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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.

While the prostate is usually the size of a walnut or golf ball in adult men, it can grow to be as large as an orange. As the gland enlarges, it can squeeze 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. If you are not able to pass urine at all (called retention) or if you have renal failure, immediate attention is required. But, other symptoms like weak urine stream or the need to push or strain can many times be monitored.

BPH is benign. This means it is not cancer, nor does it lead to cancer. Still, BPH and cancer can happen at the same time. BPH itself may not require any treatment, but if it begins to cause symptoms, treatment may help. It is also of great value to know that BPH is common. About half of all men between ages 51 and 60 have BPH. Up to 90% of men over age 80 have it.

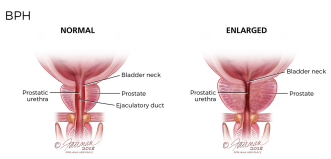


Diagram of Normal and Enlarged Prostate

Enlarge

How Does the Prostate Work?

The prostate is part of the male reproductive system and its 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.

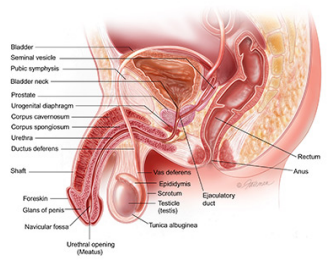


Diagram of the Male Reproductive System

Enlarge

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 be every 1 to 2 hours, mainly at night.

Other symptoms include:

- 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.

If BPH becomes severe, you might not be able to pass urine at all. This is an emergency that must be treated right away.

How Can BPH Affect Your Life?

In most men, BPH gets worse with age. It can lead to bladder damage and infection. It can cause **blood in the urine** and cause kidney damage.

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.

Who is at Risk for BPH?

There are many risk factors for BPH. Men who are at a higher risk include:

- 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)**

Can BPH be Prevented?

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.

Diagnosis

See your doctor if you have symptoms that might be BPH. See your doctor *right away* if you have blood in your urine, pain or burning when you urinate, or if you cannot urinate.

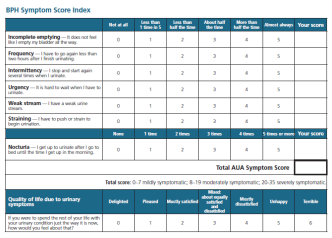
There are many tests for BPH. The following tests are used to diagnose and track BPH.

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).

Take the test and talk with your doctor about your results.



BPH Symptom Score Index

	Not at all	Less than 1 time in 5	Less than half the time	About half the time	More than half the time	Almost always	Your score
Incomplete emptying — It does not feel like I empty my bladder all the way.	0	1	2	3	4	5	
Frequency — I have to go again less than two hours after I finish urinating.	0	1	2	3	4	5	
Intermittency — I stop and start again several times when I urinate.	0	1	2	3	4	5	
Urgency — It is hard to wait when I have to urinate.	0	1	2	3	4	5	
Weak stream — I have a weak urine stream.	0	1	2	3	4	5	
Straining — I have to push or strain to begin urination.	0	1	2	3	4	5	
	None	**1 time**	**2 times**	**3 times**	**4 times**	**5 times or more**	**Your score**
Nocturia — I get up to urinate after I go to bed until the time I get up in the morning.	0	1	2	3	4	5	
						Total AUA Symptom Score	

Total score: 0-7 mildly symptomatic, 8-19 moderately symptomatic, 20-35 severely symptomatic

Quality of life due to urinary symptoms	**Delighted**	**Pleased**	**Mostly satisfied**	**Mixed about equally satisfied and dissatisfied**	**Mostly dissatisfied**	**Unhappy**	**Terrible**
If you were to spend the rest of your life with your urinary condition just the way it is now, how would you feel about that?	0	1	2	3	4	5	6

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.

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 pressur 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** to 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.

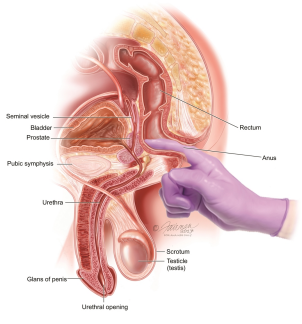


Diagram of Digital Rectal Exam of the Prostate

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Treatment

The main types of treatments for BPH are:

- Active Surveillance
- Prescription Drugs
- Less Invasive Surgery
- More Invasive Surgery

Active Surveillance

Often, BPH will only require active surveillance. If you and your doctor choose this treatment option, your BPH will be closely watched but not actively treated. This means that BPH is 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 your 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. If your symptoms get worse, or if new symptoms appear, your doctor may suggest that you begin active treatment.

Prescription Drugs

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

Alpha Blockers

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 Reducatase Inhibitors

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

With combined therapy, both an alpha blocker and a 5-alpha reductase inhibitor are used together. 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 that is available in a single tablet
- Alpha blockers and antimuscarinics

Phytotherapies

Phytotherapies are herbal treatments and 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.

Types of Less Invasive Surgeries

Prostatic Urethral Lift (PUL)

PUL uses a needle to place tiny implants in the prostate. These implants lift and compresses the enlarged prostate so that it no longer blocks the urethra. 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

This treatment 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.

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.

Transurethral Microwave Therapy (TUMT)

TUMT uses microwaves to destroy prostate tissue. A urologist inserts a catheter through the urethra to the prostate. An "antenna" then sends microwaves through the catheter to heat parts of the prostate. This destroys enlarged tissue. A cooling system protects the urinary tract from heat damage.

TUMT is a low-risk procedure that only takes one hour. Pain medication is used, but no anesthesia. It may relieve bladder obstruction. Men with too many medical problems for invasive surgery may be good candidates for this surgery. There is little blood loss or fluid absorption. TUMT 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. Newer therapies have largely replaced this practice.

Catheterization

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.

In severe cases of BPH, or when other options fail, more invasive surgery is recommended. More invasive 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 best option will depend on your health, your doctor's expertise and your personal choice.

Types of More Invasive Surgeries

Options below appear in order of least invasive to most invasive.

Transurethral Incision of the Prostate (TUIP)

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)

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)

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.

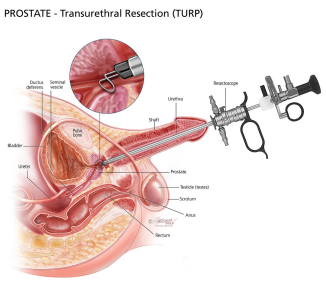

Diagram of Transurethral Resection of the Prostate (TURP)

Enlarge

Holmium Laser Enucleation of Prostate (HoLEP)

In HoLEP, the surgeon places a thin, tube-like instrument (a resectoscope) through the penis into the urethra. A laser inserted into the resectoscope destroys the 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)

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 the excess prostate tissue.

No incisions (cuts) are needed. There is very little bleeding. You may only need to stay one night in the hospital. A catheter may be used, but it is usually removed the next day.

In TUVP, 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)

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

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 and is usually done using a robotic. 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.

After Treatment

For most men, symptoms of BPH improve after treatment. Infection, bleeding, incontinence, and erectile dysfunction may occur after some treatments. In some cases, scar tissue may form.

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 occur after some 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.

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 BPH symptoms to the end of life.

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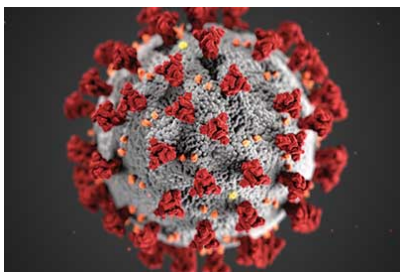

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410-689-3700 or 1-800-828-7866

info@UrologyCareFoundation.org

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