** statement about the signs and symptoms of prostate cancer?
- Early prostate cancer cannot be detected until symptoms occur.
  - Symptoms of early prostate cancer include loss of appetite and weight loss.
  - There are no warning signs or symptoms of early prostate cancer.
  - Signs and symptoms occur only after prostate cancer has metastasized to lymph nodes and bones.
- 13.** A male patient asks what he will feel during a digital rectal examination (DRE). Which is the best reply?
- “You may feel heavy pressure or squeezing.”
  - “You may feel the need to urinate.”
  - “You will feel nothing.”
  - “You will feel a brief, sharp pain.”
- 14.** A 50-year-old male patient brings up all the varying points he has read about PSA testing and asks the nurse what he should do. The nurse’s best reply is to state:
- “You’re right. This is a hot topic right now. Your best choice is the one you and your provider decide is right based on your own situation.”
  - “The U.S. Preventive Services Task Force looked at numerous studies. Since they recommend against having the test, don’t have it.”
  - “The U.S. Preventive Services Task Force is looking for ways to cut costs. If you think you need to have a PSA test, you should have one.”
  - “You’re right. It is confusing. I’m sure your provider has read all the articles and understands them well enough to make the decision.”
- 15.** A test that detects an RNA fragment and another genetic marker present in the urine of men who have prostate cancer is the:
- PSA density test.
  - Percent-free PSA test.
  - Complexed PSA test.
  - Mi-Prostate Score.
- 16.** A scanning technology that allows a provider to more accurately direct biopsy needles to sample prostate tissue is:
- Magnetic resonance imaging (MRI)/ultrasound fusion.
  - Computed tomography (CT) scan.
  - Radionuclide bone scan.
  - Immunoscintigraphy.



- 17.** Which is a **true** statement about prostate biopsy?
- It is best done only after cancer has metastasized.
  - It is a risk-free procedure.
  - The rate of infection following biopsy is increasing.
  - There are only minor complications associated with prostate biopsy.
- 18.** The nurse providing discharge instructions to a male patient who just had a prostate biopsy tells the patient he should notify his primary care provider right away if he:
- Notices any blood in his urine.
  - Experiences a fever, chills, or shaking.
  - Sees any evidence of bleeding from his rectum.
  - Feels any pressure or spasms.
- 19.** The nurse caring for a patient after prostate biopsy:
- Provides both written and verbal discharge instructions.
  - Tells the patient to avoid sexual activity for at least 3 weeks after biopsy.
  - Gives the patient a cold sitz bath to decrease bleeding.
  - Instructs the patient to remain on bed rest for 3 days.
- 20.** The Tumor-Node-Metastasis (TNM) staging system for prostate cancer indicates the:
- Extent of the spread of prostate cancer.
  - Normalized volume of the prostate gland.
  - Differentiation of the prostate cancer tumor cells.
  - Normalized prostate-specific antigen (PSA) level.
- 21.** A male patient who has been diagnosed with prostate cancer asks the clinic nurse to explain when watchful waiting is most often utilized. The nurse states that watchful waiting is often a treatment option:
- For patients who are younger than 54.
  - For men who have a life expectancy of more than 15 years.
  - When a tumor is no longer well differentiated.
  - For men who are older than 70.
- 22.** When a patient asks about possible side effects of radical prostatectomy, the clinician discusses:
- Impotence.
  - Metastasis.
  - Bone pain.
  - Breast enlargement (gynecomastia).



- 23.** When preparing a patient for prostate surgery, the nurse's most important role at this time is:
- Educating the patient and significant others about self-care after discharge.
  - Assessing for electrolyte imbalance.
  - Clarifying expectations to reduce anxiety.
  - Assessing for bladder spasms.
- 24.** Radiation therapy for prostate cancer:
- Requires whole-body irradiation, posing additional cancer risks.
  - Can be focused sufficiently to avoid damage to tissues surrounding the prostate.
  - Kills tumors with heat, essentially "cooking" the cancerous cells.
  - Can be delivered by external ionizing beams or internally placed radioactive seeds.
- 25.** Patients receiving brachytherapy should be instructed to:
- Remove ink marking from the skin after treatment planning is completed.
  - Observe for lost radioactive seeds in linens.
  - Use lotions to keep treated skin areas moist.
  - Dispose of radioactive seeds in a covered container placed in the trash.
- 26.** Which is a **true** statement about cryotherapy relative to other treatment options for prostate cancer?
- It lowers the risk for incontinence.
  - It increases recovery time.
  - It raises the risk for impotence.
  - It requires a longer urinary catheter placement period.
- 27.** The best candidate to receive androgen-deprivation therapy is the prostate cancer patient with:
- Localized prostate cancer.
  - A Gleason score of 5.
  - Metastasis to the pelvic bones.
  - Staging of T2N0M0.
- 28.** A patient with metastatic prostate cancer is scheduled for an orchiectomy next week. Which possible side effect associated with this surgery does the provider discuss with him?
- Type 1 diabetes
  - Bone pain
  - Gynecomastia
  - Weight loss



- 29.** Which treatment for metastatic prostate cancer uses the vaccine Sipuleucel-T (Provenge)?
- Androgen-deprivation therapy
  - High-intensity focused ultrasound
  - Chemotherapy
  - Biologic therapy
- 30.** In a physician's office or clinic, a nurse's initial encounter with the patient who has prostate cancer includes assessing the patient's:
- Understanding about the roles of the surgeon and radiologist.
  - Palliative care needs.
  - Fears and concerns about diagnosis, treatment, and prognosis.
  - Urinary incontinence issues.
- 31.** Before being discharged from the hospital following a prostatectomy, the patient states how anxious he is about taking care of himself when he gets home. The discharge nurse's **best** approach in responding to the patient is to:
- Tell him not to be concerned; if he follows instructions carefully, he will do okay.
  - Tell him he will receive pamphlets providing all the information he will need.
  - Go over the discharge instructions again and tell him to call his doctor if he has any questions.
  - Recognize that anxiety interferes with the ability to learn and discuss his concerns with him.
- 32.** Clinicians who are working with patients and their partners experiencing sexual dysfunction should counsel them that:
- There's no need to worry, as sexual function will return in the future.
  - No longer having an interest in sex does not mean the end of a loving relationship.
  - It is necessary for the man to remain focused on his own needs at this time.
  - Most methods of treatment for erectile dysfunction have very poor success rates.
- 33.** Clinicians working with a patient experiencing incontinence should instruct the patient to:
- Urinate every 2 to 4 hours.
  - Drink coffee only in the morning.
  - Wait until the bladder is full before attempting to void.
  - Decrease fluid intake to avoid the frequent need to void.





- 34.** The most effective treatment to regain urinary control is:
- Surgery.
  - Intermittent catheterization.
  - Pelvic floor exercises.
  - Behavior modification.
- 35.** Occupational and physical therapists manage which side effect of chemotherapy that results from nerve damage?
- Lymphedema
  - Peripheral neuropathy
  - Fatigue
  - Loss of bone mineral density

