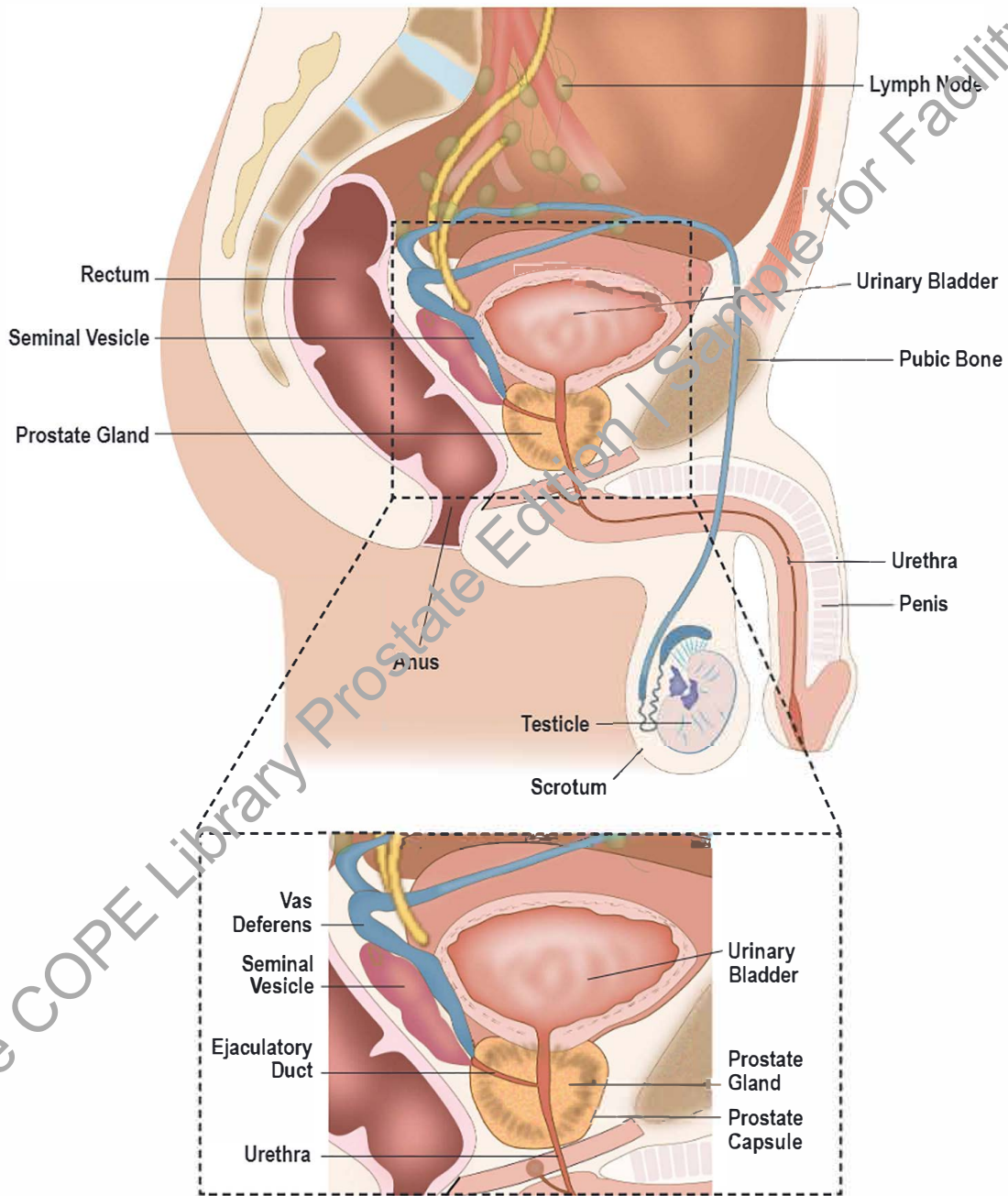




# Male Anatomy: Prostate Gland





# Prostate Biopsy: Patient Instructions

## Reason for Biopsy:

- Abnormal digital rectal exam
- Elevated prostate-specific antigen (PSA)

## Inform Healthcare Provider Before Biopsy:

- History of bleeding problems or easy bruising
- Names of any prescription or over-the-counter medications you are currently taking
- Names of vitamins, herbs or nutritional supplements you are currently taking
- Any allergies to medications or latex products

Your healthcare provider will tell you if you need to stop taking any medication or vitamins/herbs before your procedure.

## Before Procedure:

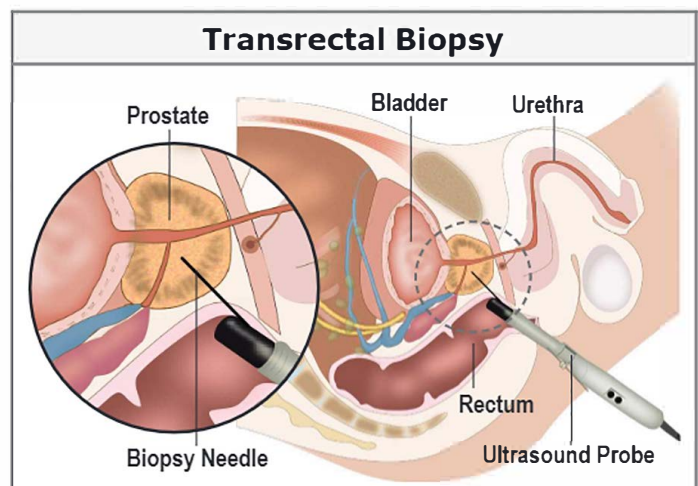
- Discontinue any blood-thinning medications such as aspirin or prescription medications such as Plavix® or Coumadin for 4 – 7 days before the procedure.
- Contact our office if you develop any illness with a fever over 100° F the day before your procedure.
- Take the prescribed antibiotics as directed by a healthcare provider.
- Self-administer a Fleet® enema (saline) at home several hours before your biopsy.

## Anesthesia: Ask Your Healthcare Provider

- You will receive medication to relax you for the procedure if needed.
- You will receive local anesthesia.
- You may receive general anesthesia for the procedure if recommended by your doctor.

## Procedure:

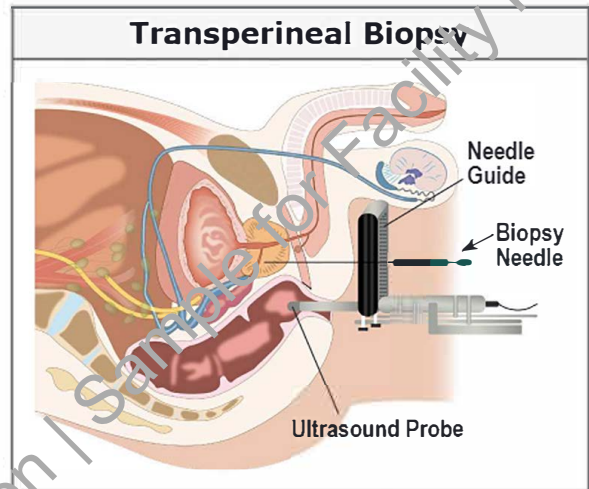
- **Transrectal Biopsy:** You will lie on your left side while the doctor inserts a transrectal ultrasound probe into your rectum to see the prostate on a screen and to guide the biopsy needle. The biopsy needle will be passed through the wall of the rectum into the prostate. Several biopsies in different areas of the prostate will be taken. You may feel pressure in the rectum and experience a brief, sharp pain as the needle enters the prostate.



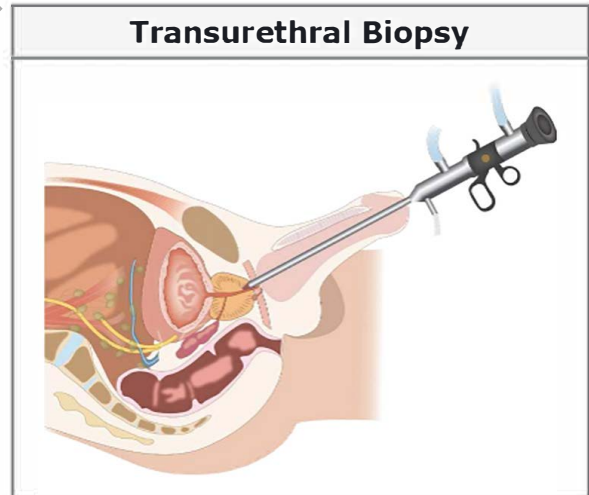


## Prostate Biopsy: Patient Instructions

- **Transperineal Biopsy:** You will lie on your back or side while the doctor inserts an ultrasound probe into the rectum to see the prostate on a screen and then makes a small incision between the scrotum and the rectum. The biopsy needle will be inserted through the incision into the prostate gland. Several biopsies in different areas of the prostate will be taken.



- **Transurethral Biopsy:** You will lie on your back as the healthcare provider inserts a flexible, lighted cystoscope through the urethra so the doctor can look directly at the prostate gland while a biopsy is taken.



### Time Required for Biopsy:

- Approximately 30 minutes

### After the Biopsy:

- You may experience some mild discomfort and soreness in the area for several days.
- You may have blood in your urine or stool lasting for several days after the biopsy. This blood should progress from pale pink to normal yellow in color.
- Ejaculation fluid may take a week to a month to return to normal color. The fluid will gradually turn from a reddish pink to a brownish color before it returns to normal.



# Prostate Biopsy: Patient Instructions

## Postoperative Care:

- Avoid strenuous activities on the day of the biopsy.
  - You may resume normal activities the day after your biopsy.
  - Wait 24 hours or until there is no blood seen in the urine before taking medications that thin the blood.
  - Other: \_\_\_\_\_
- You may resume sexual activity when you desire.
  - Drink plenty of fluids (eight 8-ounce glasses a day) for several days after your procedure.
  - Do not strain when trying to move your bowels.

## Potential Complications:

- Bruising at the biopsy site
  - Prolonged bleeding at the biopsy site
  - Other: \_\_\_\_\_
- Difficulty urinating due to swelling
  - Infection

## Notify Your Healthcare Provider if You Experience:

- Heavy bleeding at the surgical site or bleeding that continues more than 2 – 3 days
  - Blood in the urine that is increasing after 2 – 3 days
  - Other: \_\_\_\_\_
- Fever over 100.4° F
  - Increased pain
  - Inability to urinate

## Biopsy Results

The biopsied tissue is sent to the pathology lab, and the pathologist determines if the tissue is benign (not cancerous) or malignant (cancerous). If cancer is found, it will be graded on the Gleason scale, to compose a Gleason score of 2 – 10, based on the microscopic characteristics of cancer. The higher the Gleason score, the more aggressive the cancer is likely to be. Your doctor will discuss treatment recommendations after receiving the pathology report.

## Results

Your results/report will be available: \_\_\_\_\_

You will receive the results/report from: \_\_\_\_\_



# Gleason Grading System and Scoring Overview

The **Gleason grading system** is a pathology study that reports how likely your cancer is to advance and spread. A pathology report contains both a Gleason score and a Gleason grade.

- **Gleason Score** reports the degree of change in the cell's architectural pattern (histology) from normal cells to cancerous cells to determine aggressiveness on a scale of 1 – 5.
- **Grade Group** takes the Gleason scores and places them into one of five categories, prognostic groups that denotes aggressiveness and the risk of recurrence.

The Gleason grading system predicts prognosis and helps guide treatment decisions.

## Gleason Score

To assign a Gleason score, prostatic tissue is obtained either by needle biopsy or by removing the prostate gland (prostatectomy). A pathologist microscopically evaluates the removed tissue samples to identify the cancer's architectural patterns, which describes how the cancerous glands look when compared to normal glands. These architectural changes are described as one of five identified histology patterns. A higher-grade number (5) indicates a greater degree of change from normal cells and indicates a more aggressive cancer. A grade of 1 represents the least degree of change and the least aggressive.

## Gleason Grading System

- **Gleason Pattern 1:** The cancerous prostate cells closely resemble normal prostate cells. The cells are small, well-formed and tightly packed. (Least changed from normal cells.)
- **Gleason Pattern 2:** The cancer cells are more varied and irregular in shape. Cells are loosely packed and have more tissue between them, forming a larger area of cancer.
- **Gleason Pattern 3:** The cancer cells are more irregular in size and shape. Some cells are fused, and the cell borders are less distinct.
- **Gleason Pattern 4:** The tissue has few recognizable cells of the normal prostate. Cells are fused into irregular masses and have begun to invade the connective tissue that separates the cells.
- **Gleason Pattern 5:** The tissue does not have recognizable cells. The majority are irregular masses that have invaded connective tissue. There are often sheets of cancer cells throughout the surrounding tissue with a lack of pattern. (Most changed from normal cells.)

Because prostate cancer can be composed of different architectural patterns of cancer cells, the pathologist determines a score for the **two most prominent architectural patterns** observed in the specimen:

- **Primary Architectural Pattern:** Represents the highest percentage (dominant pattern) of the tumor (greater than 50% of the total pattern seen).
- **Secondary Architectural Pattern:** Represents the second (subdominant pattern) of the tumor (**less** than 50%, but at least 5% of the pattern of total cancer observed).

## Determining the Final Gleason Score

The primary group score and secondary group score are added together to obtain the final Gleason score. For example:

- Primary Group Score = 3; Secondary Group Score = 4; **Final Gleason Score = 7**



# Gleason Grading System and Scoring Overview

## Grade Groups

Grade Groups classify prostate cancer into 1 of 5 prognostic categories. Grade groups correlate to the potential for recurrence. The higher the grade group, the more aggressive and likely the cancer is to spread quickly. Grade groups act as a thumbnail sketch, condensing prognostic information into 1 of 5 categories for healthcare providers.

### Grade Groups

- **Grade Group 1** = Gleason Score  $\leq 6$  ( $\leq 3+3$ )
- **Grade Group 2** = Gleason Score 7 (3+4)
- **Grade Group 3** = Gleason Score 7 (4+3)
- **Grade Group 4** = Gleason Score 8 (4+4, 3+5, 5+3)
- **Grade Group 5** = Gleason Score 9 or 10 (4+5, 5+4 or 5+5)

Risk Group*	Grade Group	Gleason Score
<b>Very Low/Low</b>	Grade Group 1	Gleason Score $\leq 6$
<b>Favorable/Unfavorable (Intermediate)</b>	Grade Group 2	Gleason Score 7 (3 + 4)
	Grade Group 3	Gleason Score 7 (4 + 3)
<b>High</b>	Grade Group 4	Gleason Score 8 (4 + 4) (3 + 5) (5 + 3)
<b>Very High</b>	Grade Group 5	Gleason Score 9-10

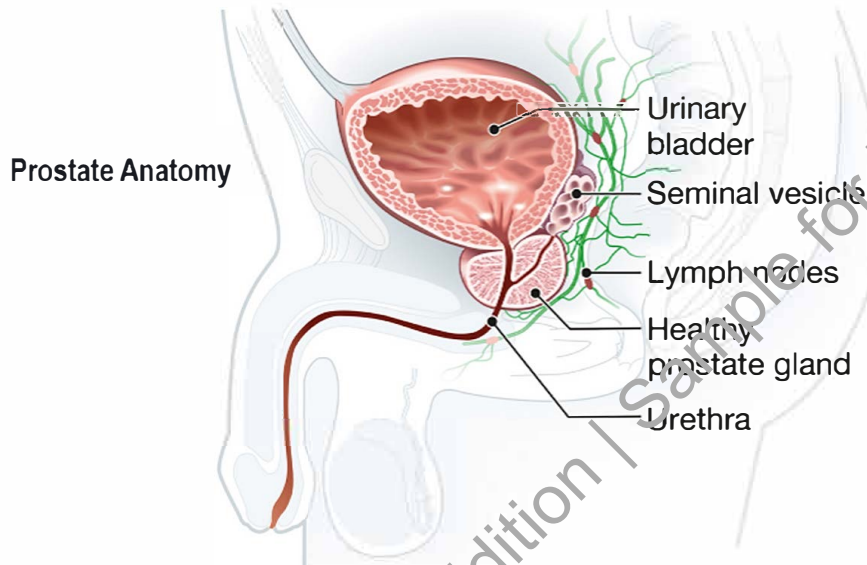
Grade Groups place the Gleason scores into one of five Groups according to tumor aggression. Grade Groups allow healthcare providers to communicate among themselves with a clear understanding of all the complex issues contained in the Gleason score. Just as you immediately know the difference between a first-grade child and a fifth-grade child, Grade Group numbers do the same for healthcare providers in describing their prostate cancer patients.

Grade Group values reduce the potential for under or over-treatment and are helpful for patient management. Grade Groups range from 1 - 5, with Grade Group 1 being the least likely to be aggressive and Grade Group 5 being the most likely to be aggressive.

### Additional Information:



## Prostate Cancer: Stage IVB



### Understanding Cancer Staging

This cancer staging sheet is based on the American Joint Commission on Cancer (AJCCN) 8th Edition. AJCCN uses TNM (**T**umor, **N**odes, **M**etastasis) criteria for determining the stage of a cancer. Stages range from I – IV. A stage number may further be subdivided with letters (a, b or c) when needed. *Example Stage IA.* Stage I is the least aggressive stage; Stage IV is the most aggressive stage.

Before the stage number, you may see the letter “c” or “p,” which indicates the information source for staging. The letter “c” indicates clinical staging based on the digital rectal exam, PSA, Gleason score and any imaging tests. The letter “p” indicates pathologic staging based on information confirmed by a pathologist after surgical removal of the prostate. *Examples: cT1a or pT3.*

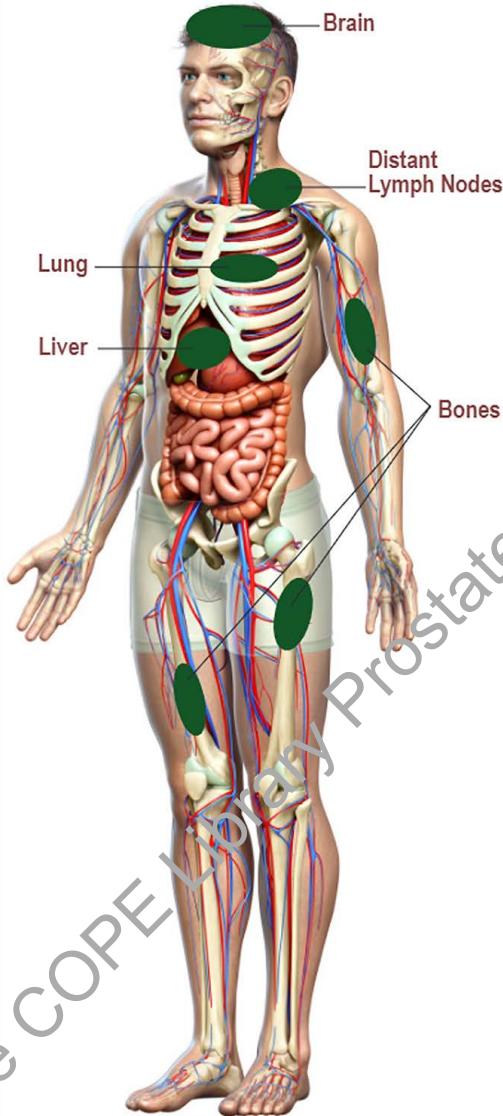
This sheet also contains the Prognostic Stage Group information about your tumor. This stage group combines all the information known about a cancer into one of five categories. The Prognostic Stage Group combines information from the Gleason score, the prostate-specific antigen (PSA) level at diagnosis and the TNM staging information to determine the score. The Stage Group ranges from 1 – 5 and indicates the level of tumor aggressiveness. A Prognostic Stage Group of 1 is the least aggressive; a Prognostic Stage Group of 5 is the most aggressive. As a rule, the higher the number or letter in staging, the more aggressive the characteristics of a cancer.

Staging and Prognostic Stage groups allow healthcare providers to communicate complex information in a shorthand manner to accurately understand and expedite treatment discussions and decisions. This information is provided to help you understand the meaning of your staging information.



# Prostate Cancer: Stage IVB

## Grade Group Any (1-5)



## Tumor: T1, T2, T3 or T4

- Tumor may or may not be growing into tissues near the prostate
- Gleason Score Any
- PSA Any Level

## Nodes

- Cancer may or may not have spread to nearby lymph nodes

## Metastasis (M1)

- Cancer has spread elsewhere in the body such as distant lymph nodes, bones, brain, liver, lungs or other organs

### Additional Information:



# Pathology Report: Prostate Cancer

The pathology report is a detailed description of your cancer at the time of biopsy or surgery. It provides information unique to your cancer — the location of your tumor in the prostate and the characteristics of your cancer's potential aggressiveness. These vital pieces of information are crucial for the next step — planning the type of treatment needed.

## The Pathology Process

If an abnormal PSA (prostate-specific antigen) occurs or a suspicious area is identified in the prostate, a tissue sample is removed, either by a biopsy procedure or a surgical procedure. The removed biopsy tissue is sent to a pathology laboratory where a pathologist (a healthcare provider who specializes in diagnosing disease from tissue specimens) microscopically examines it and prepares a pathology report. The microscopic evaluation reveals whether the tissue is benign (noncancerous) or malignant (cancerous) and helps the surgeon determine if additional treatment is needed. The pathology report provides healthcare providers the information needed to develop an appropriate treatment plan.

Because of the importance of the pathology analysis, many controls and guidelines are in place to promote accuracy. When the healthcare provider removes the biopsied tissue specimen, the edges are inked with colors to identify the position in the prostate. The specimen is placed in a container with your name, hospital number, date, biopsy identification number and the region of removal in the prostate.

In the lab, the pathologist performs a gross exam, which consists of a visual and descriptive report on weight, dimensions, contour, shape, texture and any other visual findings. The pathologist then cuts or sections the removed tissues that will be viewed under the microscope. Tissue may be prepared for examination by either frozen section or, more commonly, permanent section.

## Frozen Section

A frozen section is occasionally used for rapid analysis of the tissue. A frozen section diagnosis is usually requested by the surgeon during a surgical procedure. The pathologist quickly freezes the tissue in a cryostat. The pathologist can then prepare a slide and microscopically review this tissue provide an answer to the surgeon as to whether it is benign or malignant in just a few minutes.

Frozen section diagnoses are usually as accurate as permanent section diagnoses, but the pathologist only evaluates a small portion of the specimen. The diagnosis cannot be definitive until all the tissue is thoroughly examined on a permanent section. Thus, the results of the permanent section are considered the final diagnosis.

## Permanent Section

A permanent section is prepared by placing the specimen in a chemical (formalin) solution that fixes the tissue, similar to boiling an egg. When the tissue processing is complete in approximately 24 hours, the tissue is sliced into thin sections (thinner than tissue paper) and mounted on labeled glass slides. The pathologist then examines the sections under the microscope and issues a written report. The slides are carefully stored so that they may be reviewed in the future if necessary. A permanent section diagnosis is considered the final diagnosis because the pathologist studies all the tissue that was removed during the procedure.



# Pathology Report: Prostate Cancer

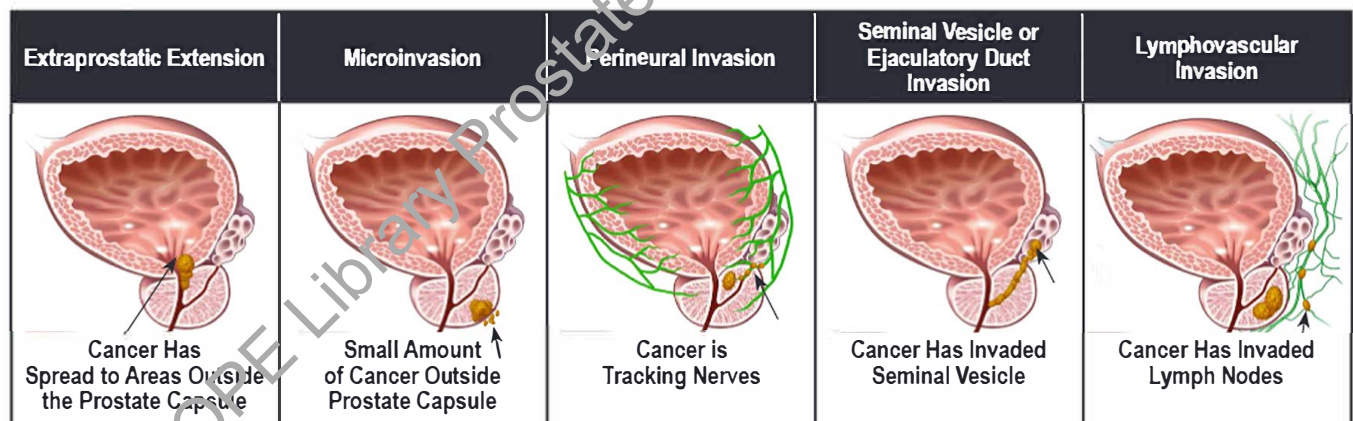
## What Does the Pathologist Look For?

Cancer occurs when healthy cells undergo an abnormal change which allows them to grow uncontrollably. This growth rate is not the same for all prostate cancer; some cancers grow slowly while others grow rapidly. Therefore, a prostate cancer diagnosis is not the same for every man. There is a wide range of characteristics that make prostate cancer unique to each man. The pathologist looks for these characteristics by studying the cellular structure/pattern of the biopsy tissues and documents the finding in the pathology report. The report classifies the changes as to their degree of change by assigning a grade which predicts aggressiveness—the potential spread to distant organs where cancer can become life-threatening. Your unique cancer profile is found in your pathology report. It serves as a road map for your healthcare provider to plan treatment and it provides you a look into your potential future.

## Tumor Spread:

Prostate biopsies usually collect approximately 12 samples of tissue from different regions of the prostate gland. The pathology report indicates:

- The region of each specimen
- The percentage of cancer in each specimen
- If the margins (cut edge) are positive or negative (also called clean) for cancer



## Cancer Spread Descriptions in a Pathology Report:

- **Extraprostatic extension** means that cancer has spread beyond the prostate capsule into surrounding tissues (seminal vessel or bladder neck). This indicates a more aggressive cancer.
- **Microinvasive** indicates a small number of cells have invaded surrounding tissues.
- **Perineural invasion** shows cancer cells tracking the nerves of the prostate which may indicate spread outside of the capsule.
- **Seminal vesicle or ejaculatory duct invasion** indicates cancer has invaded the vesicle or duct.

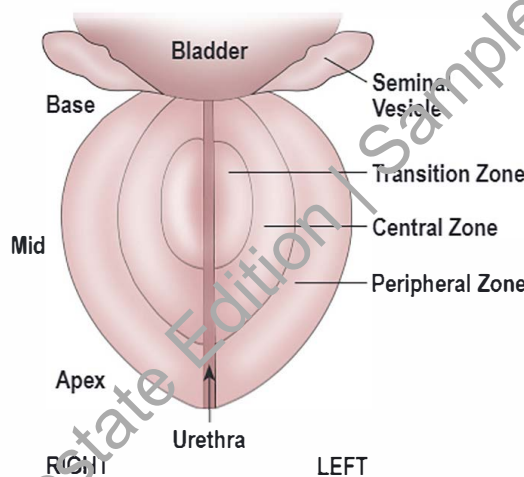


# Pathology Report: Prostate Cancer

- **Lymphovascular invasion** indicates cancer has invaded the lymph or vascular vessels.
- **Positive lymph nodes** indicate that the cancer is outside the prostate in the lymph nodes and is more likely to have spread to other parts of the body.

## Tumor Location

Your pathology report describes the area of the prostate gland where the cancer is located. If the tumor has left prostate, the area of invasion is identified.

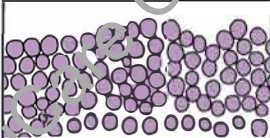
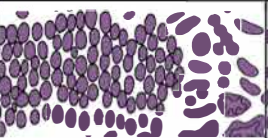





## Prostate Cancer Grading

Grading describes how abnormal or aggressive the cancer cells appear when a pathologist studies them under a microscope. Applying a grade to cancer helps a healthcare provider understand the clinical behavior of cancer, to consider treatment options and to predict outcomes.

## Gleason Grading Scale

The Gleason grading scale is the most common system for grading prostate cancer. The final Gleason score and Gleason Grade are major determining factors in a healthcare provider's treatment recommendation.

				
Gleason Pattern 1 Clustered round cells that are closely packed in masses.	Gleason Pattern 2 Cells have changed and have variable sizes and shapes.	Gleason Pattern 3 Cells have irregular shapes and spacing. Medium to large sizes.	Gleason Pattern 4 Cells are fused together. Ragged infiltrating masses that infiltrate nearby normal cells.	Gleason Pattern 5 Cells are fused into solid masses that infiltrate surrounding healthy tissue.



# Pathology Report: Prostate Cancer

## Gleason Score

The Gleason score is determined by a pathologist's microscopic observation of architectural changes observed in cancer cells when compared to normal prostate cells. Normal cell architecture is orderly; cancer cell architecture is disorderly. The disorderly arrangement of cancer ranges from minor to major changes. The pathologist describes the degree of change by using the Gleason grading scale.

The Gleason grading scale has five categories that describe the degree of architectural cell changes. The pathologist determines two prevalent architectural patterns observed (a primary and a secondary) and assigns the matching numerical score to each. The two numerical scores are added together to provide a final Gleason score.

For example:

- Predominant Pattern Score = 3; Secondary Pattern Score = 4; **Final Gleason Score = 7**

## Gleason Grading Scale for Prostate Cancer

### My Gleason Score

Primary Pattern      1   2   3   4   5

Secondary Pattern    1   2   3   4   5

**My Final Gleason Score** \_\_\_\_\_

Some facilities use the final Gleason score for treatment recommendations, while other facilities convert the Gleason score to a Grade Group Category that further defines prognostic groups.

## Grade Groups

Based on the final Gleason score, tumors are placed into one of five prognostic categories, which predicts tumor aggressiveness and the potential for cancer spread. Grade group numerical values allow healthcare providers to communicate among themselves with a clear understanding of all the complex issues contained in the pathology report. Just as you immediately know the difference between a first-grade child and a fifth-grade child, grade numbers do the same for healthcare providers and their prostate cancer patients. Grade group values reduce the potential for under or over treatment and are helpful for patient management. Grade groups range from 1 – 5 with grade group 1 being the least likely to be aggressive and grade group 5 being the most likely to be aggressive.

## Gleason System Grade Groups

- **Grade Group 1** = Gleason Score  $\leq 6$  ( $\leq 3+3$ )
- **Grade Group 2** = Gleason Score 7 (3+4)
- **Grade Group 3** = Gleason Score 7 (4+3)
- **Grade Group 4** = Gleason Score 8 (4+4, 3+5, 5+3)
- **Grade Group 5** = Gleason Score 9 or 10 (4+5, 5+4 or 5+5; HR 11.7)

**My Grade Group:** \_\_\_\_\_



# Pathology Report: Prostate Cancer

## Pathology Report

The pathologist prepares a written report that is sent to your healthcare provider. You will receive a biopsy pathology report if performed and, if surgery is performed, a surgical pathology report. Time varies as to when a pathology report will be available. Ask your healthcare provider when you can expect to get the results from your pathology report. If the diagnosis reveals cancer, the pathologist's description of cancer cell's characteristics will help the healthcare providers determine if additional diagnostic tests or imaging scans are needed (bone scan, CT, MRI or PET scan).

When you discuss the findings of your pathology report with your healthcare provider, you may want to ask and write down the answers to the following questions. Some doctors will provide you a copy of your pathology report for your records.

### Pathology Report Questions:

- What was my final Gleason Score?
- Was cancer found anywhere outside the prostate gland (extracapsular extension)? If so, where was it found?
- What was my prostate grade group?
- Is there anything else that I need to know about my cancer?

### Final Treatment Recommendations Are Derived From:

- Pretreatment PSA level
- Gleason score or Grade Group
- Extent of tumor spread (from diagnostic imaging)
- Genetic (inherited mutation gene)
- Genomic testing results (study of all genes and how they interact)
- Age
- Co-existing health conditions
- Your personal preferences for treatment

## After the Pathology Report

Obviously, you have no control over the findings described in your pathology report. However, you can become an active participant with your healthcare providers to help defeat the disease.

### Remember:

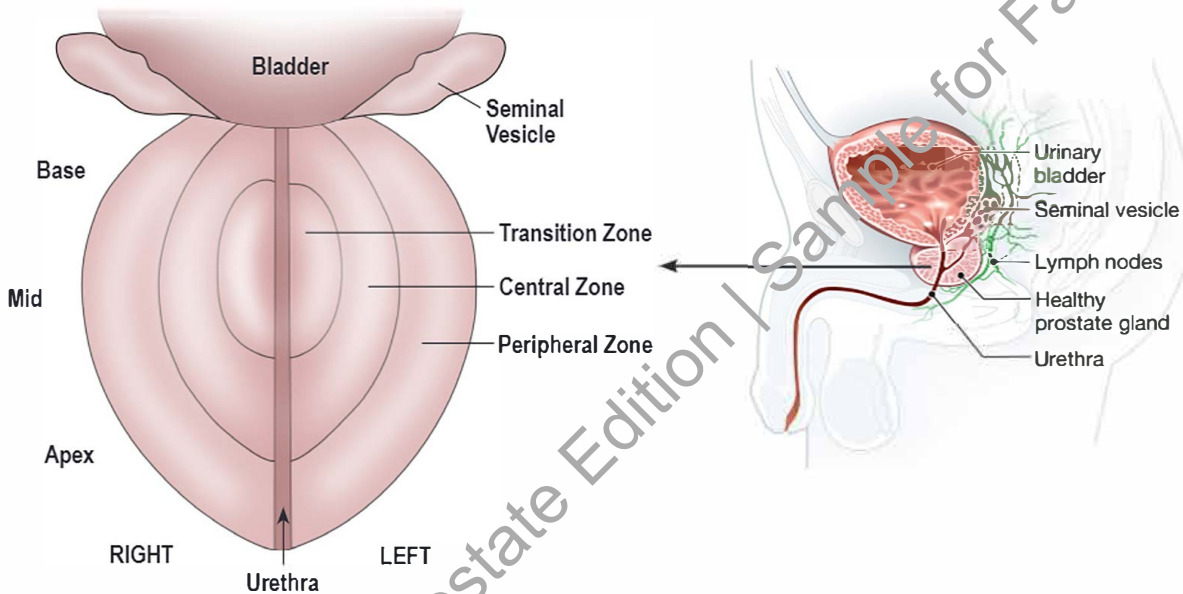
- The pathology report is the fingerprint of your cancer. It provides all the unique identifying features of your cancer. It is the foundation on which treatment decisions are made.
- Prostate cancer is a treatable disease. It certainly is not an illness you would choose, but it is an illness with many proven treatments.
- Take time to learn about your disease and treatment options. Understanding will allow you to communicate with your healthcare team as an active participant in making decisions about your care. Active participation restores a sense of control over your life.
- Employ the best of all medicines—your attitude. The most productive approach that you can bring, and one which the healthcare provider cannot provide, is a positive, cooperative attitude. Determination, combined with optimism, creates a healing environment that only you can provide.



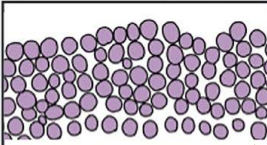
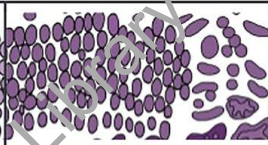



# Prostate Cancer Healthcare Provider Diagnostic Summary

Patient Name: \_\_\_\_\_ Date: \_\_\_\_\_

**Your prostate cancer was found in the following areas:**



**Gleason Pattern Scale for Staging Your Prostate Cancer:**

				
<b>Gleason Pattern 1</b> Clusters of round cells that are closely packed in masses.	<b>Gleason Pattern 2</b> Cells have changed and have variable sizes and shapes.	<b>Gleason Pattern 3</b> Cells have irregular shapes and spacing. Medium to large sizes.	<b>Gleason Pattern 4</b> Cells are fused together. Ragged infiltrating masses that infiltrate nearby normal cells.	<b>Gleason Pattern 5</b> Cells are fused into solid masses that infiltrate surrounding healthy tissue.

**Your Gleason Score**

**Your Grade Group Score: \_\_\_\_\_**

Predominant Pattern Score: \_\_\_\_\_

Secondary Pattern Score: \_\_\_\_\_

**Total Gleason Score: \_\_\_\_\_**



# Prostate Cancer Healthcare Provider Diagnostic Summary

	Gleason Patterns	Gleason Score	Grade Group	Risk	Prognosis
<input type="checkbox"/>	3+3	6	1	Low Risk	Low-grade cancer grows slowly and may take years to spread and cause symptoms.
<input type="checkbox"/>	3+4	7	2	Low to Intermediate Risk	Moderately aggressive, small cancer that grows at a modest rate. To prevent the spread treatment may be needed.
<input type="checkbox"/>	4+3	7	3	Intermediate Risk	Moderately aggressive, small cancer that grows at a modest rate. To prevent spread treatment may be needed.
<input type="checkbox"/>	4+4, 3+5, 5+3	8	4	High Risk	High-grade cancer is aggressive and spreads quickly. Treatment is required now. Further assessment for metastatic disease is needed.
<input type="checkbox"/>	4+5, 5+4, 5+5	9 or 10	5	Very High Risk	High-grade cancer is aggressive and spreads quickly. Treatment is required now. Further assessment for metastatic disease is needed.

### Imaging Studies: Cancer Spread

- None: Cancer contained within the prostate
- Cancer has spread to: \_\_\_\_\_

### Genetic Testing:

- Did not order (Patient does not meet criteria.)
- Negative
- Positive Test: \_\_\_\_\_

### Cancer Stage:

- Stage I
- Stage IIA     Stage IIB     Stage IIC
- Stage IIIA     Stage IIIB     Stage IIIC
- Stage IVA     Stage IV

### Additional Information:

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# Benign Prostatic Hyperplasia (BPH) Overview

**Benign prostatic hyperplasia (BPH)** is a noncancerous (benign) enlargement of the prostate gland. Urinary symptoms may be the first sign of an enlarged prostate. A healthcare provider diagnoses BPH during a rectal exam of the prostate.

The prostate gland is usually the size of a walnut. With BPH, the size of the prostate may increase to the size of a tennis ball. The enlarging prostate squeezes the urethra, the tube that carries urine out of the body, which causes changes in normal urination. As the size of the prostate gland increases, symptoms of BPH gradually increase.

## Common Symptoms of BPH:

- Gradual increase in the urge to urinate, especially at night
- Difficulty starting the urinary stream causing a need to push or strain
- Decrease in the force of the urinary stream
- Bladder still feels full after urinating
- Leaking or dribbling urine
- Decrease in volume of urine at urination
- Need to stop and start urinating several times

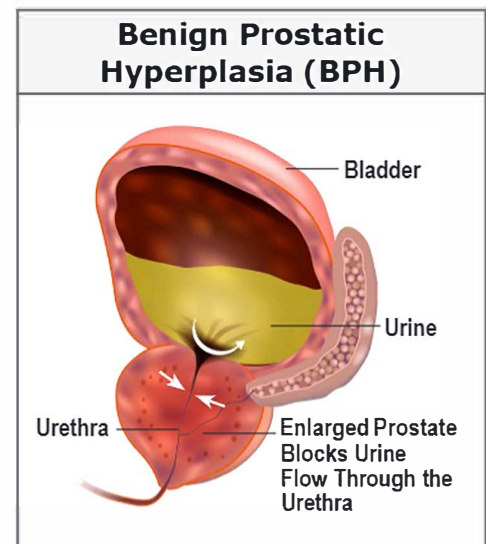
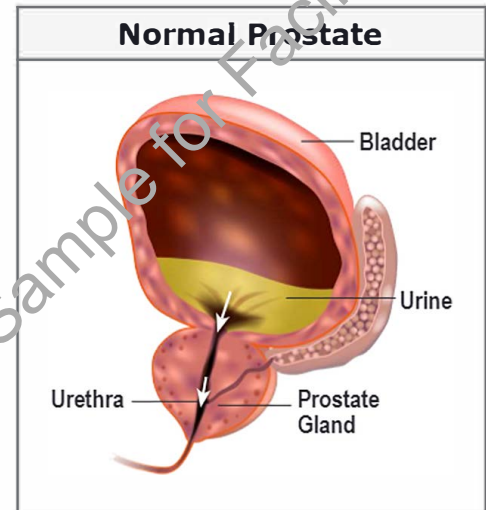
## Diagnosing BPH

Because BPH symptoms can sometimes seem similar to prostate cancer, a healthcare provider will carefully evaluate the prostate to determine the exact cause of reported symptoms. The goal is to rule out cancer as the cause. When a healthcare provider's thorough evaluation shows that cancer is **not** the cause and that the symptoms are caused by prostate enlargement only, the diagnosis is typically BPH.

Most BPH is diagnosed after a patient reports urinary symptoms to a healthcare provider during an office visit. The healthcare provider listens carefully to your reported symptoms and collects a urine sample to check for infection or blood. A digital rectal exam (DRE) is performed by the healthcare provider using a gloved finger to feel the prostate's shape and texture. If the prostate gland feels enlarged, but it is not tender and feels smooth and symmetrical in shape, this is characteristic of BPH.

## Medications That May Increase BPH Symptoms

Your current medications are also evaluated during your assessment. Some medications can cause BPH symptoms to increase. Your healthcare provider reviews your current medications for any type of narcotic (pain), antihistamine (allergy), antidepressant medications or diuretics that may increase symptoms of BPH. If possible, these medications are reduced or discontinued to reduce urinary symptoms.





# Benign Prostatic Hyperplasia (BPH) Overview

## Prostate-Specific Antigen (PSA)

A PSA (prostate-specific antigen) blood test may be obtained to see if the level is elevated. A higher PSA may occur with an enlarged prostate (BPH).

### Increased PSA Levels Can Be Elevated by Numerous Causes Unrelated to Cancer:

- Ejaculation during sex may increase levels for up to 48 hours
- Prostatic massage may increase levels for up to three days
- Prostatitis, an inflammation of the prostate gland, may increase levels for up to six weeks

The next step in your evaluation depends on the results of the clinical exam of the prostate DRE (digital rectal exam), the PSA level and the urinalysis. Because the signs and symptoms of BPH and prostate cancer may be similar, the healthcare provider takes every precaution to determine the cause of the symptoms.

### Potential Testing Procedures for BPH:

- **Cystoscopy:** Procedure to look into the urethra or bladder with a flexible camera
- **Post-void Residual:** Procedure to measure the amount of urine left in the bladder after urination
- **Ultrasound of the Prostate:** Procedure to view the prostate in real-time by entering the rectum
- **Urinalysis:** The study of the urine for infection or red blood cells, which indicates bleeding
- **Uroflowmetry:** A test to determine how fast urine flows from the body
- **Urodynamic:** A test to determine the pressure in the bladder before, during and after urinating

## Treatment of BPH

When BPH is diagnosed, treatment is not necessary unless symptoms are bothersome or a contributing cause is identified such as a urinary tract infection, blood in the urine or urinary retention, which require treatment. Treatment options may include:

- Watchful Waiting/Active Surveillance
- Minimally Invasive Surgery
- Medication (See the list below.)
- Surgery

## Medications for Treating BPH

- **Alpha-Blockers** help relax specific muscles, including the muscles in your prostate and bladder outlet, making urination easier. The most common side effects of alpha blockers are dizziness, retrograde ejaculation, increased urination, headache, and tiredness. These drugs include alfuzosin (Uroxatral®), terazosin (Hytrin®), doxazosin (Cadura®), prazosin (Minipress®), silodosin (Rapaflo®) and tamsulosin (Flomax®).
- **5-Alpha-Reductase Inhibitors** shrink the prostate and relieve pressure on the urethra. As the prostate shrinks, men who have enlarged prostates may notice an improvement in their prostate symptoms. 5-alpha-reductase inhibitors may take months to work. Side effects of these medications may include impotence, decreased sex drive, gynecomastia and reduced



# Benign Prostatic Hyperplasia (BPH) Overview

semen released during ejaculation. 5-alpha-reduction inhibitor drugs include finasteride (Propecia®, Proscar®) and dutasteride (Avodart®). It is also important to know that these medications may falsely cut PSA levels in half.

- **Phosphodiesterase-5 Inhibitors** relax the smooth muscles in the bladder and prostate to help reduce BPH symptoms. This is same medication to treat erectile dysfunction. The drug Tadalafil (Cialis®) has been approved to treat BPH. Side effects include back and muscle pain, headaches, nasal stuffiness and vision problems.
- A combination of drugs may be prescribed at the same time.

## Other Treatment Options for BPH

- Surgery for BPH is performed when symptoms are severe or do not respond to medication. Surgery of the prostate can be associated with side effects that include impotence, loss of bladder control or retrograde ejaculation (semen enters bladder after orgasm).
  - Reasons for BPH Surgery May Include:
    - » Blood in the urine
    - » Bladder stones
    - » Frequent urinary tract infections
    - » Inability to empty the bladder completely
    - » Kidney damage caused by urinary retention
    - » Medications for BPH did not relieve symptoms

Your healthcare provider will discuss your recommended treatment options for BPH. You can participate in the discussion by asking about the risks and benefits of the treatment recommended.

## Additional Ways to Lessen BPH Symptoms:

- Decrease fluid intake, especially before bedtime
- Limit alcohol and caffeine consumption
- "Double void" by emptying your bladder, relaxing for a moment, and then trying to urinate again
- Avoid antihistamines

## Additional Information:

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# Erectile Dysfunction (ED) Treatments

## Oral Medications for ED

PDE5 (phosphodiesterase type 5) medications increase blood flow to the penis erectile tissues by relaxing smooth muscles during sexual stimulation. Some erection-stimulating medications are now available over the counter.

### PDE5 Medications:

- Stendra® (avanafil)
- Cialis® (tadalafil)
- Staxyn® (vardenafil)
- Viagra® (sildenafil)
- Levitra® (vardenafil)

### Oral Medication Effectiveness

60% - 70% of men find medication effective in promoting an erection.

- Men with diabetes have lower rates of success because of diabetes' impact on blood vessels.
- Men who had damage or removal of the prostate nerves during prostate surgery do not find the drugs beneficial.

### Onset of Effectiveness

Stendra® has the fastest-acting results; onset of action ranges from 15 - 30 minutes. Other drugs take between 30 - 60 minutes to become effective.

### Duration of Effectiveness:

- Cialis®: 36 hours of effectiveness
- Viagra®, Levitra®, Staxyn®: 8 hours of effectiveness
- Stendra®: 6 hours of effectiveness

### Oral Medication Precautions:

- Do not take medication more than once in 24 hours.
- Do not take if you are taking an alpha blocker\* or nitrate\*\* medications without consulting a healthcare provider.

### \*Alpha-Blocker Blood Pressure Medications Include:

- Alfuzosin (Lroxatral®)
- Prazosin (Minipress®)
- Tamsulosin (Flomax®)
- Doxazosin (Cardura®)
- Silodosin (Rapaflo®)
- Terazosin (Hytrin®)

### \*\*Nitrate Medications Include:

- Nitroglycerin (Nitro-Dur®, Nitrolingual®, Nitrostat®)
- Isosorbide (Dilatrate®, Isordil®)
- Nitroprusside (Nitropress®)



# Erectile Dysfunction (ED) Treatments

## Penile Injections

Penile injection medications are self-administered shots given prior to planned intercourse. The medication is injected into the side of the penis with a very tiny needle to simulate an erection.

## Penile Injection Medications

Injected medications increase blood flow to the erectile tissues of the penis, causing them to dilate, which allows engorgement and promotes an erection. Injections are proven effective for 70% - 90% of men with all types of erectile dysfunction. For men whose erectile dysfunction is caused by prostate surgery, injections are the most effective of all treatments.

Some men find that oral drugs do not work for them. Oral medicines may not be as effective because they must be metabolized by the body after taking. The needed dose of medication to cause an erection may not reach the penile tissues. Injectable drugs, because they are administered directly into the penis, avoid body metabolism.

## Penile Injection Medications:

- Caverject® (alprostadil)
- Edex® (alprostadil)
- Papaverine
- Phentolamine
- Prostaglandine
- Trimix

## Onset of Effectiveness

After injection, an erection occurs between 5 – 20 minutes.

## Duration of Effectiveness

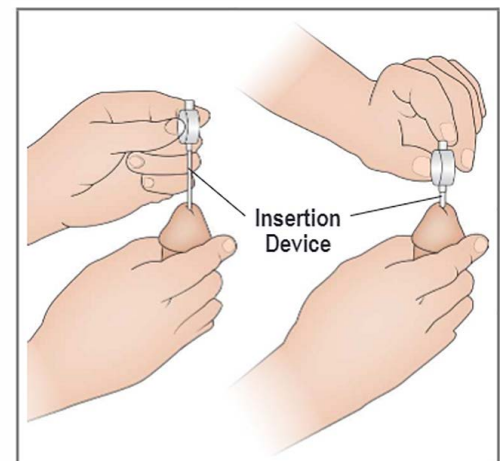
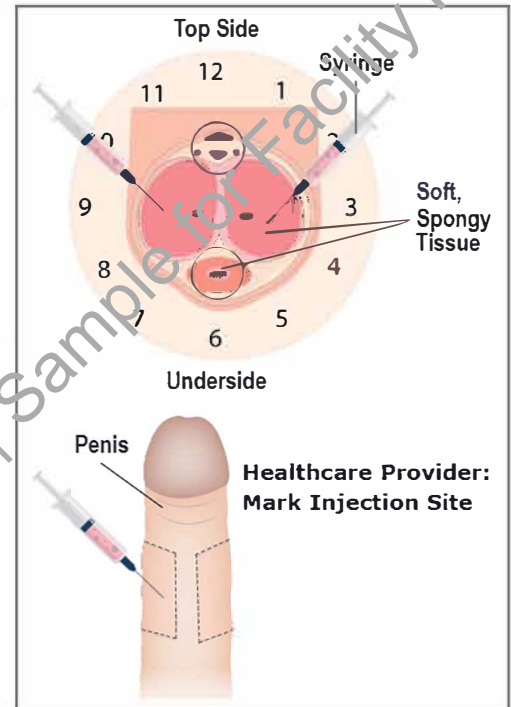
An erection will last from 30 – 60 minutes.

## Precaution

Do not use medication more than once in 24 hours.

## Urethral Suppositories

The urethral suppository is a medication placed into a prefilled applicator. It is inserted into the tip of the penis (into the urethra) shortly before planned intercourse to stimulate an erection. The applicator places tiny pellets of medication that dissolve quickly and cause increased blood to flow into the erectile tissues of the penis. About 10% of men report mild pain during insertion.





# Erectile Dysfunction (ED) Treatments

## Urethral Suppository Medication:

- MUSE® (alprostadil)

### Onset of Effectiveness

After medication insertion, an erection occurs between 8 – 10 minutes.

### Duration of Effectiveness

An erection will last from 30 – 60 minutes.

### Precautions

- Medication can cause dizziness and low blood pressure.
- Do not use medication more than twice in 24 hours.

## Penis Vacuum Pump

The penis vacuum pump is a hand-held suction device that draws blood into the penis by creating a vacuum. The penile pump does not require any medication for a man to have an erection. The pump is available in a manually operated model or a battery-operated model. Both models, manual or battery-operated, have a plastic cylinder that is placed over the penis, and suction is applied to draw blood into the erectile tissue.

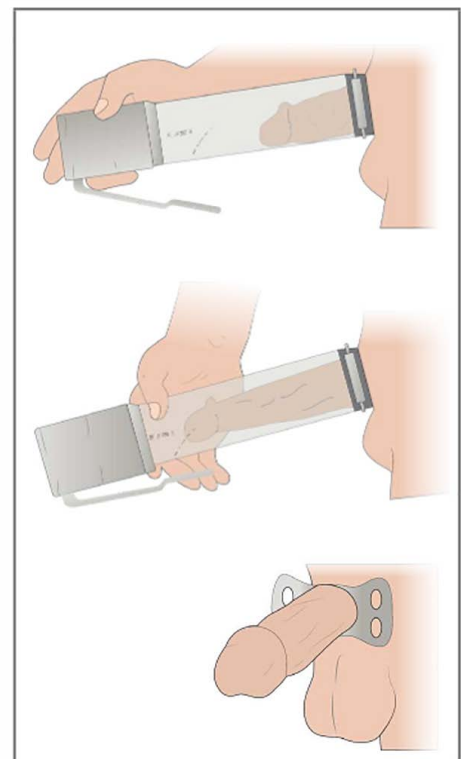
When an erection is firm enough for intercourse, the cylinder is removed and an elastic band is placed at the base of the penis. The elastic band maintains the erection until the band is removed.

### Onset of Effectiveness

The time required to acquire a firm erection takes about five minutes.

### Effectiveness

The penile vacuum pump is non-invasive and effective when used correctly. The advantage of a pump over medications is that the pump can be used as often as a man desires. The disadvantages are that the pump requires manual dexterity to operate, and even though the erection is firm, it does not feel like a normal erection. Because the elastic band does not extend to the base of the penis, the erection may be somewhat floppy.



### Precaution:

It is highly suggested that a man receives instructions on the proper use of a vacuum pump to ensure success.