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## Erectile Dysfunction (ED)

### What is Erectile Dysfunction?

Erectile dysfunction, or ED, is the most common sex problem that men report to their doctor. It affects as many as 30 million men.

ED is defined as trouble getting or keeping an erection that's firm enough for sex.

Though it's not rare for a man to have some problems with erections from time to time, ED that is progressive or happens routinely with sex is not normal, and it should be treated.

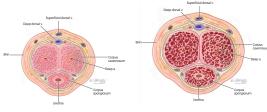
ED can happen:

- Most often when blood flow in the penis is limited or nerves are harmed
- With stress or emotional reasons
- As an early warning of a more serious illness, like: atherosclerosis (hardening or blocked arteries), heart disease, high blood pressure or high blood sugar from Diabetes

Finding the cause(s) of your ED will help treat the problem and help with your overall well-being. As a rule, what's good for your heart health is good for your sex health.

### How Erections Work

During sexual arousal, nerves release chemicals that increase blood flow into the penis. Blood flows into two erection chambers in the penis, made of spongy muscle tissue (the corpus cavernosum). The corpus cavernosum chambers are not hollow.



[Diagram of How Erections Work](#)

[Enlarge](#)

During erection, the spongy tissues relax and trap blood. The blood pressure in the chambers makes the penis firm, causing an erection. When a man has an orgasm, a second set of nerve signals reach the penis and cause the muscular tissues in the penis to contract and blood is released back into a man's circulation and the erection comes down.

When you are not sexually aroused, the penis is soft and limp. Men may notice that the size of the penis varies with warmth, cold or worry; this is normal and reflects the balance of blood coming into and leaving the penis.

Updated June 2018

### Symptoms

With Erectile Dysfunction (ED), it is hard to get or keep an erection that is firm enough for sex. When ED becomes a routine and bothersome problem, your primary care provider or a Urologist can help.

ED may be a major warning sign of cardiovascular disease indicating blockages are building in a man's vascular system. Some studies have shown men with ED are at significant risk of getting a heart attack, stroke or circulatory problems in the legs. ED also causes:

- Low self-esteem
- Depression

- Distress for the man and his partner

If ED is affecting a man's well-being or his relationships, it should be treated. Treatment aims to fix or enhance erectile function, help circulatory health and help the quality of a man's life.

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## Causes

ED can result from health problems, emotional issues, or from both. Some known risk factors are:

- Being over age 50
- Having high blood sugar (Diabetes)
- Having high blood pressure
- Having cardiovascular disease
- Having high cholesterol
- Smoking
- Using drugs or drinking too much alcohol
- Being obese
- Lacking exercise

Even though ED becomes more common as men age, growing old is not always going to cause ED. Some men stay sexually functional into their 80s. ED can be an early sign of a more serious health problem. Finding and treating the reason for ED is a vital first step.

### Physical Causes of ED

ED happens when:

- **There is not enough blood flows into the penis**

Many health issues can reduce blood flow into the penis, such as hardened arteries, heart disease, high blood sugar (Diabetes) and smoking.

- **The penis cannot trap blood during an erection**

If blood does not stay in the penis, a man cannot keep an erection. This issue can happen at any age.

- **Nerve signals from the brain or spinal cord do not reach the penis**

Certain diseases, injury or surgery in the pelvic area can harm nerves to the penis.

- **Diabetes can cause small vessel disease or nerve damage to the penis**

- **Cancer treatments near the pelvis can affect the penis' functionality**

Surgery and or radiation for cancers in the lower abdomen or pelvis can cause ED. Treating prostate, colon-rectal or bladder cancer often leaves men with ED. Cancer survivors should see a Urologist for sexual health concerns.

- **Drugs used to treat other health problems can negatively impact erections**

Patients should talk about drug side effects with their primary care doctors.

### Emotional Causes of ED

Normal sex needs the mind and body working together. Emotional or relationship problems can cause or worsen ED.

Some emotional issues that can cause ED are:

- Depression
- Anxiety
- Relationship conflicts
- Stress at home or work
- Stress from social, cultural or religious conflicts
- Worry about sex performance

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## Diagnosis

Finding the cause of your ED will help direct your treatment options.

Diagnosing ED starts with your health care provider asking questions about your heart and vascular health and your erection problem. Your provider may also give you a physical exam, order lab tests or refer you to a Urologist.

### Health and ED History

Your doctor will ask you questions about your health history and lifestyle. It is of great value to share facts about drugs you take, or if you smoke or how much alcohol you drink. He/she will ask about recent stressors in your life. Speak openly with your doctor, so he/she can help you find the best choices for treatment.

### What Questions Will the Health Care Provider Ask?

Questions about your health:

- What prescription drugs, over-the-counter drugs or supplements do you take?
- Do you use recreational drugs?
- Do you smoke?
- How much alcohol do you drink?
- Have you had surgery or radiation therapy in the pelvic area?
- Do you have any urinary problems?
- Do you have other health problems (treated or untreated)?

#### **Questions About ED**

Knowing about your history of ED will help your health provider learn if your problems are because of your desire for sex, erection function, ejaculation, or orgasm (climax). Some of these questions may seem private or even embarrassing. However, be assured that your doctor is a professional and your honest answers will help find the cause and best treatment for you.

Questions about your ED symptoms:

- How long have you had these symptoms? Did they start slowly or all at once?
- Do you wake up in the morning or during the night with an erection?
- If you do have erections, how firm are they? Is penetration difficult?
- Do your erections change at different times, like when going in a partner, during stimulation by mouth, or with masturbation?
- Do you have problems with sex drive or arousal?
- Do you have problems with ejaculation or orgasm (climax)?
- How is this problem changing the way you enjoy sex?
- Do you have painful erections, feel a lump or bump in the penis or have penile curvature? These are signs of [Peyronie's Disease](#) which can be treated but calls for an expert in urology to assess and manage.

#### **Questions About Stress and Emotional Health**

Your health care provider may ask you questions about depression or anxiety. He or she may ask about problems in your relationship with a partner. Some health care providers may also ask if they may talk to your sex partner.

- Are you often under a lot of stress, or has something recently upset you?
- Do you have any anxiety, depression or other mental health issues?
- Are you taking any drugs for your mental health?
- How satisfied are you with your sex life? Has there been any changes lately?
- How is your relationship with your partner? Has there been any changes lately?

#### **Physical Exam**

A physical exam checks your total health. Examination focusing on your genitals (penis and testicles) is often done to check for ED. Based on your age and risk factors, the exam may also focus on your heart and blood system: heart, peripheral pulses and blood pressure. Based on your age and family history your doctor may do a rectal exam to check the prostate. These tests are not painful. Most patients do not need a lot of testing before starting treatment.

#### **Lab Tests**

Your health care provider may order blood tests and collect a urine sample to look for health problems that cause ED.

#### **Other Tests**

Questionnaires are often used by health experts to rate your ability to initiate and keep erections, gauge your satisfaction with sex and help identify any problems with orgasm.

#### **Advanced Erectile Function Tests**

For some men with ED, specialized testing may be needed to guide treatment or re-assess you after a treatment fails.

- Blood work to check Testosterone and other male hormones
- Blood work to measure blood sugar (Diabetes)
- Ultrasonography (penile Doppler) to check blood flow
- A shot into the penis with a vascular stimulant to cause an erection
- Pelvic x-rays like arteriography, MRI or CT scanning are rarely needed to check ED unless there is history of trauma or cancer
- Nocturnal penile tumescence (NPT), an overnight test to check for sleep erection

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#### **Treatment**

The treatment for ED starts with taking care of your heart and vascular health. Your doctor may point out 'risk factors' that can be changed or improved.

You may be asked to change certain food habits, stop smoking, increase workouts or stop using drugs or alcohol. You may be offered alternatives to the drugs you take. (Never stop or change prescription drugs without first talking to your health care provider.)

Your health care provider may also suggest treating emotional problems. These could stem from relationship conflicts, life's stressors, depression or anxiety from past problems with ED (performance anxiety).

The treatments below are available to treat ED directly.

## **ED Treatments**

Non-invasive treatments are often tried first. Most of the best-known treatments for ED work well and are safe. Still, it helps to ask your health care provider about side effects that could result from each option:

- Oral drugs or pills known as phosphodiesterase type-5 inhibitors are most often prescribed in the U.S. for ED (Viagra, Cialis, Levitra, Stendra)
- Testosterone Therapy (when low testosterone is detected in blood testing)
- Penile Injections (ICI, intracavernosal Alprostadiol)
- Intraurethral medication (IU, Alprostadiol)
- Vacuum Erection Devices
- Penile Implants
- Surgery to bypass penile artery damage for some younger men with a history of severe pelvic trauma. Penile vascular surgery is not recommended for older men with hardened arteries.

## **Oral Drugs (PDE5 inhibitors)**

Drugs known as PDE type-5 inhibitors increase penile blood flow. These are the only oral agents approved in the U.S. by the Food and Drug Administration for the treatment of ED.

- Viagra<sup>\*</sup> (sildenafil citrate)
- Levitra<sup>\*</sup> (vardenafil HCl)
- Cialis<sup>\*</sup> (tadalafil)
- Stendra<sup>\*</sup> (avanafil)

For best results, men with ED take these pills about an hour or two before having sex. The drugs require normal nerve function to the penis. PDE5 inhibitors improve on normal erectile responses helping blood flow into the penis. Use these drugs as directed. About 7 out of 10 men do well and have better erections. Response rates are lower for Diabetics and cancer patients.

If you are taking nitrates for your heart, you SHOULD NOT take any PDE5 inhibitors. Always speak with your health care provider before using a PDE5 inhibitor to learn how it might affect your health.

Most often, the side effects of PDE5 inhibitors are mild and often last just a short time. The most common side effects are:

- Headache
- Stuffy nose
- Facial flushing
- Muscle aches
- Indigestion

In rare cases, the drug Viagra<sup>\*</sup> can cause blue-green shading to vision that lasts for a short time. In rare cases, the drug Cialis<sup>\*</sup> can cause or increase back pain or aching muscles in the back. In most cases, the side effects are linked to PDE5 inhibitor effects on other tissues in the body, meaning they are working to increase blood flow to your penis and at the same time impacting other vascular tissues in your body. These are not 'allergic reactions'.

## **Testosterone Therapy**

In those rare cases where a low sex drive and low blood levels of Testosterone are at fault for ED, Testosterone Therapy may fix normal erections or help when combined with ED drugs (PDE type 5 inhibitors).

## **Vacuum Erection Device**

A vacuum erection device is a plastic tube that slips over the penis, making a seal with the skin of the body. A pump at the other end of the tube makes a low-pressure vacuum around the erectile tissue, which results in an erection. An elastic ring is then slipped onto the base of the penis. This holds the blood in the penis (and keeps it hard) for up to 30 minutes. With proper training, 75 out of 100 men can get a working erection using a vacuum erection device.



**Diagram of a Erectile Dysfunction Vacuum**  
**Enlarge**

## ***Intracavernosal (ICI) and Urethra (IU) Therapies***

If oral drugs don't work, the drug Alprostadiol is approved for use in men with ED. This drug comes in two forms, based on how it is to be used: intracavernosal injection (called "ICI") or through the urethra (called "IU therapy").

## **Self-Injection Therapy**

Alprostadil is injected into the side of penis with a very fine needle. It's of great value to have the first shot in the doctor's office before doing this on your own. Self-injection lessons should be given in your doctor's office by an experienced professional. The success rate for getting an erection firm enough to have sex is as high as 85% with this treatment. Many men who do not respond to oral PDE5 inhibitors can be 'rescued' with ICI.

ICI Alprostadil may be used as a mixture with two other drugs to treat ED. This combination therapy called "bimix or trimix" is stronger than alprostadil alone and has become standard treatment for ED. Only the Alprostadil ingredient is FDA approved for ED. The amount of each drug used can be changed based on the severity of your ED, by an experienced health professional. You will be trained by your health professional on how to inject, how much to inject and how to safely raise the drug's dosage if necessary.

ICI therapy often produces a reliable erection, which comes down after 20-30 minutes or with climax. Since the ICI erection is not regulated by your penile nerves, you should not be surprised if the erection lasts after orgasm. The most common side effect of ICI therapy is a prolonged erection. Prolonged erections (>1 hour) can be reversed by a second injection (antidote) in the office.

Men who have penile erections lasting longer than two to four hours should seek Emergency Room care. Priapism is a prolonged erection, lasting longer than four hours. It is very painful. Failure to undo priapism will lead to permanent penile damage and untreatable ED.

## **Intraurethral (IU) Therapy**

For IU therapy, a tiny medicated pellet of the drug, Alprostadil, is placed in the urethra (the tube that carries urine out of your body). Using the drug this way means you don't have to give yourself a shot, unfortunately it may not work as well as ICI. Like ICI therapy, IU Alprostadil should be tested in the office, before home usage.

The most common side effects of IU alprostadil are a burning feeling in the penis. If an erection lasts for over four hours, it will need medical attention to make it go down.

## **Surgical Treatment**

The main surgical treatment of ED involves insertion of a penile implant (also called penile prostheses). Because penile vascular surgery is not recommended for aging males who have failed oral PDE5 inhibitors, ICI or IU therapies, implants are the next step for these patients. Although placement of a penile implant is a surgery which carries risks, they have the highest rates of success and satisfaction among ED treatment options.

Penile implants are devices that are placed fully inside your body. They make a stiff penis that lets you have normal sex. This is an excellent choice to improve uninterrupted intimacy and makes relations more spontaneous.

There are two types of penile implants.

### **Semi rigid Implant (Bendable)**

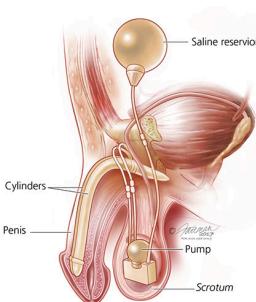
The simplest kind of implant is made from two easy-to-bend rods that are most often made of silicone. These silicone rods give the man's penis the firmness needed for sexual penetration. The implant can be bent downward for peeing or upward for sex.

### **Inflatable Implant**

With an inflatable implant , fluid-filled cylinders are placed lengthwise in the penis. Tubing joins these cylinders to a pump placed inside the scrotum (between the testicles). When the pump is engaged, pressure in the cylinders inflate the penis and makes it stiff. Inflatable implants make a normal looking erection and are natural feeling for your partner. Your surgeon may suggest a lubricant for your partner. With the implant, men can control firmness and, sometimes, the size of the erection. Implants allows a couple to be spontaneously intimate. There is generally no change to a man's feeling or orgasm.

### **Penile Implant**

[Enlarge](#)



### **What is the Surgery Like?**

Penile implants are most often placed under anesthesia. If a patient has a systemic, skin, or urinary tract infection, this surgery should be postponed until all infections are treated. If a man is on blood thinners, then he may need to talk with a medical expert about stopping the medications for elective surgery and healing.

Most often, one small surgical cut is made. The cut is either above the penis where it joins the belly, or under the penis where it joins the scrotum. No tissue is removed. Blood loss is typically small. A patient will either go home on the same day or spend one night in the hospital.

Recovery Time after Penile Implants:

- Most men will feel pain and will feel better with a narcotic pain-relief drug for one to two weeks. After the first week, over-the-counter pain drugs (such as acetaminophen or ibuprofen) may be substituted for narcotic pain drugs.
- Discomfort, bruising and swelling after the surgery will last for a few weeks.
- For the first month, men should limit their physical activity. The surgeon will explain when and how much exercise to do during the healing period.
- Men most often start having sex with their penile implants by eight weeks after surgery. If there is persisting swelling or pain, the use of the implant may be delayed. The surgeon or health care expert in the surgeon's office will talk about how to inflate and deflate the implant.

There are risks to prosthetic surgery and patients are counselled before the procedure. If there is a post-operative infection, the implant will likely be removed. The devices are reliable, but in the case of mechanical malfunction, the device or a part of the device will need to be replaced surgically. If a penile prosthesis is removed, other non-surgical treatments may no longer work.

Most men with penile implants and their partners say that they're satisfied with the results, and they return to more spontaneous intimacy.

## Clinical Trials

Several restorative or regenerative treatments are under investigation for the future treatment of ED:

- Extracorporeal shock wave therapy (ESWT) - low-intensity shock waves that aim to fix the erectile tissues and help restore natural erections.
- Intracavernosal injection of stem cells - to help cavernous tissue regrowth
- Intracavernosal injection autologous platelet rich plasma (APRP) - to help cavernous tissue regrowth

These are not currently approved by the FDA for ED management, but they may be offered through research studies (clinical trials). Patients who are interested should discuss the risks and benefits (informed consent) of each, as well as costs before starting any clinical trials. Most therapies not approved by the FDA are not covered by government or private insurance benefits.

## Supplements

Supplements are popular and often cheaper than prescription drugs for ED. However, supplements have not been tested to see how well they work or if they are a safe treatment for ED. Patients should know that many over-the-counter drugs have been found on drug testing to have 'bootlegged' PDE 5 Inhibitors as their main ingredient. The amounts of Viagra, Cialis, Levitra or Stendra that may be in these supplements is not under quality control and may differ from pill to pill. The FDA has issued consumer warnings and alerts.

More information may be found [here](#).

*Updated June 2018*

## After Treatment

All of the treatments for ED (except for implant surgery) are used as needed for sex and then wear off. The treatments help the symptoms, but do not fix the underlying problem in the penis.

If medical treatments don't work as well as hoped:

- Changing the dosage (for PDE5i, IU or ICI alprostadiol) as prescribed by the doctor may help
- Reviewing the instructions again may reveal a missing step in a treatment plan
- Considering a different path may be necessary: emotional/relationship counselling, a vacuum erection device or penile implant are all good alternatives when others methods fail. Don't give up!

*Updated June 2018*

## More Information

### Frequently Asked Questions

#### How do I know my ED is physical and not mental?

It's hard to know. Health providers now realize that most men have an underlying physical cause of ED. For most patients, there are both physical and emotional factors that lead to ED. It is impossible to prove that there is no psychological part to a man's ED.

#### If I worry about being able to get an erection, can I make a bad condition worse?

Nothing happens in the body without the brain. Worrying about your ability to get an erection can make it difficult to get one. This is called performance anxiety and can be overcome with education and treatment.

#### Can I combine treatment options?

This is often done. However, only combine treatments after talking with your health care provider about this. Erections can last too long with drug therapy, which is dangerous. Ask your doctor for proper instructions.

#### I was fine until I began taking this new drug, what should I do?

Never stop or change a prescription medication without first talking with your health care provider.

Many drugs can cause ED, but some cannot be changed because the drug's benefits are too important for you. If you feel sure that a specific drug has caused the ED problem, ask your health care provider if you can change drugs. If you must stay on the drug that is causing the problem, there are ED treatments that can help.

### What Questions Should I Ask My Health Care Provider?

- What is ED?
- What causes ED? Can it be prevented?
- Can you help me with ED, or do I need to see a specialist? If I need a specialist (Urologist), do you have a referral for me?
- What tests do you suggest to find the cause of my ED, and why?
- Can you check my heart and blood health?
- Are there any lifestyle changes that could help my symptoms?

- What types of treatments are available?
- What treatment do you suggest for me and why?
- What are the pros and cons of each type of treatment you suggest?
- What are the side effects?
- What happens if the first treatment doesn't help?

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### Get the Facts about Erectile Dysfunction

[What is Erectile Dysfunction? - Urology Care Foundation](#)



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