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# Erectile Dysfunction

*By Robert S. Hollabaugh, Jr. MD*

## Introduction

*"Man survives earthquakes, epidemics, the horrors of illness and all the tortures of the soul, but the most tormenting tragedy at all times has been, is, and will be the tragedy of the bedroom."*

*– TOLSTOY*

The current popular terminology for male sexual failure is "erectile dysfunction". But for most men who live daily with this condition the historical term "impotence" is much more meaningful because it describes the depression, frustration, hopelessness, and loss of power that accompany the physical loss. The psychologic burden is enormous, and often produces enough despair to prevent men from seeking an appropriate solution.

The term erectile dysfunction is technically used to distinguish erection failure from other male sexual problems such as loss of sexual drive, infertility, and problems with ejaculation and orgasm. All men at every age experience occasional sexual failure because of stress, fatigue, acute illness, alcohol, or discordant relationships. While this is momentarily alarming and distressing, it is also transient and usually does not require any medical intervention. On the other hand, the persistent inability to get and keep an erection adequate to initiate and complete satisfactory sexual intercourse is a problem that should be evaluated by a health professional .

Erectile dysfunction syndrome (EDS) is very common, affecting half of all men over age 50 and many men under age fifty, particularly those with early vascular disease, diabetes, years of cigarette smoking or alcohol abuse. The onset of EDS is almost always gradual and the early indicators are often subtle and unrecognized. Early in the process loss of early morning erections may occur. Then getting an erection may begin to take longer, and occasionally the erection won't last throughout intercourse. The ability to get a second erection becomes more difficult. Fatigue, stress, or any distraction makes intercourse more difficult. More and more stimulation is required to get and keep the erection. The occasional failure becomes more commonplace, and it is at this point that the man usually realizes that there is a problem.

## Anatomy

What is necessary for a man to get and maintain a good erection? Four components must be in order for normal erectile function:

- A brain and nervous system
- A heart and peripheral blood vessels
- Available male sexual hormone (testosterone)
- A normally functioning penis.

The largest human sexual organ is the brain. It is the seat of sexual orientation, desire, stimulation, spontaneity, and orgasm. The spinal cord and peripheral nerves must also be intact in order to carry the messages between the brain and the penis.

During a normal erection, the blood flow into the penis increases by 700% and this massive flow must be maintained throughout the entire erection time. If not, the erection quality is only partial or it disappears before intercourse is complete. Cardiac function and blood flow through the arteries must be adequate for normal erectile function.

Testosterone is "the male hormone" and is responsible for sexual desire. While testosterone is necessary for an erection, it is not sufficient alone to create an erection – in other words some men with normal hormone levels cannot get good erections. Clearly lack of normal testosterone can prevent normal erections. If levels of testosterone are normal, extra testosterone is not thought to further enhance erections.

The erectile system requires coordination of many diverse components: both physical and psychological. The **physical demands** for a good erection are severe: massive and sustained increase in penile blood flow, perfect functioning of the nerve pathways, adequate cardiac function during physical stress, all occurring in a background environment of adequate testosterone. The **psychologic demands** are equally severe: sexual desire, absence of fatigue, ability to dismiss stress, absence of fear and anger, cooperative and supportive partner, and perfect timing. It is therefore not surprising to realize that for the man, erectile function becomes the ultimate natural "stress test", sometimes revealing problems with both the body and the mind. Any stress or that detracts from the immediate focus on sex can cause erection difficulties. Everyone has experienced this at some point. If you have been involved in sex

and the phone rings or someone knocks on the door, it does not take 10 minutes for the erection to disappear – it is gone instantly. This is a natural response, but perfectly illustrates the fact that anything that distracts from the focus of sex will affect the quality of the erection.

## Causes

While there are many causes of erectile dysfunction, it is most important to understand that EDS is a condition, not a specific illness. EDS is commonly a symptom arising from one or several different medical illnesses. Treating the medical condition may or may not reverse the impotence. On many occasions the sexual dysfunction can be treated directly and concurrently with the underlying illness.

### NEUROLOGIC DISEASE

Diseases that affect the brain and spinal cord often interfere with normal erections. These can be traumatic such as brain or cord injury from accidents, or they may be degenerative changes such as occur in multiple sclerosis or Parkinson's disease.

### CARDIOVASCULAR DISEASE

Arteriosclerosis reduces blood flow throughout the arterial system by narrowing the channel inside the vessels and by making the walls of the vessels rigid and incapable of expansion. When this process happens in the heart, heart attacks and cardiac disease develops. When this happens to blood vessels in the penis, the 700% increase in blood flow simply cannot be achieved and poor erections result. This process is the leading cause of EDS in men over 60. It is very important to understand that EDS is "vascular", especially for men who have no obvious heart trouble, as the erectile dysfunction can be the earliest warning of a developing heart problem. Things that treat heart and vascular disease can help improve the EDS. So remember, what's good for the heart is good for erections! Hypertension, high cholesterol and lipids, and diabetes all contribute to vascular disease and arteriosclerosis.

### DIABETES

Diabetes deserves special attention in any discussion of EDS. Diabetes delivers a "double whammy" to the erectile system, deteriorating the function of both nerves and blood vessels. Diabetes is also associated with two other major problems: lack of exercise and obesity.

- Diabetic men are 2–5 times more likely to develop EDS than non-diabetics.
- Diabetic men develop impotence 10 to 15 years sooner than non-diabetics.
- Diabetic men have a 70% to 95% risk of developing EDS during their lives.

Treating diabetes does not erase the risk of EDS; however, control of diabetes greatly slows down the processes that affect the blood vessels and nerve tissues. Take control!

### HYPOGONADISM

Low testosterone is a proven cause of impotence, but much controversy swirls around how low is too low. Testosterone production gradually decreases in all men after age 50 but these men do not necessarily develop symptoms of low testosterone. In addition to lack of sexual desire, low testosterone symptoms may include tiredness, lethargy, or depression. Only by measuring the testosterone can one determine if a problem exists. Testosterone levels can be further affected by obesity, herbal supplements, and stress. Correcting situations where there is low testosterone can help restore erectile function.

### PELVIC CANCER

Treatment of pelvic malignancies can result in impotence, most commonly prostate cancer and colon cancers near the rectum. When these tumors are treated with surgery, radiation, or freezing (cryotherapy), damage can occur to both the nerves and blood vessels that course through the pelvis to the penis. In many advanced cancer situations, the necessary medical treatment knowingly causes impotence, and patients must choose to trade quality of life for length of life.

### ALCOHOL

Alcohol is a common and underestimated cause of impotence. Alcohol interferes with erections primarily through the nervous system by suppressing mental function and interfering with nerve transmission. Chronic excessive alcohol causes permanent nerve damage both in the brain and in the periphery.

### SMOKING

Tobacco smoking causes early and severe impotence, sometimes by age 30. A male smoker with hypertension has an impotence risk seven times greater than normal. Nicotine causes immediate restriction of blood vessel caliber that may last for up to 8 hours. Long-term smoking causes damage to blood vessels and severe hardening of the arteries. The impotence associated with smoking may be irreversible and responds poorly to pharmacological therapy. These same changes occur in women.

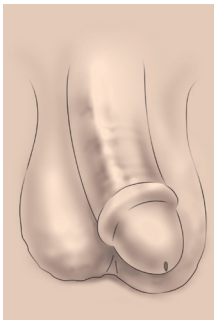
### PSYCHOLOGICAL CAUSES

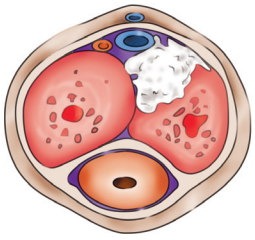
As discussed, approximately 90% of all erectile dysfunction has a physical cause. The other 10% of cases occur in the mind, and not the body, and are classified as psychologic or psychogenic. Depression, anxiety, marital and job stress, money worries, and guilt can all interfere with erections. The anxiety created by repeated sexual failure can then create more anxiety and failure in a vicious chronic cycle referred to as "performance anxiety." Anything that detracts from focus on sex can ruin the moment. As everyone knows, a simple "knock on the door" or a "telephone interruption" can make an erection go away immediately. Ringing phones are distractions but so are interpersonal problems, job problems, health problems, and anxiety in general. These causes can be very difficult to treat because they are often deeply rooted in the personality and lifestyle of the patient. The most successful therapies involve interrupting the vicious cycle of performance anxiety to restore confidence.

### PEYRONIE'S DISEASE

Some erectile dysfunction may start with a noticeable change in the shape of the penis. While some mild amount of curve is normal, any increase or severe curvature introduces the possibility of Peyronie's disease. Peyronie's disease (**PD**) results from **scar tissue forming**

PEYRONIE'S DISEASE





**in the penile shaft**, which reduces the normal elastic properties of the penis. The result can range from mild curvature to pain to loss of the erection completely. **Trauma** to the penis has been suggested as a cause, but in many cases no obvious event for the scarring is known. A common scenario involves vigorous sex, with the woman on top, leading to a buckling injury of the penis caused by crooked entry.

The diagnosis is made based on the exam. Rarely are x-rays or other diagnostic tests needed. A firm area, or **plaque**, can be felt along the penile shaft. Because of the lack of flexibility of the plaque, the penis curves on the same side during erection. It may or may not be painful with erection.

Treatment of Peyronie's disease focuses on relieving pain and straightening the penis. Peyronie's disease may resolve spontaneously, so a period of watchful waiting, for 6-12 months, is encouraged until the disease stabilizes. Medications, such as **Vitamin E** or Potaba, may be tried early on and function to try to soften the plaque. Injections into the penis are uncommonly attempted. If the erections don't improve with the above, **surgery** to remove the scar or straighten the curve may be considered. In general, surgery is recommended only in cases where the curvature is so severe that sexual activity is not possible. In some cases, placement of a penile prosthesis may be necessary to restore erectile function. Peyronie's can be managed and corrected, but it can also be a lifelong problem.

## Treatments Options

With so many factors contributing to impotence, what's a man to do? First, acknowledge the problem. This is always the first step to change. Then above all, do something different! Albert Einstein's definition of insanity is "doing the same thing over and over and expecting the result to be different." Prevention is still the best cure, even if the process has already started. Remember "EDS is vascular." Get off the couch and start exercising regularly. Get on a healthy diet. Lose weight. Lower your blood pressure, cholesterol, and blood sugar. Stop smoking. Stop drinking too much alcohol. Once you've done this, then you must keep doing it forever.

Next, see a physician. Have your blood glucose, bioavailable testosterone, and lipids checked. Then follow your physician's recommendations.

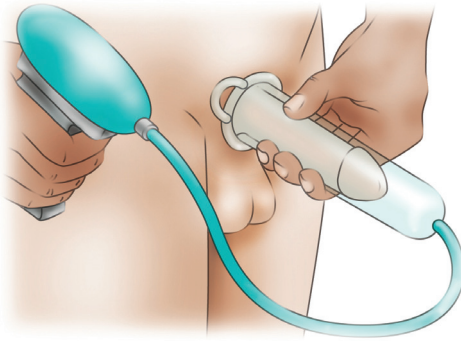
### ORAL MEDICATIONS (PHOSPHODIESTERASE INHIBITORS)

In general, every man with persistent sexual dysfunction should be given a trial on a phosphodiesterase inhibitor medication like **Levitra**, **Viagra**, or **Cialis**. These medications intensify natural erections by increasing blood flow into the penis. These medications work for 60%–70% of all men and are the single most successful and effective therapy ever devised for EDS. Patients must receive proper instructions because these medications work well only when taken properly, taken consistently, and activated by sexual stimulation. Some patients absolutely cannot safely take these types of medications: patients on nitroglycerin, patients who have unstable angina, or patients who have uncontrolled congestive heart failure. For properly chosen patients, the side effects are minimal. The cost is about $10–20 per dose. It's worth it! In general, these medications are taken 15–30 minutes before sexual activity. The body needs to go thru the natural stimulation to create an erection. In other words, the erection does not just appear. These medicines intensify the body's own natural erection.

### VACUUM ERECTION DEVICES

Vacuum Erection Devices (VED) function on the basis of using vacuum pressure to draw blood into the penis. A hard plastic tube is placed over the penis and a vacuum seal is created. Pumping up the device creates a vacuum effect inside the tube and draws blood into the penis. When the penis is erect, a band is slipped over the shaft of the penis to trap the blood in the penis and maintain the erection. It is very safe, but does require some practice to use. They usually cost about $250–$500.

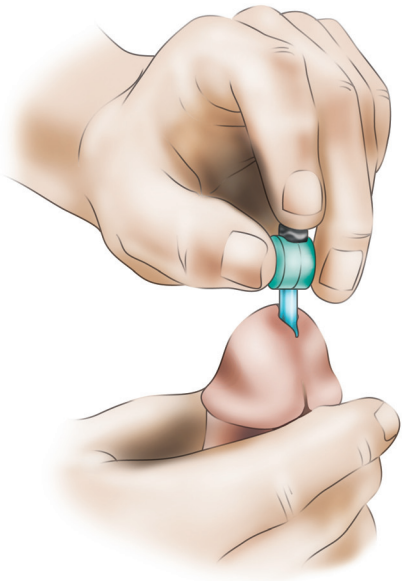
VACUUM ERECTION DEVICES



### URETHRAL SUPPOSITORIES

Urethral suppositories (**MUSE alprostadil**) are erection medications that are inserted down the tip of the urethra. When placed into the urethra, the medication is absorbed directly into the penile tissues, where the chemical then causes blood to flow into the penis to create an erection. Sexual stimulation and light activity will additionally increase blood flow into the penis and further the

URETHRAL SUPPOSITORIES

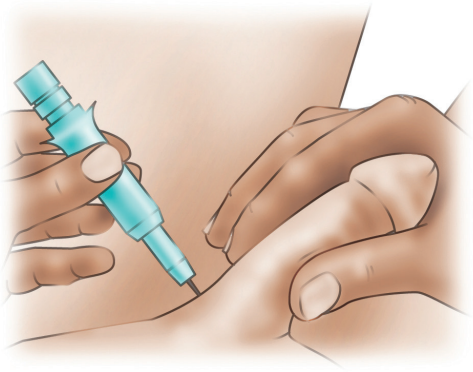


erection. When using this product, patients need to remember to urinate BEFORE placing the suppository. If you place it and then urinate immediately, all of the medication will be washed out and lost. MUSE is well tolerated once patients are trained how to use it. While it may sound painful to put medication down the opening of the penis, it is not, and it is easy to learn how to do. Occasionally, patients experience a burning sensation in the shaft of the penis due to the absorption of the medication, but this is usually minimal.

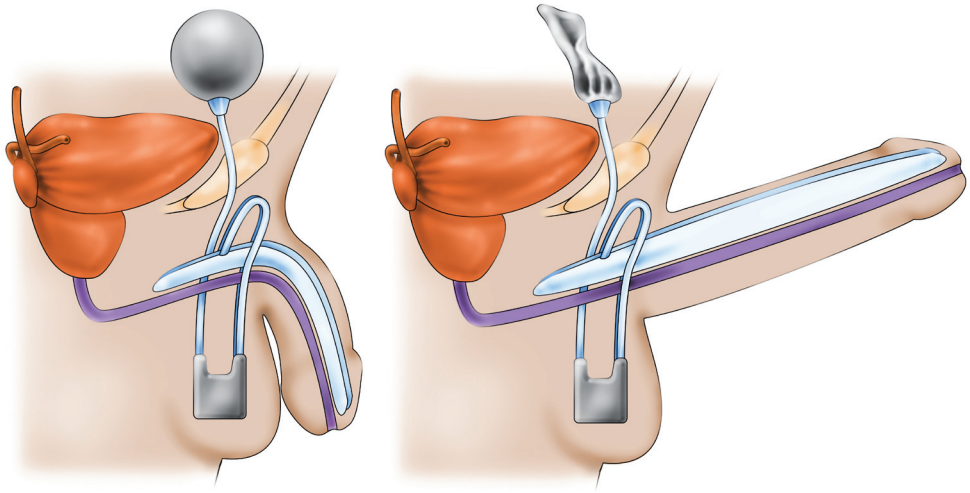
**PENILE INJECTION THERAPY**

Penile Injection therapy involves direct injection of a chemical (**Caverject, Edex, Alprostadil, and Tri-Mix**) into the shaft of the penis with a needle and syringe. While this initially sounds like a horrible option, it is not nearly as bad as it sounds. A childhood fear of needles makes many people shy away from this option. Once trained nearly everyone comments that there is no pain. The patient mixes up the chemical and injects a certain amount into the penile shaft. The goal is to get the chemical deep into the penile shafts where it will cause blood to flow into the penis. Typically, patients select a spot on the side of the penis near the base (not at the head of the penis). You should avoid the top side (large veins) or bottom side (water channel). After injection, the erection will develop within 5–15 minutes. Sexual stimulation and light activity will additionally increase blood flow into the penis and further the erection. Patients will determine the dose of medication to create a durable erection that lasts approximately 15–30 minutes. It is possible to create a dangerous situation if the erection lasts much longer than that. If the rigid erection lasts more than 4 hours (called Priapism), you should go immediately to the nearest Emergency Room. There, doctors can usually inject a medication to reverse it. Danger results after 4 hours because fresh blood with oxygen cannot get to the penis and the penile tissues can die. Priapism is extremely rare if the medication is used appropriately.

SELF INJECTION



PENILE PROSTHESIS



**PENILE PROSTHESIS**

The most aggressive therapy for EDS is surgical implantation of a penile prosthesis. The prosthesis consists of a mechanical hydraulic device. The device is placed surgically in a hospital under full anesthesia. Two cylinders are surgically placed in the shaft of the penis with a small pump device in the scrotal sac. Patients pump the device to inflate the cylinders and create a rigid penis. After sex, the cylinders can be decompressed. The result is functionally and cosmetically excellent, and penile sensation, orgasm and ejaculation remain perfectly normal. While penile prosthesis implantation is usually considered a back-up or last line therapy for men who fail other medical and injection treatments, it should probably be considered as a first option for men who have irreversible vascular disease or nerve damage. The patient-partner satisfaction rate is 95% and the need for any further therapy or management ceases.

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