

SEXUAL HEALTH

# Erectile Dysfunction



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*Urology Care*  
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*The Official Foundation of the  
American Urological Association*



# Don't Let Erectile Dysfunction Keep You from a Satisfying Sex Life.

## What Is Erectile Dysfunction or ED?

Men who have ED have a problem getting or keeping an erection that's firm enough for sexual satisfaction.

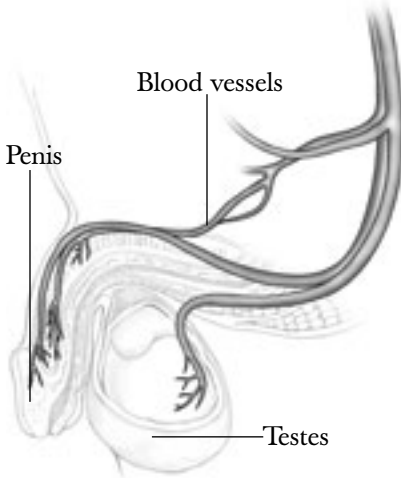
Most men have difficulty with erections from time to time. In some men, it is a regular, more severe problem. It can cause low self-esteem, performance anxiety, depression and stress. ED may affect the quality of a marriage or intimate relationship. The good news is there are many safe and effective treatments.

## Who Gets ED?

Studies show that about one half of American men over age 40 have some degree of ED. At one time, health care providers thought that psychological problems, such as stress and anxiety, were the main causes of ED. Recent studies show that most cases have a physical cause. While ED becomes more common as men age, growing old is not the cause of the problem. Though sexual function may decrease with age, many men enjoy sexual activity well into their senior years.

ED can be an early warning sign of a more serious illness, such as heart disease, high blood pressure or diabetes mellitus. Diagnosing and treating the condition that causes ED can improve your overall well being, as well as help restore your sexual health.

Figure A: Penis Anatomy



How do erections occur? When a man is not sexually aroused, his penis is soft or limp. During sexual arousal, nerve messages release chemicals that increase blood flow into the penis. The blood flows into two erection chambers made of spongy tissue (the corpus cavernosum, Figure A) inside the penis. The “smooth muscle” in the erection chambers relaxes, which allows blood to enter and remain in the chambers. The pressure of the blood in the chambers makes the penis firm, producing an erection.

After a man has an orgasm, the blood flows out of the chambers and the erection subsides.

## What Causes ED?

ED can result from medical, physical or psychological factors. ED may be caused by a combination of factors that could also include medicine, alcohol or drugs. The physical and medical causes of ED include three basic problems:

1. Not enough blood flows into the penis. Many conditions can reduce blood flow into the penis, causing ED. Heart disease, diabetes and even smoking can contribute to ED.
2. The penis cannot store blood during an erection. A man with this problem, called venous leak or cavernosal dysfunction, cannot maintain an erection because blood does not remain trapped in the penis. This condition may occur at any age.
3. Nerve signals from the brain or spinal cord do not reach the penis. Certain diseases, injury or surgery in the pelvic area can damage nerves in the penis

Sexual activity requires the mind and body to work together. Psychological, emotional or

relationship problems can cause or worsen ED. These include:

- depression
- relationship conflicts
- stress at home or work
- anxiety about sexual performance

Many prescription and over-the-counter medications cause erectile difficulties as a side-effect. Marijuana, cocaine, heroin, and alcohol use can also lead to sexual problems. Be sure you tell your health care provider about any medications or drugs you use.

Your health care provider can treat many causes of ED. But, you may be sent to see a urologist. Urologists perform specialized evaluations, prescribe medications and perform surgery to correct erection problems. If your ED is due to a hormonal problem, such as a low testosterone level or is related to diabetes, you may be referred to an endocrinologist (a doctor who specializes in hormones, their function, and the organs that produce them).

Your health care provider may also refer you to a mental health professional. These specialists treat psychological or emotional causes of ED. Even if your ED is not caused by these factors, it may contribute to them. It may be helpful to get counseling, alone or with your partner, in addition to getting medical therapy for ED.

**For more information on how to lower your risk of getting ED, go to [UrologyHealth.org/PreventingEDFS](http://UrologyHealth.org/PreventingEDFS).**

## How Is ED Diagnosed?

ED is diagnosed by a urologist or other medical professional through a brief physical examination. A careful medical, social, psychological and sexual history is also taken. Sometimes blood tests are also done.

## Medical History

Your health care provider may ask you about your ED experience. He or she will want to know if you have other conditions that might contribute to your ED. These include endocrine problems or depression. Some questions about your sexual history and performance may seem very personal. You may be embarrassed, but answering honestly will help your provider find the best treatment for you.

Your health care provider is likely to ask you about:

- your current sexual function
- when you started noticing changes
- any past medical or sexual problems
- surgery or injury to the pelvic area

- current and past medications (prescriptions, over-the-counter, dietary supplements, etc.)
- your lifestyle and personal habits (drinking alcohol, smoking, stress, using illicit drugs, etc.)
- your relationship with your current and past partners

## The Physical Exam

Your health care provider will check your overall health and physical condition. He or she will look for signs of problems with your circulatory (blood), nervous and endocrine (hormonal) systems. This includes checking your blood pressure, penis and testicles. They may also perform a rectal exam to check the prostate gland. These exams are not painful and may provide important information about the cause of your ED.

Men with ED may have tests to check for:

- low levels of the hormone testosterone
- elevated levels of sugar in your blood or urine, which are signs of diabetes
- elevated levels of blood cholesterol and other lipids (fatty substances)

Additional tests can determine if you have problems with the nerve or blood supply to the penis.

**For more information on how ED is diagnosed and**

**questions your provider may ask, go to [UrologyHealth.org/DiagnosingEDFS](http://UrologyHealth.org/DiagnosingEDFS).**

## How Is ED Treated?

Your health care provider may be able to improve your ED by treating underlying causes such as:

### Lifestyle or Psychological Factors

Changing certain habits, such as stopping drug or alcohol use may improve or eliminate ED. Psychological problems, such as relationship conflicts, depression or performance anxiety, can also be treated.

### Prescription or Nonprescription Drug Use

If ED is a side effect of a prescribed medication you are taking, your health care provider may be able to adjust the amount you take, or switch you to a different drug. Do not stop taking your medicine or change your dosage without talking to your provider first.

### Hormone Therapy

If a blood test shows that your testosterone level is too low, your health care provider may prescribe testosterone replacement therapy. This may help if you experience low sex drive in addition to ED.

## Medication for ED

The oral medications sildenafil citrate (Viagra<sup>®</sup>), vardenafil HCl (Levitra<sup>®</sup> and Staxyn<sup>®</sup>), tadalafil (Cialis<sup>®</sup>) and avanafil (Stendra<sup>®</sup>) are considered safe and effective for treating ED for many men.

These drugs are known as phosphodiesterase type 5 (PDE-5) inhibitors. They work to relax muscle cells in the penis for better blood flow and to produce a rigid erection.

These medicines work in about 7 out of every 10 men with ED. They can be effective regardless of age or race. However, they only work if a man is sexually stimulated. Even men with severe or complete ED may respond to these treatments. Men with ED after pelvic surgery should try PDE-5 inhibitors, although they may not be as effective in these men.

Studies show that many men who do not seem to respond to an oral PDE-5 inhibitor may not be taking the medication properly. These medicines take some time to work. Their effects last for only a set amount of time. Men should take these medications 30-60 minutes before sexual activity. The chart on page 8 gives recommendations for each of these medications. Sexual stimulation is required to bring about an erection with the PDE-5 inhibitors. If you take

your medication with no sexual stimulation, the medication will not work. These drugs do not treat a lack of sexual desire.

**Even men who respond to these oral medications should pay attention to lifestyle factors that can affect ED. Make good food choices, get regular physical activity, and try to maintain normal weight and cholesterol levels.**

Drink alcohol only in moderation and do not smoke. This may improve how you respond to drug treatment for ED. It may help prevent your ED from becoming worse. At the same time, these steps may have a positive effect on your overall health.

All of these PDE-5 inhibitors are believed to be equally effective. Work with your health care provider to find the best medication for you. He or she may adjust the dose of your PDE-5 inhibitor if the drug does not seem to be working or causes bothersome side effects. Do not change your dose without talking to your provider. Speak to your health care provider about drug specific information you should know. The PDE-5 inhibitors are

for treatment of ED in men only. Women or children should not take them. Men who do not have ED should not use these medications.

As with any drug, some men may experience side effects when taking PDE-5 inhibitors. The most common are headaches, flushing (redness) of the face, runny or stuffy nose, upset stomach, dizziness and muscle aches. Those side effects are usually mild, but taking these drugs with alcohol may make them worse. A few men taking sildenafil citrate may notice changes in their vision. Usually, side effects associated with PDE-5 inhibitors disappear in a few minutes to a few hours. Contact your health care provider if you experience any side effects that are bothersome or do not go away. You can find more information about side effects at the FDA's Center for Drug Evaluation and Research website, at [www.fda.gov/cder](http://www.fda.gov/cder).

Men with certain medical conditions should be careful when using PDE-5 inhibitors. Make sure your health care provider knows if you have any of the following conditions.

- active stomach ulcers
- certain heart problems
- retinitis pigmentosa (a rare eye disease)
- a recent stroke, heart attack or lifethreatening arrhythmia

- abnormally low or elevated blood pressure
- liver or kidney problems
- bleeding disorders
- a deformed penis shape or Peyronie's disease (bent penis)
- history of an erection lasting more than four hours
- certain blood cell problems

Be sure you tell your health care provider about all drugs you are taking, including prescriptions, over-the-counter medications or supplements, or recreational drugs before you take any PDE-5 inhibitors. If you have taken a PDE-5 inhibitor and then require emergency medical treatment, be sure you share that information with medical personnel.

A patient taking alpha-blocker medications should speak to his provider before taking PDE-5 inhibitors. Taking an alpha blocker with these medications may cause lightheadedness, dizziness or fainting due to a decrease in blood pressure.

Never take any PDE-5 inhibitor if you are taking any medication that contains a nitrate. This may cause blood pressure to drop to dangerously low levels. If you are not sure if you are taking a nitrate (these include pills, patches and inhalers), ask your health care provider. One of the

most commonly used nitrates is nitroglycerin, which is often prescribed for angina (heart-related chest pain). Make sure you tell doctors, pharmacists and other health care providers if you take any PDE-5 inhibitors even if only occasionally, so that you do not also receive a nitrate. PDE-5 inhibitors must not be used in combination with recreational drugs such as amyl nitrate, known as “poppers”. Amyl nitrate is a nitrate drug like nitroglycerine.

If you have a heart condition and want to start treatment for ED, first ask your health care provider if your heart can handle the extra strain of having sex. Because sex makes the heart work harder, sexual activity is not advisable for some men with certain heart problems.

If you have never been diagnosed with a cardiovascular disease (a disease of the heart or blood vessels), your health care provider will check out your health before prescribing ED treatment. They will pay special attention to your risk factors for heart or circulatory disease. That is because ED may be a clue to undiagnosed cardiovascular disease or other disorders.

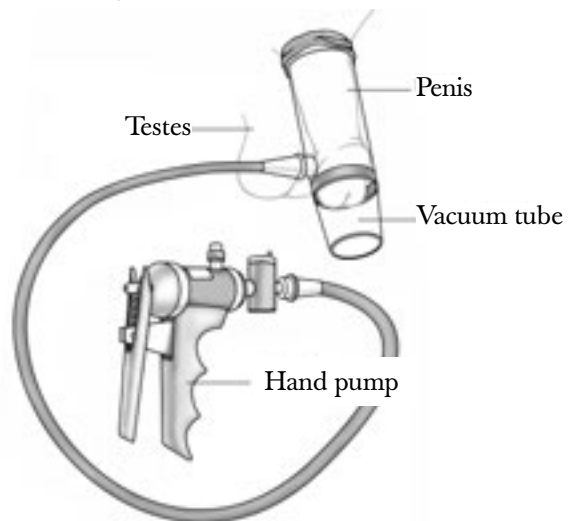
## What Other Treatments Are Available for ED?

Other safe and effective options include vacuum erection devices (Figure B), self-injection therapy, intraurethral therapy and penile implants. These other methods are especially useful for men who cannot take a PDE-5 inhibitor or do not have a satisfactory response to the medication.

### Vacuum Erection Devices

Vacuum erection devices (VEDs), can be used by any man with ED, regardless of his age or the underlying problem. VEDs come in a variety of models, but the basic unit is a clear plastic cylinder that fits over the penis. A pump is

**Figure B: Vacuum Erection Device**





connected to the cylinder that draws out air. This creates a negative pressure that draws blood into the penis, causing an erection to form. Once an erection occurs, an elastic ring is slipped around the base of the penis. The ring helps hold the blood in the penis. The ring can be left in place safely for up to 30 minutes.

Wearing the ring for longer than 30 minutes could result in tissue damage. Only use a tested, medically approved vacuum pressure device to achieve an erection. Although the vacuum devices are generally effective, some men find them difficult to use.

### Self-Injection Therapy

This treatment involves injecting a small amount of medication, most commonly alprostadil (or prostaglandin), into the base of the penis before sexual activity. The medication goes directly into the corpus cavernosum, where it relaxes smooth muscle and produces an erection. For most men, the feeling of the injection is no worse than a pinch. This treatment is easy to use and works for many men. Most men who do not respond to PDE-5 inhibitor treatment will respond to injection therapy.

The most common side effect is penile pain. Bruising at the injection site and scarring may also occur. The most serious but rare side effect is an erection that lasts too

long. A man who experiences an erection for longer than four hours (a condition known as priapism) should get medical attention immediately. This condition can permanently damage the penis if not treated promptly.

### Intraurethral Therapy

This treatment is a variation of self-injection therapy. Instead of injecting the penis, a man inserts a tiny medicated pellet of alprostadil into his urethra. Although generally safe, this method is less effective than self-injection therapy. Possible side effects include pain in the penis or groin area, prolonged erection and low blood pressure. Alprostadil may irritate the vagina of a female partner, causing mild burning or itching. This therapy should not be used if a man's partner is pregnant or planning to become pregnant.

### Surgical Treatments

Surgery to correct problems with blood vessels to the penis may help in rare cases, particularly for young men who have had injuries to the pelvis or penis. It also may be recommended for men born with certain types of blood vessel abnormalities.

### Penile Implants

A penile implant (Figure C) requires surgery. This option is for carefully selected men. Two basic types of implants are available. With malleable or bendable implants,

two rods are inserted into the corpora cavernosa. To have an erection, a man bends his penis upward into an erect position. With an inflatable implant, a pair of inflatable cylinders is attached to a fluid reservoir and a pump hidden inside the body. To have an erection, a man presses on the pump. This transfers fluid into the cylinders, making the penis rigid.

Modern penile implants are easy to use and work well. Patients report being satisfied with them. Rarely, serious problems are associated with penile implants, including infection (increased in men with diabetes). Mechanical breakdown with inflatable implants can occur.

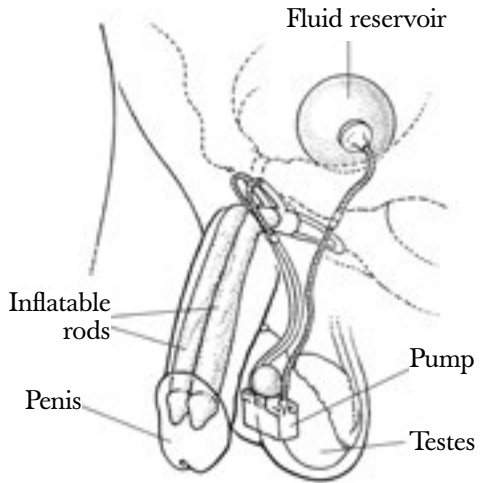
### Complementary and Alternative Medicines

Natural or herbal medications and supplements have become increasingly popular as ways to improve health and treat illness. These alternative medicines are popular based in part on the idea that natural products are

safer than standard manufactured medications. Some products claim to promote sexual health and improve erectile function. There is no valid scientific evidence that these products are any more effective than a placebo or sugar pill for treating ED.

Men who use alternative medicines or dietary supplements for ED or for other health reasons should know that natural does not always mean safer. Remember that some natural ingredients can be dangerous, even deadly.

**Figure C: Penile Implant**



Drug	Available Strength	Usual Starting Dose*	Maximum Duration	Should I Avoid Taking with Meals?
sildenafil citrate	25, 50, 100 mg	50 mg	4 hours	Yes
vardeafil HCl	5, 10, 20 mg	10 mg	36 hours	No
tadalafil	2.5, 5, 10, 20 mg	10 mg	4 hours	No

*\*For men without liver or kidney disease and not taking medications that can affect PDE-5 inhibitor blood levels. The usual starting dose of sildenafil and vardeafil is also lower in men over 65 years of age.*



## Where Can You Go for More Information about Erectile Dysfunction?

For more information about erectile dysfunction and other urologic conditions, please visit the Urology Care Foundation's website, **UrologyHealth.org**. To find a urologist near you, visit **UrologyHealth.org/FindAUrologist**.

We also recommend visiting:

**UrologyHealth.org/EDFS**

**UrologyHealth.org/DiagnosingEDFS**

**UrologyHealth.org/PreventingEDFS**

**UrologyHealth.org/MedicalEDFS**

**UrologyHealth.org/SurgicalEDFS**

The American Association of Sexuality Educators, Counselors and Therapists (AASECT) provides a national listing of sexuality counselors and sex therapists. To locate a therapist in your area, go to **AASECT.org**.

### About the Urology Care Foundation

The Urology Care Foundation is committed to advancing urologic research and education. We collaborate with researchers, health care professionals, patients and caregivers to improve patients' lives. The Urology Care Foundation is the official foundation of the American Urological Association (AUA).

The Urology Care Foundation provides this information based on current medical and scientific knowledge. This information is not a tool for self-diagnosis or a substitute for professional medical advice. It is not to be used or relied on for that purpose. Please see your urologist or other healthcare provider regarding any health concerns and always consult a health care professional before you start or stop any treatments, including medications.

**For more information, contact:**

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