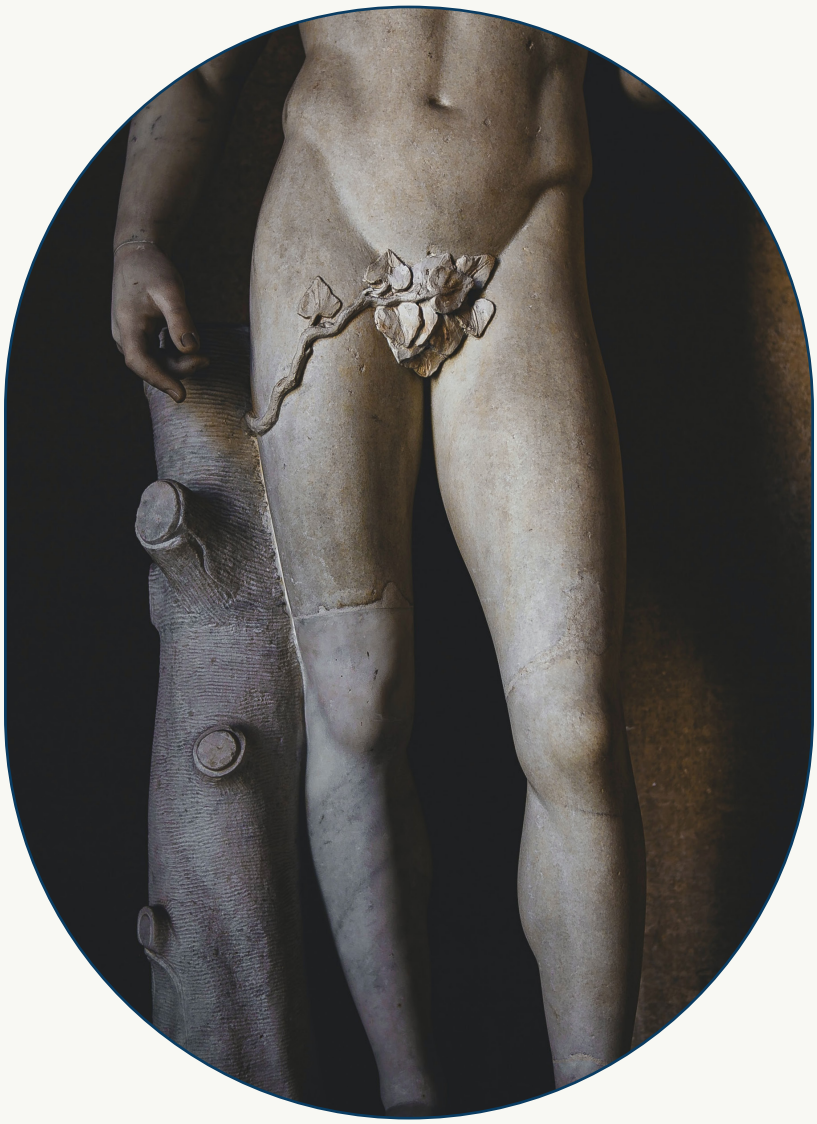
FRENCHIE M.D.

FRICTION FREE HEALTHCARE



ERECTILE DYSFUNCTION

FACT SHEET

AN INTRODUCTION INTO ERECTILE DYSFUNCTION

Erectile dysfunction is one of the most common male sexual dysfunctions, affecting over 40 million men worldwide [1][2]. An Australian survey showed that at least one in five men over the age of 40 years experiences erectile problems, and about one in ten men is completely unable to have erections [1]. You are not alone. It is formally defined as the inability to achieve an erection firm enough for penetrative sexual intercourse. While not a disease, it can be a symptom of physical or psychological/social issues. We understand that ED can be a source of stress for many men, but the good news is there are treatments and strategies available to help improve your sexual well-being. Let's dive in.

What happens in a 'normal' erection?

Erections are a complex physiological process. To understand how they happen, it's essential to first learn the penis's anatomy. Take a look at the cross section below.

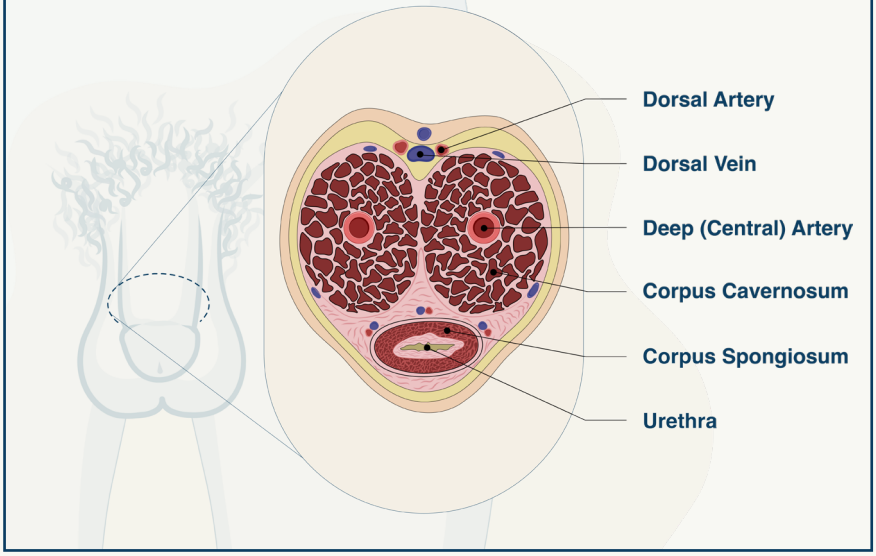
The penis contains two main columns of spongy tissue: the Corpus Spongiosum and the Corpus Cavernosum, both innervated by the Dorsal Nerve. This tissue is encapsulated by fibrous tissue, known as the Tunica Albuginea and then skin. Usually, when the penis is stimulated, nerve signals are fired (from the dorsal nerve to the pudendal and eventually S2-S4 spinal roots).

The spongy tissue expands to allow increased blood flow through dilation of arteries and arterioles (blood vessels carrying oxygenated blood towards tissues), allowing the blood to fill these spongy reservoirs and be stored for a period of time. This engorgement compresses the penile veins, specifically the subtunicular venular plexus internally and the emissary veins externally, preventing blood from leaving the penis. This maintains the erection as the penis stretches and fills within its inner casing [3]

With changes in both the spongy tissue and blood vessels, adjacent muscle cells of the ischiocavernosus muscles contract in reaction. During this process, chemicals are locally released; some promote and maintain an erection, while others cause the penis to become flaccid (soft).

With this understanding, we can see how various factors affecting the vascular, nervous, or endocrine systems might cause or contribute to ED.

ANATOMY OF THE PENIS



SYMPTOMS & CAUSES
ERECTILE DYSFUNCTION

What are the symptoms of Erectile Dysfunction?

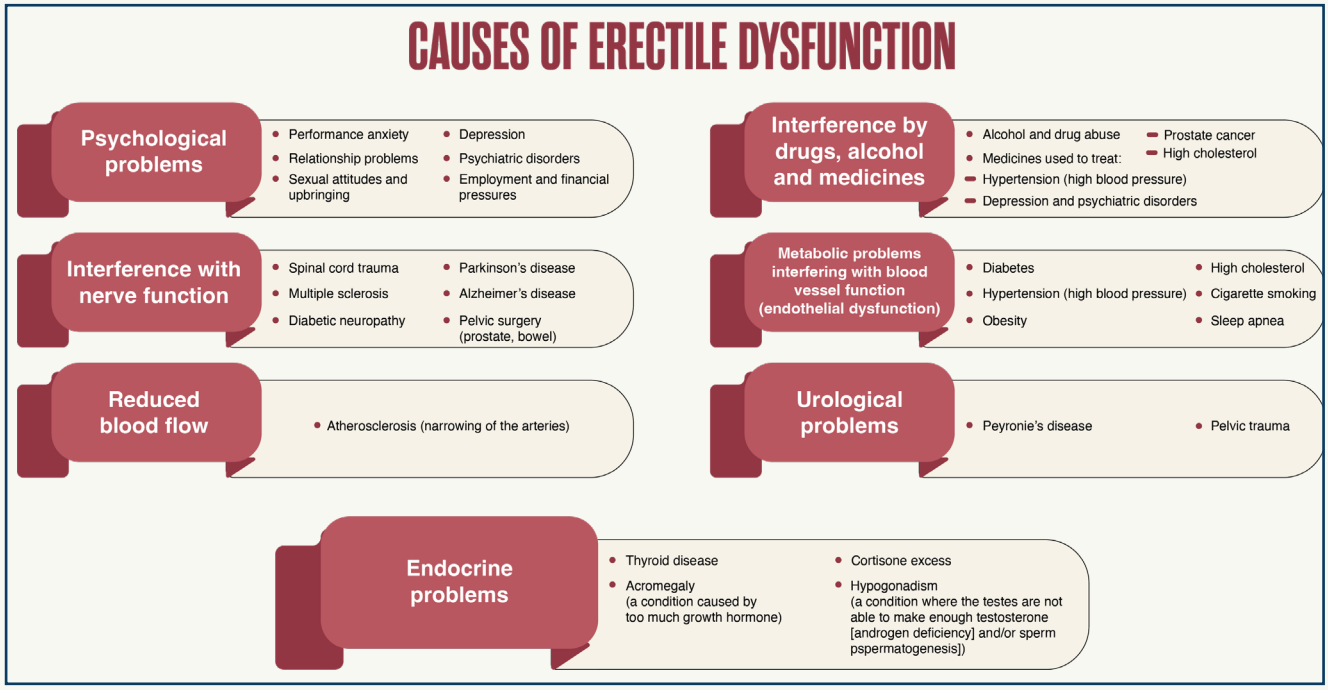
Symptoms of ED include:

- Being able to get an erection sometimes, but not every time you want to have sex
- Being able to get an erection, but not having it last long enough for penetrative sex
- Being unable to get an erection at any time

Are there different types of ED?

Yes, there are 3 main subtypes of Erectile dysfunction: organic (primary), psychogenic (causes by psychological or social problems), and mixed. This will be explored further below.

What causes Erectile dysfunction?



There are many causes for Erectile dysfunction and people may have one or several causes contributing to their symptoms. They are classified above [2].

Are there any risk factors for getting Erectile dysfunction?

Age is the most significant risk factor for ED. While up to 10% of the male population under the age of 45 might experience this, by the age of 80, nearly all men suffer with the condition [2]. However, aging in itself doesn't cause ED; rather, it's more likely that increased underlying conditions contribute to its presence.

Furthermore, men who have diabetes are 2-3 times more likely to experience erectile dysfunction due to damage to the peripheral nerves of the penis [4]. Cardiovascular disease and risk factors such as high blood pressure, obesity, high cholesterol are also associated with an increased presence of ED. An umbrella review of five meta-analyses and two systematic reviews indicated that patients with ED faced approximately 1.5 times higher risk of cardiovascular diseases—including coronary heart disease, heart attack, and stroke—compared to other patients [5].

Lastly, depression, stress, and relationship issues are commonly associated with ED. In a meta-analysis of 49 studies, having ED was linked to a 1.39 times greater risk of depression, while the presence of depression correlated with a 2.92 times increased risk of ED [6].

How can I manage Erectile Dysfunction?

A holistic approach is best when it comes to ED and involves a stepwise approach: identifying any underlying causes, conditions and culprit medications, reducing cardiovascular risk factors if present, optimising lifestyle, and then initiating medical, psychological and interventional treatments. This includes improving diet, sleep, exercise, reducing alcohol consumption, managing your mental health through psychosocial counselling and therapy, devices, and of course oral and topical medications.

1- Optimising Lifestyle

Achieving as healthy a weight as possible for your height, and a waist circumference <94 cm through regular exercise that you enjoy can reduce your risk factors for ED and improve both your physical and mental well-being. The current recommendations are to try and move every day, with 2.5-5 hours of moderate intensity (brisk walk, golf) or 1.25-2.5 hours of vigorous exercise (fast cycling, jogging, soccer) a week [7].

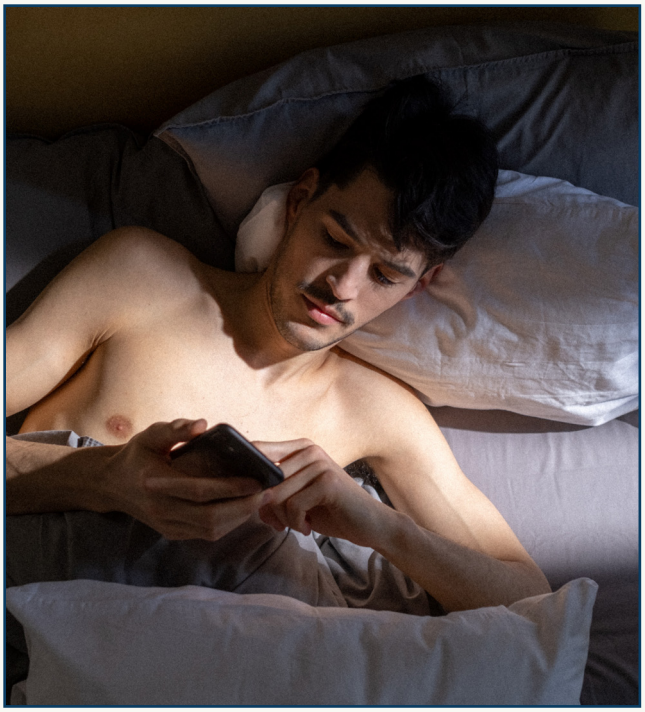
A healthy varied diet with minimal processed food and more fresh fruit and vegetables, low in salt and saturated fats, such as the Mediterranean diet, can help reduce risk factors like high blood pressure, and high cholesterol [8].

2- Managing psychosocial stressors

Life and relationships can be challenging even for the best of us, with numerous factors leading to stress and tension. These stresses can manifest as issues and dissatisfaction in the bedroom. When this becomes an ongoing problem, talking to a skilled therapist, counsellor, or coach can be incredibly helpful. There is a lot of stigma around seeking psychological support, but we encourage you to explore this sooner rather than later, as the longer erectile dysfunction is left untreated, the greater the effect on relationships, and a vicious cycle can ensue.

3- Reducing cardiovascular risk factors

Your doctor may explore blood tests to check cholesterol levels, or measure your blood pressure and instigate a combination of lifestyle and medication based interventions to bring these contributing risk factors down (cholesterol and blood pressure medications when needed, smoking cessation, and adjusting your diet, such as reducing caffeine, alcohol, saturated fat and, salt consumption, to name a few.).



4- Oral therapies: Phosphodiesterase-5 inhibitors

The rationale for the use of PDE5 inhibitors is based upon the role of nitric oxide-induced vasodilation [9]. It is important to understand that phosphodiesterase-5 inhibitors do not create sexual stimuli. They only help with getting and maintaining an erection when there is adequate external sexual stimulation.

PDE5 inhibitors include medications such as sildenafil (25-100 mg), tadalafil (5-20 mg), vardenafil (5-20 mg) and avanafil (50-200 mg). The American Urological Association Guideline states that sildenafil, tadalafil, vardenafil and avanafil have similar efficacy in men with erectile dysfunction [9].

Phosphodiesterase-5 inhibitors work best if taken 1–2 hours before sexual intercourse. Tadalafil has a 2-hour lead-in time, when taken as required.

Side effects can occur with medications, and are discussed in more detail below.

5- Vacuum devices

Vacuum devices work on a principle of vacuum constriction therapy. They are cylindrical tubes placed over the penis, and as air is pumped out of the cylinder, the pressure build-up helps to draw blood into the penis, causing the penis to enlarge, mimicking natural physiology. A rubber ring is then placed around the base of the penis to sustain the erection [2][11].

6- Penile injections

Penile injections such as Alprostadil, a synthetic analog of prostaglandin E1 (PGE1), work by increasing peripheral blood flow (vasodilation) and smooth muscle of the corpus cavernosum relaxation, hence increasing the diameter of the cavernous arteries leading to an erection [12].

7- Penile prosthesis

Penile implants are devices known as prostheses that can restore erections and are surgically inserted into the penis. This allows erections through squeezing on a specific part of the device and has a reported 75-98% satisfaction rate for patients and partners [13].

8- Penile extracorporeal shock therapy

This involves low intensity shock sound waves administered to the penis externally, to stimulate penile tissue, and encourage blood flow. It has also been theorised to assist the growth of new blood vessels through stem cell induction, but more research is needed.

How do I take my tablets?

Phosphodiesterase-5 inhibitors work best if taken 1–2 hours before sexual intercourse [10]. Tadalafil has a 2-hour lead-in time when taken on demand and is typically prescribed as a daily low dose, such as 5 mg. Daily dosing is sometimes the treatment pathway of choice for men who have benign prostatic hyperplasia, as it has the benefit of also improving lower urinary tract symptoms [10].

Large meals and alcohol should be avoided before before taking your tablets. However, when phosphodiesterase-5 inhibitors are taken daily, food and alcohol have less impact on the response.

I have started my tablets but I'm not seeing an improvement just yet. Why is this?

Depending on the severity of your erectile dysfunction, your doctor will decide on an appropriate starting dose, assessing your response and side effects. It is important to follow all instructions, take the drug as prescribed (on an empty stomach) and, on five to six occasions, self assess the treatment effect.

This information can then be shared with your doctor. Failure to do this could lead to a suboptimal or no response. Which in turn, could lead to an inappropriate use of higher doses or the addition of other treatment options.

We want to avoid this and get you the best response, so remember to be transparent and informative with your treating doctor.

Other things like anxiety, alcohol, excessive expectations of how these drugs should work, and not waiting long enough for them to work can also affect response, so if you are experiencing any of these issues, just be honest with your doctor so they know what factors might be at play to inform their care and dose titration, to get you the best results possible.

Studies have shown that with proper instruction and counseling, approximately 25 to 30 percent of patients initially labeled as nonresponders to PDE5 inhibitor therapy would actually then benefit from this therapy [11].

What side effects should I be aware of when taking PD-5 inhibitors?

Common side effects include: flushed face, headaches, blocked nose, and gastric reflux. However, most of these adverse effects have a dose-response pattern i.e. higher doses cause more side effects.

Studies show that the average rates are similar across the phosphodiesterase-5 inhibitors except for dyspepsia (lowest rates reported with avanafil), flushing (lowest rates reported with tadalafil), and myalgia (lowest rates reported with vardenafil and avanafil) [14].

Tadalafil is associated with low back and leg pain which often goes away when the drug is stopped.

Rarer side effects include vision disturbance (Sildanefil can rarely cause blue vision) nonarteritic anterior ischemic optic neuropathy (NAION), and hearing loss.

If you experience any of these common or rarer symptoms, it is important to stop the medication and inform your doctor.

What are the contraindications to oral therapy?

You must not use this therapy in conjunction with nitrates, and exert caution when using alpha adrenergic agonists (e.g. tamsulosin) to avoid drops in blood pressure (hypotension).

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