

Erectile Dysfunction

A plain-English guide for you and your family

WHAT IS HAPPENING

An erection happens when the lining of tiny blood vessels in the penis (the endothelium) releases a messenger called nitric oxide. That signal tells the smooth muscle wrapped around those vessels to relax, so blood rushes in and fills spongy chambers. The rush of blood traps inside, the penis gets firm, and stays that way until the signal turns off. When something breaks that chain — stiff vessels from diabetes or smoking, damaged nerves from surgery or spinal injury, low testosterone, medicines that block the signal (like some blood pressure pills, antidepressants, or opioids), performance anxiety, or scar tissue bending the penis (Peyronie disease) — not enough blood gets in or the blood leaks back out too soon, and the erection fails. The symptom you see (cannot get or keep it hard) is the downstream result; the real break is always upstream in one of those steps. None of it is random. Trace the clues backward: if morning erections disappeared too, it is usually physical (vessels, nerves, hormones); if they are still there, it is often the mind. And because the same stiff, sick vessels feed the heart, trouble with erections can be the body's early alarm that a heart attack or stroke is years away — sometimes the only alarm you get.

What you might feel

- Trouble getting or keeping an erection firm enough for sex
- Erections that are softer than they used to be
- Normal erections during sleep or in the morning, but trouble during partnered sex
- Trouble began suddenly after a stressful event, new relationship worry, or depression
- Gradual worsening over months or years, especially with diabetes, high blood pressure, or high cholesterol
- Low interest in sex or low energy overall
- Taking medicines for blood pressure, depression, or prostate enlargement
- Pain, numbness, or a curve in the penis

Call the doctor right away if...

- New trouble with erections plus chest pain, shortness of breath, or pain in the legs when walking — may signal blocked arteries in the heart or legs that need urgent care
- Sudden complete loss of all erections including morning ones, especially after pelvic surgery, radiation, or a bike or straddle injury — may mean nerve or blood-vessel damage
- Erection lasting more than four hours (priapism) — trapped blood can clot and destroy the spongy tissue, causing permanent damage if not drained quickly
- New numbness or tingling in the groin, trouble controlling the bladder or bowels, or weakness in the legs — may signal spinal-cord compression that needs emergency imaging and treatment

What the care team will do

- Screen for heart disease by asking about chest pain during exercise and checking blood pressure and pulse in both arms
- Measure waist size, body mass index, and ask about exercise habits to identify obesity and sedentary lifestyle
- Check hemoglobin A1c or fasting blood sugar to find undiagnosed diabetes
- Review the medicine list for beta-blockers, thiazide diuretics, SSRIs, finasteride, opioids, and antihistamines that block erections
- Ask private questions about sadness, worry, and relationship conflict in a calm and nonjudgmental way
- Teach that PDE5 inhibitors like sildenafil or tadalafil work only with sexual stimulation and take 30 to 60 minutes to start
- Document smoking status and offer referral to a tobacco cessation program
- Reassure the patient that erection problems are common, treatable, and not a sign of lost manhood

Medicines you may be given — and why

Sildenafil (Viagra)

An erection happens when blood vessels in the penis relax and open up so more blood can flow in. A chemical called cGMP tells those vessels to relax; another enzyme, PDE5, breaks down cGMP and ends the erection. Sildenafil blocks PDE5, so cGMP lasts longer and the blood vessels stay open, making the erection firmer and easier to get. It does NOT start an erection on its own—you still need sexual arousal; the pill just helps your body follow through once you are turned on.

Tadalafil (Cialis)

Tadalafil works the same way as sildenafil—it blocks the enzyme PDE5 so that cGMP (the chemical that relaxes blood vessels in the penis) sticks around longer. This keeps the vessels open and makes erections easier when you are aroused. The main difference is how long it lasts: tadalafil stays in your body much longer (up to 36 hours), so you have a wider window of time to have sex without needing to plan around a pill. Like sildenafil, it does NOT start desire or arousal; you still need to be turned on for it to work.

Vardenafil (Levitra, Staxyn)

Vardenafil blocks the enzyme PDE5, which normally breaks down cGMP (the chemical that relaxes blood vessels in the penis). By blocking PDE5, cGMP lasts longer, blood vessels stay open, and blood flows in to create an erection when you are sexually aroused. It works the same way as sildenafil and tadalafil but may act a little faster in some people. It does NOT create arousal or desire—you still need to be turned on for the drug to help.

Avanafil (Stendra)

Avanafil blocks the enzyme PDE5, so cGMP (the chemical that tells blood vessels in the penis to relax and open) stays around longer. This makes it easier to get and keep an erection when you are sexually aroused. Avanafil is newer and may work a bit faster than older PDE5 inhibitors—some men can take it as little as 15 minutes before sex. Like the others, it does NOT create arousal; you still need to be turned on for it to help.

Testosterone replacement (injections, gels, patches)

Testosterone is the main male sex hormone made in the testicles. It drives libido (sex drive), helps the brain send signals for arousal, supports the health of blood vessels and nerves in the penis, and keeps energy and mood steady. When testosterone is low (hypogonadism), desire drops and erections become harder to get—even if blood flow is fine. Testosterone replacement brings the hormone level back up, which can restore libido and improve erections IF low testosterone was the root problem. It does NOT help if testosterone is already normal—adding more will NOT make erections better and can cause side effects.

Alprostadil urethral suppository (MUSE)

Alprostadil is a man-made copy of prostaglandin E1, a natural chemical that tells blood vessels to relax and open. You insert a tiny pellet of alprostadil into the opening of the urethra (the tube in the penis where urine comes out). The drug is absorbed through the urethral lining, travels into the nearby erectile tissue, and directly relaxes the blood vessels so blood flows in and creates an erection—usually within 10 to 15 minutes. This method skips the need for an injection and works even if nerve signals are damaged (for example, after prostate surgery).

Alprostadil intracavernosal injection (Caverject, Edex)

Alprostadil is a man-made version of prostaglandin E1, a natural chemical that tells blood vessels to relax. You inject a tiny dose directly into the side of the penis (into the corpus cavernosum, the spongy tissue that fills with blood during an erection). The drug works right at the site—it relaxes the blood-vessel muscle, blood rushes in, and an erection forms within 5 to 20 minutes. This method works even when nerves are badly damaged (for example, after prostate surgery or spinal-cord injury) because it bypasses the need for nerve signals or arousal.

Where this information comes from

- AUA Guideline on Erectile Dysfunction 2018
- American College of Cardiology/American Heart Association
- UpToDate
- Endocrine Society Clinical Practice Guideline

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