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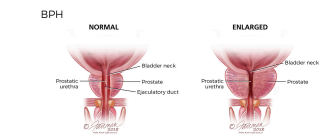
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## Benign Prostatic Hyperplasia (BPH)

### What is Benign Prostatic Hyperplasia (BPH)?

Benign prostatic hyperplasia (BPH) is when the prostate and surrounding tissue expands. The prostate goes through two main growth periods as a man ages. The first is early in puberty when the prostate doubles in size. The second begins around age 25 and continues during most of a man's life. As you age, your prostate may get larger. BPH is when it gets large enough to cause problems.

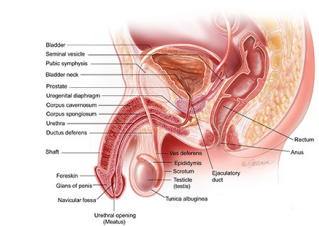
As the prostate enlarges, it presses against the urethra. The bladder wall becomes thicker. Over time the bladder may weaken and lose the ability to empty fully. Urine then remains in the bladder. These problems cause many of the lower urinary tract symptoms (LUTS) of BPH. How BPH causes symptoms may help your healthcare team determine if and what type of treatment to suggest.



[Diagram of Normal and Enlarged Prostate](#)  
[Enlarge](#)

### How Does the Prostate Work?

The prostate is part of the male reproductive system. The prostate's main job is to make fluid for semen. It is about the size of a walnut and weighs an ounce or so. It sits below the bladder and in front of the rectum. It goes around a tube called the urethra. The urethra carries urine from the bladder and out through the penis.



[Diagram of the Male Reproductive System](#)  
[Enlarge](#)

### Who is at Risk for BPH?

- Men over the age of 50 as the risk for BPH rises with age
- Men whose fathers had BPH
- Men who are overweight or obese
- Men who don't stay active
- Some men with erectile dysfunction (ED)

### Symptoms

When the prostate is enlarged, it can bother or block the bladder. Needing to pass urine often is a common symptom of BPH. This might include the need to pass urine as often as every one to two hours, mainly at night.

Other symptoms of BPH are listed below:

- Incomplete emptying: the feeling your bladder is full, even after passing urine.
- Frequency: the need to pass urine often, about every one to two hours.
- Intermittency: the need to stop and start several times when passing urine.
- Urgency: feeling the urgent need to pass urine as if you can't wait.
- Weak stream: a weak urine flow.
- Straining: trouble starting to pass urine or the need to push or strain to pass urine.
- Nocturia: the need to wake up at night more than two times to pass urine.

Causes

The causes of BPH are not clear. It mainly occurs in older men. Hormone changes are thought to play a role.

Hormones from the testis may be the main factor. For example, as men age, the amount of active testosterone in the blood declines. Estrogen levels stay the same. BPH may occur when these hormone changes trigger prostate cell growth. Another theory is about the role of dihydrotestosterone (DHT.) This male hormone supports prostate development. Some studies show that older men have higher levels of DHT. Testosterone levels go down.

Diagnosis

There are many tests for BPH. The following tests are used to diagnose and track BPH.

Symptom Score Index

If you have any urinary changes or symptoms, your doctor may talk to you about the BPH Symptom Score Index. The American Urological Association (AUA) developed this test to assess urinary symptoms.

This is often the first step to diagnose BPH. The score can rate BPH as being mild to severe. You and your health care provider may talk about your results and your medical history. This is sometimes also called the International Prostate Symptom Score (IPSS.)

Rate your symptoms with the BPH Symptom Score Index below!

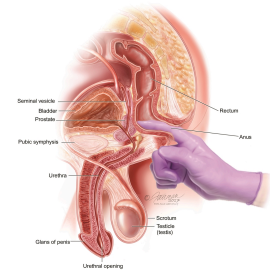
BPH Symptom Score Index									
	Not at all 0	1	2	3	4	5	6	7	Total score
Frequency How often do you pass urine in the last 24 hours?	0	1	2	3	4	5	6	7	
Weak stream How often do you pass urine in the last 24 hours?	0	1	2	3	4	5	6	7	
Intermittency How often do you stop and start when passing urine?	0	1	2	3	4	5	6	7	
Urgency How often do you feel the need to pass urine as if you can't wait?	0	1	2	3	4	5	6	7	
Straining How often do you have trouble starting to pass urine?	0	1	2	3	4	5	6	7	
Weak stream How often do you have a weak urine flow?	0	1	2	3	4	5	6	7	
Intermittency How often do you stop and start when passing urine?	0	1	2	3	4	5	6	7	
Urgency How often do you feel the need to pass urine as if you can't wait?	0	1	2	3	4	5	6	7	
Straining How often do you have trouble starting to pass urine?	0	1	2	3	4	5	6	7	
Total AUA Symptom Score									
Total score: 0-7 mild, asymptomatic; 8-19 moderately symptomatic; 20-35 severe symptomatic									
Quality of life due to urinary symptoms									
How much do urinary symptoms bother you?	0	1	2	3	4	5	6	7	
Total score: 0-7 mild, asymptomatic; 8-19 moderately symptomatic; 20-35 severe symptomatic									

[Benign Prostatic Hyperplasia Symptom Score Index](#)  
[Enlarge](#)

Physical Exam

A digital rectal exam (DRE) is often the next step. During a DRE, you lie on your side or bend over. The doctor inserts a gloved, lubricated finger into your rectum to feel the back wall of the prostate gland. The health care provider is looking for enlargement, tenderness, lumps or hard spots. This 10-15 second exam is an important way to find problems.

[Diagram of Digital Rectal Exam of the Prostate](#)  
[Enlarge](#)



Urine Tests

These tests are done to measure how well you release urine. This shows the doctor if the urethra is blocked or obstructed. There are several types:

- **Urinalysis** tests your urine sample to check for important things such as blood, signs of infection, glucose (sugar), protein and other factors that can tell your urologist the cause of your symptoms. Urine tests are also used to screen for bladder cancer. If you have blood in your urine, pain or burning when you pass urine, or you cannot pass urine, it is important to see your doctor right away.
- **Post-void residual volume (PVR)** measures urine left in the bladder after passing urine. This is done to diagnose the problem. It may also be done before surgery.
- **Uroflowmetry** measures how fast urine flows. This is done to diagnose the problem. It may also be done before surgery.
- **Urodynamic pressure flow study** tests pressure in the bladder during urination.

Scans

These tests are done to see the size and shape of the prostate. Some BPH scans include:

- **Ultrasounds** look inside the body and see the size and shape of the prostate.
- **Cystoscopy** is an exam used to look at the urethra or bladder with a scope.
- **Magnetic resonance imaging (MRI)** and **computed tomography (CT)** are more detailed scans. These are done if surgery is necessary to reopen the flow of urine. These scans provide a very clear image of the prostate and surrounding area. It shows exactly how and where the prostate is enlarged.

## Blood Tests

If cancer is suspected, blood tests may be done.

- **Prostate-specific antigen (PSA)** blood tests are used to screen for prostate cancer. The PSA blood test checks the level of PSA, a protein made only by the prostate gland. This blood test can be done in a lab, hospital or a provider's office. Avoid sexual activity several days prior to the test, as this may artificially increase the PSA reading.

When the prostate is healthy, very little PSA is found in the blood. A rapid rise in PSA may be a sign that something is wrong. A benign (non-cancer) enlargement of the prostate can cause a rise in PSA levels, as can inflammation of the prostate (prostatitis). The most serious cause of a rise in PSA is cancer.

## Treatment

There are many treatments for BPH. You and your health care provider will decide together which option is right for you. Mild cases may need no treatment at all. In some cases, minimally invasive procedures (surgery without anesthesia) are good choices. And sometimes a combination of treatments works best.

The main types of treatments for BPH are:

[Active Surveillance](#)

[Prescription Drugs](#)

[Less Invasive Surgery](#)

[More Invasive Surgery](#)

### Active Surveillance

Often, BPH may only require *active* surveillance. This means your BPH will be closely watched but not actively treated and may be monitored with regular visits to your urologist. A yearly exam is common. Your health care provider will look for worse or new issues before suggesting anything else. Diet and exercise are often recommended as a way to prevent or manage symptoms.

Active surveillance is best for men with mild to moderate symptoms. It is also an option for men who are not bothered by the effects of BPH.

### Prescription Drugs

Prescription drugs may also be an option for men with BPH. Types of drugs include:

**Alpha blockers** are pills used to relax the muscles of the prostate and bladder to reduce BPH symptoms. They do not shrink the prostate but they may improve urine flow if there is a blockage. One benefit of alpha blockers is they start to work right away. Side effects may include dizziness, lightheadedness, fatigue and difficulty ejaculating. Men with moderate to severe BPH and men who are bothered by their symptoms are good candidates. Alpha blockers are not a good choice if you plan to have cataract surgery soon.

Alpha-blocking drugs include alfuzosin, doxazosin, silodosin, tamsulosin and terazosin.

**5-Alpha reductase inhibitors** are pills that can increase urine flow and shrink the prostate by blocking DHT. DHT is a male hormone that can build up in the prostate and may cause prostate growth. These drugs may lower the risk of BPH problems and the need for surgery. Side effects include erectile dysfunction and reduced libido (sex drive). You must keep taking the pills to prevent symptoms from coming back. These may be best for men with very large prostate glands.

These prescription drugs may take many months to become fully effective and include dutasteride and finasteride.

**Combined therapy** uses both an alpha blocker and a 5-alpha reductase inhibitor. They may work better together than either drug does alone to stop BPH from getting worse. By taking two drugs, you may have more side effects than if you were taking just one. Some side effects may include dizziness, erectile dysfunction, weakness or lack of energy and a drop in blood pressure when moving from sitting or lying down to standing. A urologist may add antimuscarinics for patients with overactive bladder symptoms. Overactive bladder is when the bladder muscles squeeze uncontrollably. It leads to frequent and urgent need to pass urine. It can lead to incontinence (leaking). Antimuscarinics relax the bladder muscles.

Men with larger prostates are good candidates for this treatment.

Possible drug combinations include:

- Finasteride and doxazosin
- Dutasteride and tamsulosin, a combination of both medications that is available in a single tablet
- Alpha blockers and antimuscarinics

**Phytotherapies** or herbal therapies are not recommended by health care providers. One popular herb is saw palmetto. Several important studies show they do not work. Also, the quality and purity of supplements vary.

### Less Invasive Surgery

Less invasive surgery or minimally invasive surgical treatments (MIST) can often be done as an outpatient, without a stay in the hospital. Recovery time is usually quicker. It can offer relief from symptoms, including urine control problems. Some MISTs do not reduce your risk for another surgery or needing to take medications again. Be sure to ask your urologist about re-treatment rates whenever considering a MIST or even more invasive surgery.

Good candidates include men who have taken BPH medication that did not work or men with the following symptoms:

- Weak stream of urine
- Straining to start to pass urine
- Urinary tract obstruction, bladder stones and/or blood in your urine
- Incomplete emptying
- Bleeding from the prostate

There are several types of less invasive surgeries from which to choose. The option will depend on the size of your prostate, your overall health and your personal choice.

**Prostatic urethral lift (PUL)** uses a needle to place tiny implants in the prostate. These implants lift and compress the enlarged prostate so that it no longer blocks the urethra. These implants stay in the body forever and are not easily removed. PUL may be done with either local or general anesthesia.

With this treatment there are no cuts in the body and tissue is not destroyed or removed. Many men with enlarged prostates and urinary symptoms are good candidates. There are fewer sexual side effects with this, compared to other types of prostate surgery. MRI can still be done if you had a PUL. Talk to your doctor about how PUL may impact the image quality of future MRI used for prostate cancer detection and if you are allergic to nickel, titanium or stainless steel. Current studies have evaluated five years of treatment with PUL and future studies may help to determine long term durability.

**Water vapor thermal therapy (WVTT)** uses water vapor (steam) to destroy prostate cells squeezing the urethra. This treatment can be done in a doctor's office with local anesthesia or after you have taken a pill for pain. It uses a special handheld device with a needle at the end. It combines radiofrequency energy and water to create steam. The needle and steam cause rapid cell death. The body's natural healing response then breaks down and removes the dead tissue, causing the prostate to shrink.

Men may be good candidates if they do not want to take medication for BPH or if they have tried prescription drugs and found they do not work. Men who prefer not to have surgery or want to avoid sexual side effects may also be good candidates.

You may have blood in your urine and need to use a catheter for a few days. Painful or frequent urination should go away within about two to three weeks. Sexual side effects, such as erectile dysfunction, are unlikely.

Studies currently suggest that symptom improvement lasts for at least five years.

**Temporary Implanted Prostatic Devices (TIPD)** are placed in the prostatic urethra through a cystoscope and remain there for a period of about a week after which it is removed by the urologist. While in position, it functions to re-shape the urine channel. In re-shaping the urethra, there is a modest lessening of the prostatic obstruction and thus a modest improvement in the symptoms of BPH and improved urine flow. It is a low-risk procedure that can be inserted in the OR or in the office. It may relieve bladder obstruction. TIPD poses a low risk of side effects, such as urinary tract infections, urinary incontinence and scarring in the urethra. Some men have symptoms that include frequent or intense urges to pass urine and a burning feeling when passing urine.

**Prostate Artery Embolization (PAE)** is a radiologic procedure done by radiologists to block blood flow to the prostate to try to shrink the entire gland to improve symptoms. This newer procedure does not have long term data to understand its durability. PAE probably improves urinary symptoms, at least for short periods measured for less than a year. There is a shortage of substantial evidence to recommend PAE over more widely available minimally invasive therapies for the routine treatment of LUTS, but there is evidence showing a short-term benefit of PAE compared to observation in a very select patient population.

**Catheterization** uses a tube called a catheter in the bladder to drain urine. Catheters can be placed through the urethra or via a small puncture in the bladder above the pubic bone. This option is helpful for men with bladder control problems and a blocked prostate. Still, catheters' benefits are temporary. Infection is a risk. This treatment is best for men who are waiting for medication to work, or waiting for surgery. They also help when there is an infection, or for men toward the end of their lives, when surgery is not advised. There are two types:

- Clean, where the catheter is placed and removed every six to eight hours. This can be done by yourself or by a caregiver. For this, the catheter is removed when the urine flow stops.
- Indwelling, where the catheter stays in the bladder for longer periods of time.

## **More Invasive Surgery**

In severe cases of BPH or when other options fail, more invasive surgery is recommended. Surgery is best if you:

- Are unable to pass urine
- Have kidney damage
- Have frequent urinary tract infections
- Have a lot of bleeding
- Have stones in the bladder

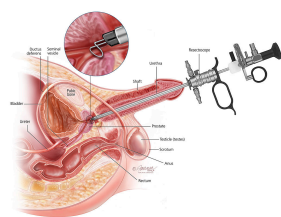
There are several types of more invasive surgery options from which to choose. The option will depend on your health, your doctor's expertise and your personal choice. Options below appear in order of least invasive to most invasive.

**Transurethral incision of the prostate (TUIP)** is used to widen the urethra if the prostate gland is small but causes a major blockage. For TUIP, the surgeon makes small cuts in the bladder neck, where the urethra joins the bladder and in the prostate. This widens the urethra and reduces the pressure of the prostate on the urethra, making urination easier. The hospital stay is one to three days. A catheter is left in your bladder for one to three days after surgery. Some men need follow-up treatment. Men who do not want a complete prostatectomy (removal of the prostate) but need surgery are good candidates.

**Photoselective vaporization (PVP)** is a way to vaporize prostate tissue with a high-powered laser. Most men can have a PVP without problems. The procedure is done as an outpatient procedure at the hospital or sometimes in the doctor's office. There are few side effects. After PVP, most men can stop medical therapy. This method is useful for most men except those with the largest of prostates. Because this method causes very little blood loss it is particularly useful in men with a higher risk of bleeding, such as those taking blood-thinning medications or those with weak hearts.

**Transurethral resection of the prostate (TURP)** is a common surgery for BPH. TURP uses electric current or laser light to cut and remove tissue. This is done with anesthesia and a tool called a resectoscope inserted through the penis. The resectoscope provides light, irrigating fluid and an electrical loop. The loop cuts tissue and seals blood vessels. The removed tissue is flushed into the bladder and out of the body with a catheter. Men who require surgery because of moderate to severe BPH symptoms may be good candidates for TURP.

PROSTATE - Transurethral Resection (TURP)



## **Diagram of Transurethral Resection of the Prostate (TURP)**

[Enlarge](#)

**Holmium laser enucleation of prostate (HoLEP)** is when a surgeon places a resectoscope through the penis into the urethra. A laser inserted into the resectoscope destroys excess prostate tissue. No incisions (cuts) are needed and there is very little bleeding. You may only need to stay one night in the hospital. A catheter is used, but it is usually removed the next day. Men with larger prostates who wish to avoid more-invasive surgery may be good candidates for this treatment. Men with a higher risk of bleeding, such as those taking blood-thinning medications, may also be good candidates for HoLEP.

**Thulium laser enucleation of the prostate (ThuLEP)** is similar to HoLEP but uses a different type of laser. As in HoLEP, the surgeon places a resectoscope through the penis into the urethra. A laser inserted into the resectoscope destroys excess prostate tissue. Men with larger prostates who wish to avoid more-invasive surgery may be good candidates for this treatment. No incisions (cuts) are needed and there is very little bleeding. You may only need to stay one night in the hospital. A catheter is used, but it is usually removed the next day. Men with a higher risk of bleeding, such as those taking blood-thinning medications, may also be good candidates for ThuLEP.

**Transurethral vaporization of the prostate (TUVP)** is when the surgeon inserts a resectoscope into the urethra with a lens, a light, and a tool that sends out an electrical current to destroy prostate tissue. Heat from the electrical current seals small blood vessels, reducing the risk of bleeding. There is little bleeding or fluid absorption. You may stay one night in the hospital and you can usually return home without a catheter. Men with larger prostates who wish to avoid more-invasive surgery may be good candidates for TUVP.

**Transurethral water-jet ablation (TWJA)** uses high-pressure water jets to destroy excess prostate tissue. The surgeon first uses ultrasound to precisely map the location of the excess tissue. Then the high-pressure water jets are directed to that area. Following this, the surgeon inserts another instrument to seal small blood vessels to reduce the risk of bleeding. The patient needs to stay in the hospital one night to irrigate the bladder to prevent blood clots. You may need to use a catheter for about 48 hours after the procedure and should be able to go home the next day.

**Simple prostatectomy** removes the entire prostate gland with laparoscopic or robotic-assisted surgery. It is important for the surgeon to be skilled at this surgery. This is only offered to men with the largest of prostate glands. This is a long-term cure. You will probably stay in the hospital for a few days after surgery and your activities will be limited for several weeks. A catheter will usually be needed for 1 to 2 weeks while you heal.

## ***What to Expect After Surgery***

For most men, symptoms of BPH improve after treatment. After surgery, it can take time for sexual function to return fully. Most experts believe that if you were able to have an erection shortly before surgery, you will be able to after surgery. Your orgasm is not expected to change. In some cases, men can experience an issue where semen enters the bladder rather than out the penis (retrograde ejaculation.)

Infection, bleeding and incontinence may also occur after some BPH treatments. In some cases, scar tissue may form. Side effects vary with the type of treatment you choose and most side effects are temporary. Some men need further or new treatment for their BPH symptoms after initial treatment.

It is of great value to tell your doctor about any side effect you may have to get help.

## **Other Considerations**

### **Preventing BPH**

#### **How can you prevent BPH?**

There is no sure way to prevent BPH. Still, losing weight and eating a well-balanced diet, rich in fruits and vegetables, may help. Too much body fat may increase hormone levels and other factors in the blood and stimulate the growth of prostate cells. Staying active also helps control weight and hormone levels.

#### **How can you prevent a recurrence of BPH?**

Once you have been treated with surgery for BPH, taking medicine may sometimes be needed to control residual or new symptoms. Sometimes men need repeated treatment to get rid of bothersome symptoms. In older men, it may be possible to control the symptoms of BPH until the end of life.

*Updated September 2023.*

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