

How to Treat

PULL-OUT SECTION

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This is the first week of a two-part series on erectile dysfunction. Part 1 discusses initial evaluation and workup and gives an overview of therapy. Part 2 next week looks at treatment options in depth.

Introduction

IN the past 30 years, the male sexual health treatment paradigm has evolved from a psychosexual model to a new model, in part prompted by advances in basic science. Such developments include oral and intracavernosal-injection pharmacotherapy, vacuum constriction devices and penile prostheses. This progress has coincided with an increased understanding of the nature of male sexual health problems, and epidemiological data that confirms that these problems are widely prevalent and the source of considerable morbidity, both for individuals and within relationships.

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Erectile dysfunction – part 1

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Epidemiology

Prevalence

ACCURATE figures for the prevalence of erectile dysfunction (ED) in populations around the world are difficult to obtain. However, data from several Australian, US and UK studies are similar, and are regarded as the best estimate. The prevalence of complete ED is estimated to be about 5% among men in their 40s, 10% among men in their 60s, 15% among men in their 70s and 30-40% among men in their 80s. From these figures it has been estimated that there may be 20 million men in the US, and perhaps as many in Europe, who have significant problems with erectile function. It is projected that by 2025, ED will affect 322 million men worldwide.

Prevalence studies show that, when controlling for other factors, increasing age is a strong risk factor for ED, especially after 50 years of age (figure 1). In addition, conditions such as obesity, diabetes, hypertension, hypercholesterolaemia and vascular disease — all present in Western populations in epidemic proportions — are causative factors (table 1). Although the incidence of ED rises significantly with increasing age, recent studies indicate that a large percentage of men remain sexually active into their 70s and beyond; 55-70% of men aged 77-79 are sexually active, with about six sexual activities per month. Only half of the men who self-report ED are concerned about it.

Pathophysiology

Penile erection is a neurovascular phenomenon that requires dilation of penile vasculature, relaxation of smooth muscle, increased intracavernosal blood flow and normal veno-occlusive function. With sexual stimulation, the cavernosal and helicine arteries and cavernous smooth muscle undergo relaxation, allowing markedly increased arterial blood inflow to the lacunar spaces. The systemic blood pressure, transmitted through the dilated helicine arteries, expands the trabeculae against the tunica albuginea. Compression of the subtunical plexus of venules, reduction of lacunar venous outflow and elevation of intracavernosal pressure combine to make the penis rigid. Any disease that interferes with this process may result in ED (see box, right).

Penile vascular disease is the most common cause of organic ED. There are several pathophysiological mechanisms of vasculogenic ED, including impaired arterial inflow, impaired smooth muscle cavernosal relaxation, chronic ischaemia-induced increased cavernosal smooth muscle contraction, cavernosal fibrosis, veno-occlusive dysfunction and chronic or episodic hypoxaemia. Endothelial dysfunction appears to be the final common pathway for many cases of ED.

ED may be an early manifestation of generalised endothelial dysfunction and a predictor and precursor of other forms of cardiovascular disease. One-quarter of men with hypertension have significant ED; and 60% of men presenting with ED have undiagnosed lipid abnormalities. More than half of men

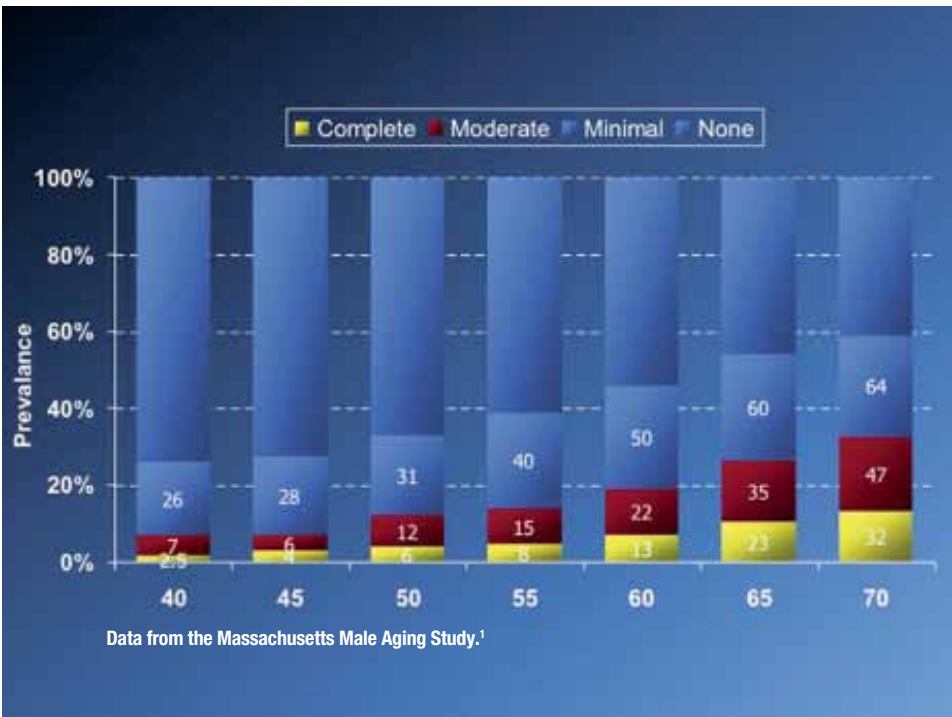


Figure 1: Relationship between age and the probability of erectile dysfunction.

Table 1: Prevalence of significant ED with specific medical conditions	
Condition	Prevalence (%)
Overall (age 40-70 years)	10
Severe depression	90
Post MI	40
Diabetes	35
Hypertension	25
Cigarette smokers	20



One-quarter of men with hypertension have significant ED; and 60% of men presenting with ED have undiagnosed lipid abnormalities.

with ED who have no cardiac symptoms have an abnormal stress test, and 40% have been found to have significant coronary artery disease when studied.

Risk factors for erectile dysfunction

Apart from age, the main risk factors for ED are the same as those for vascular disease (smoking, hypertension, abnormal lipid profile, obesity and lack of exercise). Essentially, any condition that damages endothelial function can result in ED. Other factors include depression, diabetes and other endocrine disorders.

Diabetes

Erectile dysfunction (ED) is reported to occur in 35-70% of men with diabetes. More than 50% develop ED within 10 years of initial diagnosis. The condition occurs earlier in life for men with diabetes and the age-adjusted probability of complete ED is nearly three times higher. The prevalence of ED increases with age, from 9% in men with diabetes aged 20-29 to 95% in men aged over 70 years. It also increases with duration, poor glycaemic control and complications of diabetes such as vascular and microvascular disease and neuropathies. One study reported that as many as 11% of men seeking treatment for ED have undiagnosed diabetes.

Coronary artery disease

It is well known that ED is associated with numerous risk factors for coronary artery disease, including lipid abnormalities, hypertension, smoking, diabetes, obesity and lack of physical activity. However,

most physicians do not routinely ask cardiac patients about erectile dysfunction, and these patients often are reluctant or embarrassed to discuss it.

In addition, there is a paucity of studies examining the effect of controlling cardiovascular risk factors on ED once ED has been diagnosed. The results of the few studies that have been performed indicate that the only lifestyle modification that may make a difference in the incidence of ED is continuation or initiation of physical activity. Midlife changes in lifestyle other than physical activity may not have a beneficial effect on ED because it is simply too late. Some studies have suggested that smoking cessation may improve erectile function while other studies have refuted this effect. In addition, use of some antihypertensive and lipid-lowering drugs may actually exacerbate ED. Further studies are needed to examine the effect of controlling cardiovascular risk factors on ED.

Neurological disease

Many neurological disorders commonly lead to ED. These include spinal cord injury, multiple sclerosis and cavernous nerve damage following major pelvic cancer surgery such as radical prostatectomy or anterior resection of the colon.

Endocrine disorders

Endocrine disorders such as hypogonadism, hyperprolactinaemia and thyroid disease play a significant role in the pathophysiology of ED. Testosterone regulates cavernosal nerve structure and function, nitric oxide synthase expression and activity, phosphodiesterase type 5 and

Causes of erectile dysfunction

Psychogenic

- Performance anxiety
- Loss of attraction
- Relationship difficulties
- Stress

Psychiatric

- Depression

Neurogenic

- Spinal cord injury
- Pelvic surgery
- Pelvic radiotherapy
- Multiple sclerosis
- Diabetes
- Intervertebral disc lesion
- Alcohol

Endocrine

- Hormonal deficiency
- Testosterone deficiency
- Raised sex-hormone binding globulin
- Hyperprolactinaemia

Arteriogenic

- Hypertension
- Smoking
- Diabetes
- Hyperlipidaemia
- Peripheral vascular disease
- Metabolic syndrome

Venous

- Functional impairment of the veno-occlusive mechanism

Drugs

Central and/or direct effect, most commonly

- Antihypertensives
- Antidepressants
- LH-releasing hormone analogues

corporal smooth muscle cell growth and differentiation.

Although androgens profoundly affect male sexual function overall and erectile physiology, testosterone deficiency is a relatively uncommon cause of ED. About 12% of men with ED have a serum testosterone below 10.4 nmol/L. Diagnosis of a testosterone deficiency involves demonstration of significant and persistent subnormal early morning total testosterone levels on at least 2-3 occasions. Further qualification of androgen status may require determination of pituitary gonadotropin and prolactin levels.

Benign prostatic hyperplasia

Men with benign prostatic hyperplasia (BPH) have a high prevalence of ED. The explanation for this association remains unclear, but the quality of life of men with BPH is reduced by its effects on sexual function.

Psychogenic

Although most men with ED have an underlying vascular cause that is usually related to endothelial dysfunction there is always a contributing — sometimes substantial — psychogenic component related to performance anxiety. Treatment of this component alone may be sufficient to restore normal erections.

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Diagnosis

A FULL history and thorough examination are both needed to help elucidate the cause of ED, determine whether the problem is psychogenic or organic in origin and also identify any clinical signs of the known risk factors. It should be borne in mind that ED can be an early symptom of a significant systemic condition, such as diabetes or cardiovascular disease.

Referral to an appropriate physician may be necessary if there is evidence of any of the following:

- Significant peripheral vascular or cardiac disease.
- An organic cause of ED in a young man.
- Hypogonadism in a young man.
- Peyronie’s disease.
- Hyperprolactinaemia.

Findings from the history and examination of the patient can be supplemented by investigations to identify the cause of erectile failure.

History

A detailed history is probably the most important aspect of the patient assessment. The clinical history has several purposes, as follows:

- To confirm that the patient is suffering from ED and/or another sexual dysfunction such as hypoactive desire or premature ejaculation.
- To assess the severity of the condition.
- To identify a possible underlying aetiology.
- To assess the fitness of the patient for resuming sexual activity.

The terminology associated with ED is often confused, and men’s expectations of their sexual function may be unrealistic. The severity of the problem can often be assessed by asking simple questions (see box, right).

Many doctor–patient consultations about ED are initiated by the doctor. The patient may present with an unrelated problem and only when questioned more closely will he reveal his true concerns. Likewise, there are some medical conditions, or ‘tickets of entry’, that are known to be associated with ED. Many patients are relieved, indeed pleased, to discuss the problem once the issue has been raised.

Once the degree of ED has been established, enquiries can be made about a possible aetiology. The aim of the subsequent discussion is to differentiate between obvious psychological causes and organic causes of the problem. Many men have a combination of causes, however, and the history will contain both organic and psychogenic elements.

In addition to the initial questions shown in the box, other topics to cover in discussions with patients include:

- The patient’s sexual development and the onset of the problem.
- The presence of any obvious stress factors, such as marital difficulties.
- Relationship problems, financial concerns, sexual inhibitions.

Associated sexual symptoms

Comorbid premature ejaculation occurs in about one-third of patients complaining of erectile dysfunction.



Suitable initial questions to ask the patient with ED

- What is the problem with your erections?
- How frequently do you have the problem?
- When did you last have successful sexual intercourse?
- How strong is your sexual desire, now and in the past?
- What has been the effect of your sexual difficulties on your relationship with your partner?
- What is your partner’s attitude towards the problem?
- What are you and your partner hoping to gain from any treatments that may be available?

The terminology associated with ED is often confused, and men’s expectations of their sexual function may be unrealistic.

Table 2: Different characteristics of psychogenic and organic ED

Psychogenic ED	Organic ED
Sudden onset	Gradual onset
Specific situation	All circumstances
Normal nocturnal and early morning erections	Absent nocturnal and early morning erections
Possible problems during sexual development	Normal sexual development
Possible relationship problems	Relationship problems not an issue

In some instances, premature ejaculation and ED may form a vicious cycle, where a man trying to control his ejaculation instinctively reduces his level of excitation leading to ED, or where a man trying to achieve an erection increases his excitation and arousal leading to premature ejaculation. A careful medical and sexual history will identify men who incorrectly self-report ED as a result of confusing the physiological loss of erection following early ejaculation, with ED.

Hypoactive sexual desire due to dysfunctional relationships or depression may lead to ED because of a subconscious desire to abbreviate unwanted penetration. Similarly, diminished sexual desire can be a consequence of the development of a pattern of sexual avoidance caused by the embarrassment and frustration of chronic and repeated sexual failure. Finally, female sexual dysfunctions, such as anorgasmia, hypoactive sexual desire, sexual aversion, sexual arousal disorders, and sexual pain disorders may also contribute to or precipitate ED.

Psychogenic ED

The association between anxiety and ED should be established. A psychological element should be suspected in a patient who obtains an erection during foreplay or self-stimulation but fails or fears failure on penetration. In these men, early morning and nocturnal erections are often preserved.

Psychogenic ED can be caused by several problems, principally performance anxiety, but also guilt, depression, relationship problems, or fear and personal anxiety.

Performance anxiety may be self-perpetuating, with any subsequent attempts at sexual contact being burdened by a fear of failure that only serves to exacerbate the problem. Concerns over whether an adequate and sustainable erection will develop can lead to ‘spectatoring’ (anxious scrutiny of a developing erection), which only serves to inhibit normal sexual responses further. Many men with psychogenic ED may develop a pattern of sexual avoidance due to the frustration and embarrassment of repeated attempts and failure. In turn, this avoidance may be misinterpreted as a lack of sexual desire.

Inhibitory messages from the brain, acting on the spinal erection centre, prevent not only the psychogenic erection but also the reflex erection by modulating the normal reflex arc. The onset of psychogenic ED is usually sudden and may relate to a specific occasion or life event. A more detailed psychosexual history, exploring sources of anxiety, guilt, relationship difficulties or depression should be obtained.

Organic ED

Organic erectile dysfunction is characterised by a progressive loss of erectile function with a gradual loss of sustainable erectile rigidity, often combined with the progressive loss of early morning and nocturnal erections (table 2). Many men with ED develop secondary premature ejaculation caused by ‘rushed’ intercourse to prevent loss of erection.

Several questionnaires have been developed to score the erectile problem objectively. The short five-question form of the International Index of Erectile Function (IIEF),

Sexual health inventory for men (SHIM)

How do you rate your confidence that you could get and keep an erection?

1 (very low) – 5 (very high)

When you had erections with sexual stimulation, how often were your erections hard enough for penetration (entering your partner)?

0 (no sexual activity) – 5 (almost always or always)

During sexual intercourse, how often were you able to maintain your erection after you had penetrated (entered) your partner?

0 (did not attempt intercourse) – 5 (not difficult)

During sexual intercourse, how difficult was it to maintain your erection until completion of intercourse?

0 (did not attempt intercourse) – 5 (almost always or always)

When you attempted sexual intercourse, how often was it satisfactory for you?

0 (did not attempt intercourse) – 5 (almost always or always)

The questionnaire is self-administered by the patient at the initial consultation. A total <21 indicates ED

the IIEF-5 or Sexual Health Inventory for Men (SHIM), is useful for both diagnosis and assessment of response to treatment (see box above).

Drug and alcohol use

Careful enquiry should be made about current medications as well as the use of recreational drugs. A number of these may cause or contribute to ED. For example, antihypertensive agents, such as beta blockers and thiazide diuretics, are associated with ED. In such cases, it may be worthwhile changing the patient’s medication to another class of antihypertensive agent that improves endothelial function and helps to preserve or enhance erectile function. Such agents include calcium-channel blockers, ACEIs, angiotensin-II receptor blockers and alpha-adrenergic blockers.

Erectile dysfunction is a common complication of antidepressant therapy when SSRIs, monoamine oxidase inhibitors and tricyclic antidepressants are used.

Although alcohol is considered to improve erection and sexual drive when utilised in small amounts as a result of its vasodilatory effects and the suppression of anxiety, excessive alcohol consumption has long been regarded as a risk factor for ED. In fact, chronic, heavy alcohol consumption may have an irreversible effect on erectile function due to neurological damage.

Consumption of more than eight standard drinks a day is associated with a significantly higher odds ratio for ED than 1-7 drinks a day (odds ratio 2.09 vs 1.96) after adjusting for age, education,

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presence of diabetes and smoking. Chronic use or habituation of cannabis, methamphetamine or opiates is associated with an increased risk of ED and drug interactions with phosphodiesterase type-5 inhibitors.

Physical examination

To a certain extent, the examination of ED will be directed by the medical and sexual history. However, it is important to assess the external genitalia, the endocrine and vascular systems, and the prostate in most patients. The presence, location and size of the testes, together with an assessment of secondary sexual characteristics, will usually be enough to identify obvious hypogonadism.

Vascular assessment should include measurement of blood pressure, cardiac status and pulses in the lower extremities. A palpable aortic aneurysm should be sought. The penis should be carefully palpated to exclude the presence of fibrous Peyronie's plaques and to check for phimosis.

The prostate should be the same rubbery consistency as the tip of the nose. Induration or a palpable nodule should raise the suspicion of prostate cancer. In this case, serum levels of PSA should be obtained and, if they are elevated in relation to the patient's age and a diagnosis of prostate cancer is likely to be of clinical value, he should be referred for transrectal ultrasound-guided biopsy.

Clinical investigations

The degree to which men should undergo clinical investigation depends on the history of the problem, the experience of the physician and the preferences of the patient. The investigations can be divided into essential, possible and specialised (see box, right).

General investigations include serum concentrations of total testosterone (before 11am), fasting glucose, fasting lipids and, in men over 50 years of age, a PSA test.

A clear-cut threshold for testosterone deficiency has not been agreed upon. Rather, recent evidence demonstrates that the prevalence of psychosomatic symptoms



Clinical investigations for ED

Essential

- Serum total testosterone*
- Fasting serum glucose
- Fasting cholesterol/triglycerides

Possible

- Serum free testosterone*
- Sex-hormone-binding globulin
- Prolactin
- Creatinine
- Thyroid hormones
- Full lipid profile
- Prostate-specific antigen
- FSH/LH

Specialised

- Nocturnal penile tumescence testing
- Colour Doppler imaging
- Pharmacocavernosography
- Pharmacocarteriography
- Psychiatric evaluation
- Vascular evaluation
- Cardiac evaluation

*Testosterone levels are best obtained before 11am

and metabolic risk factors gradually accumulates with decreasing androgen levels.

Androgen-related libido or vigour falls, visceral fat accumulates, and depression and type 2 diabetes are augmented in men with testosterone concentrations below 10nmol/L. Erectile dysfunction has been identified as a composite pathology of metabolic risk factors, smoking and depression; testosterone only contributes to ED at a concentration below 8nmol/L.

Further investigations may be required based on the results of these initial investigations including serum concentrations of luteinising hormone (LH), prolactin, thyroid hormones and HDL-LDL fractions of cholesterol.

Special investigations are not always required, but if patients fail to respond to minimally invasive treatments, such investigations may be necessary before other options can be explored. S

pecialised investigations need only be performed when a detailed knowledge of the cause of ED is required, and the patient and his partner have expressed an interest in pursuing corrective therapy or

A diagnosis of ED can have a profound impact on a man, his partner and their relationship, his family and ultimately society.

Specific indications for referral to a specialist

- Patient request for specific testing
- Patient requiring vascular, neurological or cardiac evaluation
- Young patient with severe erectile dysfunction
- Patient with Peyronie's disease
- Patient with refractory depression, psychosis or complex psychosexual disorder
- Patients who fail initial therapy

if there is concern about a patient resuming sexual activity. A specialist referral is usually required (see box above).

Colour Doppler imaging, performed by either a sexual health specialist or radiologist, provides information about penile haemodynamics after maximal smooth-muscle relaxation has been induced with a vasoactive agent.

Its aim is to distinguish arterial insufficiency and veno-occlusive dysfunction from other causes of erectile failure. Nocturnal penile tumescence testing that is used to assess the presence of nocturnal erections and differentiate psychogenic from organic ED has a minimal role in the contemporary evaluation of ED. Other more invasive investigations such as pudendal arteriography or pharmacocavernosography are limited to specialist practice.

Impact of a diagnosis of ED

It is increasingly recognised that a diagnosis of ED can have a profound impact on a man, his partner and their relationship, his family and ultimately society, as it has a negative effect on the patient's quality of life. ED can lead to withdrawal from intimacy, avoidance of all physical contact with a partner and an increase in emotional stress, which can perpetuate any psychogenic component to the ED. The condition can affect a man's self-esteem and self-image and lead to anxiety and hence depression.

Treatment of ED has been shown to lead to the resolution of depression and the restoration of self-esteem, and thus improvement in quality of life.

Treatment options

THE treatment options for men with ED are now varied and effective when compared with those from 20 years ago (table 3). The selection from these various treatment options depends on a number of factors such as the severity of the ED, underlying cause, and patient and partner choice.

However, the fact that erectile dysfunction is associated with endothelial and thus vascular dysfunction should be recognised by physician and patient alike before specific treatments are recommended. If a patient exhibits signs and symptoms of non-psychogenic ED then it is likely that he has an underlying vascular cause, and risk factors should be sought and if possible modified. Cigarette smoking and the use of recreational drugs should be discouraged while regular exercise should be encouraged

Table 3: Treatment options in psychogenic and organic ED

Psychogenic ED	Organic ED
Psychosexual therapy	Oral pharmacological agents
Oral pharmacological agents	Intracavernosal therapy
Intracavernosal therapy	Vacuum devices
	Androgen replacement therapy
	Surgery

because it has been shown to preserve erectile function, and depression and dyslipidaemia should be recognised and addressed.

These lifestyle changes should be recommended, whatever the cause of the ED, as erectile dysfunction can be an indicator of general well-being and a predictor of the risk of onset of other vascular events such as hypertension and coronary artery disease. Men with suspected vasculogenic ED should be screened for silent myocardial ischaemia

by using an exercise stress test or CT coronary angiography. Other vascular investigations, such as carotid duplex or abdominal aorta ultrasound, should be performed if indicated by the patient history or examination findings.

If the onset of ED is associated with the introduction of a new drug, such as an antihypertensive, then an alternative agent should be sought. It is believed that alpha blockers are less likely to cause ED than other antihypertensives, and may even protect against the onset of ED.

Therapeutic options will vary according to the underlying cause, and include oral drug therapy, psychosexual therapy, intracavernosal injections and surgery.

Psychosexual therapy

Erections are often stimulated by audiovisual stimuli or fantasy.

In the same way, however, CNS signals can inhibit the erectile response. Alternatives to treatment in this situation include identification of the source of anxiety, guilt or depression followed by psychological and/or drug treatment. Once a patient can obtain an erection 'on demand' from a physical therapy, he may overcome performance anxiety himself.

Treatment for psychogenic ED cannot be standardised, because the source of anxiety varies between patients. Relationship difficulties, depression, guilt, problems with intimacy and lack of sexual experience may all increase anxiety and/or conflict, which may then manifest as ED.

Psychosexual treatments range from simple sex education through to more involved therapy such as improving part-

ner communication and cognitive behavioural therapy. The onus is on the counsellor to identify the source of anxiety and select an appropriate therapy. Sex education usually involves correction of misinformation and ignorance about normal sexual practice. Improving partner communication may allow partners to overcome their embarrassment about sexual matters and express their sexual needs and desires.

Modern sex therapy is predominantly behaviour-based and aims to reduce performance anxiety through a programmed relearning of a couple's sexual behaviour. Often, this is achieved by gradually increasing a couple's repertoire of sexual activities that do not depend on maintaining a full erection, until full confidence is restored. Although these types of therapy are expensive in terms of time and resources because they ideally require the presence and co-operation of the sexual partner and may be associated with a significant rate of recurrence after therapy, many couples derive genuine benefit from this approach. This is especially so when it is combined with oral pharmacological therapy.

Pharmacotherapy

Most patients with ED will respond to the safe and effective oral pharmacological agents now available. These include the phosphodiesterase type-5 inhibitors sildenafil, tadalafil and vardenafil. Other physical treatments, such as vacuum devices and intracavernosal drugs, are used on demand. However, the rates of discontinuation from these alternative treatment options are high as a result of side effects, dislike of needles and unwillingness of the partner to participate. These pharmacological treatments will be discussed in further detail in next week's How To Treat.



Organic erectile dysfunction will only respond to physical interventions. However, a contributing psychogenic component may respond to psychosexual therapy sufficient to restore normal erections. Treatment can be either cause-specific and aim to correct an identifiable abnormality, or general and aim to provide an erectile response regardless of the underlying cause. The appropriate treatment option will vary according to the patient's cultural, religious and economic status.

Combined psychogenic-organic erectile dysfunction.

A large proportion of patients have a combination of psychogenic and organic ED. Erectile failure resulting from a developing organic problem may provoke the onset of a psychogenic effect once the patient develops the 'fear of failure' on sexual contact. To treat these men holistically, the family physician and psychotherapist may need to collaborate and combine counselling with a physical therapy, such as an oral pharmacological agent.

Key points

Epidemiology

- About 10% of men between 40 and 70 years of age have severe ED
- Patients with certain medical conditions have an increased risk of ED
- ED may be a harbinger of future vascular disease and cardiovascular events
- Most patients have a psychogenic component to their ED, which can be a substantial contributing factor

Diagnosis and treatment options

- ED is a good index of overall male health, being associated with vascular disease, smoking, diabetes, depression and other conditions. It is the responsibility of the clinician to seek out a possible cause
- The patient's history is perhaps the most important diagnostic tool
- Investigations are tailored to the history, examination and suspected cause of ED
- Modification of risk factors should be recommended to men with ED (as advice on overall male health) but rarely leads to restoration of sexual function
- Partner communication is an important aspect of sexual function, and therefore dysfunction
- Psychogenic ED has a multitude of causes
- Psychogenic ED may respond to psychosexual or physical therapy; organic ED responds only to physical therapies

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How To Treat – Erectile dysfunction – part 1

Case study

HAROLD is a 48-year-old accountant, married to Lucy for 18 years. He presents with a 2-3 year history of progressively worsening ED with normal sexual desire. Harold also has a four-year-history of hypertension treated with candesartan (8mg daily) and he has smoked 20 cigarettes a day for 30 years. There is a strong family history of coronary artery disease. He has failed to respond to an adequate trial of on-demand sildenafil and tadalafil and a six-week trial of daily tadalafil (5mg nocte). There were no abnormal physical findings.

Investigations revealed the following: glucose 5.3; cholesterol 6.2, LDL cholesterol 4.1, triglyc-



erides 2.4 and total testosterone 16.5nmol/L. Colour doppler ultrasonography demonstrated moderately severe arterial occlusive disease involving both cavernous arteries.

It is well established that endothe-

lial dysfunction related to diabetes, hypertension, hypercholesterolemia and cigarette smoking is the precursor of atherosclerotic penile vascular occlusive disease. Penile vascular disease is the most common cause of organic ED. This is the most likely diagnosis for Harold's presentation.

There is increasing evidence to suggest that men with ED, especially men with diabetes, metabolic syndrome and testosterone deficiency syndrome, are at an increased risk of silent myocardial ischaemia and subsequent cardiac events.

For this reason, Harold needed to be screened for coronary artery disease with exercise electrocardiography and, if indicated, coronary

angiography and/or other cardiac imaging techniques.

Harold was referred to a cardiologist. During the exercise stress test, Harold developed chest pain and his ECG was positive for myocardial ischaemia. A subsequent coronary angiogram demonstrated a high-grade stenosis of the left anterior descending coronary artery (LAD) which was treated by percutaneous transluminal coronary angioplasty (PTCA) with stenting.

At review eight weeks later, Harold was started on self-administered intrapenile alprostadil to which he responded well. A subsequent exercise stress test was normal.

Reference

1. Kleinman KP, et al. A new surrogate variable for erectile dysfunction status in the Massachusetts male aging study. *Journal of Clinical Epidemiology* 2000; 53:71-78.



How to Treat Quiz

Erectile dysfunction – part 1
— 10 May 2013

INSTRUCTIONS

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The mark required to obtain points is 80%. Please note that some questions have more than one correct answer.

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1. Which TWO statements are correct regarding epidemiology of erectile dysfunction (ED)?

- a) Increasing age is a strong risk factor for ED, especially after 50 years of age
- b) Twenty-five per cent of men with hypertension have significant ED as well as 40% of those post-MI
- c) Testosterone deficiency is the most common cause for ED that should be investigated for in every case of ED
- d) Most men over the age of 70 are not sexually active and it is important to avoid delving into sexual history without clinical suspicion

2. Which THREE statements are correct regarding the aetiology of erectile dysfunction?

- a) While penile vascular disease is the predominant cause for organic ED, erectile dysfunction can be the result of a diverse spectrum of diseases including uncommon conditions such as MS and hyperprolactinoma
- b) More than 50% of patients with diabetes develop ED within 10 years of diagnosis and the GP should consider initiating a discussion about ED for those with long-term diabetes
- c) A lack of sexual desire is not a true cause of erectile dysfunction and the patient should be reassured and monitored regularly at 6-12 monthly intervals
- d) More than 10% of patients with ED have undiagnosed diabetes

3. Which THREE questions are suitable in an initial discussion of ED with a patient?

- a) "What is the problem with your erections?"
- b) "What is your partner's attitude towards the problem?"
- c) "Have you been using anabolic steroids?"
- d) "What are you and your partner hoping to gain from any treatments that may be available?"

4. Which TWO statements are correct regarding the investigations for ED?

- a) A serum total testosterone less than 12nmol/L is diagnostic of ED due to testosterone deficiency
- b) A serum total testosterone is an essential initial investigation for ED and should be taken early in the morning
- c) Nocturnal penile tumescence testing to assess the presence of spontaneous nocturnal erections is the first-line investigation to distinguish organic from psychogenic ED
- d) Colour Doppler imaging, pudendal arteriography and pharmacocavernosography are specialised investigations that are limited to specialist practice

5. John is a 34-year-old man who presents to you as a new patient requesting a repeat script for sildenafil, saying he needs it sometimes for "difficulty in the bedroom". Which TWO statements are correct?

- a) Erectile dysfunction at 34 is unlikely and at this age it is highly probable that he is either using sildenafil with other illicit drugs for recreational purposes or selling it on the black market
- b) A perception of "difficulty in the bedroom" may point to psychogenic and, less commonly organic erectile dysfunction, but it may also stem from unrealistic expectations and misconceptions
- c) Further history taken from John should include John's sexual development and the onset of the problem, attitudes of him and his partner, and elucidate the presence of any obvious stress factors
- d) John is likely to be using the sildenafil to overcome a psychogenic erectile dysfunction and the prescription should be given because obstruction will simply lead to further aggravation of that psychogenic component

6. John tells you that he has just started a

new relationship and has had recurrent difficulty maintaining an erection to orgasm for the past three months. Which TWO statements are correct?

- a) With this acute presentation and at his age, John's ED cannot be the result of a previously undiagnosed diabetes
- b) A careful history will identify whether John has an organic ED or has wrongly attributed the physiological loss of erection following early ejaculation with ED
- c) A reasonable approach at this point is to provide John with a short supply of sildenafil and re-evaluate his erectile dysfunction after three months
- d) Performance anxiety may be a contributing factor to John's presentation and may be clarified by asking John whether he wakes with an erection and is able to obtain an erection during foreplay or self-stimulation

7. Jeremy is a 44-year-old man with hypertension and dyslipidaemia who presents with the same request and history as John. Which TWO statements are correct about history-taking with Jeremy?

- a) While Jeremy is presenting with difficulty maintaining an erection to orgasm, targeted history should include questions regarding premature ejaculation
- b) Calcium-channel blockers are an important cause of drug-related ED
- c) There is value in exploring the state of Jeremy's relationship with his partner because a dysfunctional relationship is a contributory factor for ED
- d) It is important to ask Jeremy if his first episode of ED came on suddenly, because psychogenic ED usually comes on gradually over many sexual encounters as anxiety and frustration builds up

8. Having taken a detailed history, you proceed to an examination. Which TWO statements are correct?

- a) A physical examination for ED should

- include examination of the eyes
- b) You will need to carefully palpate the penis to exclude a physical cause of Jeremy's ED
- c) If a PSA level is required to clarify any history of lower urinary tract symptoms, a digital rectal examination should be attempted before taking the blood test
- d) There is no reason at any point to palpate the patient's penis; this may be a cause for complaint to the medical tribunal for a gross violation of professional conduct with medicolegal consequences

9. You find that Jeremy is indeed suffering from a combination of psychogenic and organic ED. Which ONE statement is correct regarding his management?

- a) A limited amount of smoking is known to paradoxically enhance erectile function because the nicotine effect, much like a small amount of alcohol, may improve ED
- b) Exercise stress testing should be requested if the organic cause is likely to be vasculogenic, because of the prevalent risk of silent MI
- c) The psychogenic component of his ED may not respond to the script he asked for
- d) Jeremy should be advised to undertake psychosexual therapy that will improve his ED by teaching him how to turn his full attention to achieving an erection

10. Which THREE questions are part of the Sexual Health Inventory for Men (SHIM) questionnaire that is used to score ED objectively?

- a) "How often do you have nocturnal and early morning erections?"
- b) "How do you rate your confidence that you could get and keep an erection?"
- c) "When you had erections with sexual stimulation, how often were your erections hard enough for penetration (entering your partner)?"
- d) "When you attempted sexual intercourse, how often was it satisfactory for you?"

CPD QUIZ UPDATE

The RACGP requires that a brief GP evaluation form be completed with every quiz to obtain category 2 CPD or PDP points for the 2011-13 triennium. You can complete this online along with the quiz at www.australiandoctor.com.au. Because this is a requirement, we are no longer able to accept the quiz by post or fax. However, we have included the quiz questions here for those who like to prepare the answers before completing the quiz online.

NEXT WEEK This series concludes next week, with an in-depth discussion of treatment options.

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