Erectile dysfunction: assessment and management in primary care

Opening Vignette

Michael, a 55-year-old man, visits you for his regular follow-up for hypertension and diabetes mellitus. His conditions have been well controlled on oral medications, but your previous attempts to encourage him to quit smoking have been futile so far. He mentions that he has been smoking more than usual due to increased stress after starting a new job. Towards the end of the consult, he sheepishly asks, 'Doctor, can I have Viagra?'

WHAT IS ERECTILE DYSFUNCTION?

Erectile dysfunction (ED) is defined as "the consistent or recurrent inability to attain or maintain a penile erection sufficient for sexual satisfaction".[1] It is the most common sexual problem experienced by men and has a negative impact on psychological wellbeing and quality of life. In addition, ED is an independent risk factor for cardiovascular mortality and may be the first presenting symptom in undiagnosed coronary artery or peripheral vascular disease.[2]

HOW COMMON IS THIS IN MY PRACTICE?

The global prevalence of ED varies widely, from 13.1% to 71.2%, based on the population studied and the questionnaires used.[3] Of these, the Massachusetts Male Aging Study reported an overall incidence of 52% of ED in men aged 40–70 years.[4] This is similar to the findings of a local population-based study in 2003, with 51.3% of respondents reporting some degree of ED, with varying severity.[5] Prevalence increases with age, affecting 5%–10% of men aged 40 years and 40%–60% of men aged 70 years.[6] However, despite its prevalence, ED is commonly underreported and undertreated. Patients may feel embarrassed to discuss sexual matters or may have the misconception that ED is a normal part of ageing.[7] Likewise, physicians do not proactively screen for sexual health problems due to time constraints, lack of awareness or personal discomfort with the subject. As a result, patients may turn elsewhere for help. In recent years, the Health Sciences Authority has reported several cases with adverse outcomes following consumption of adulterated sexual enhancement products purchased overseas or through online platforms.[8]

HOW RELEVANT IS THIS TO MY PRACTICE?

Family physicians can diagnose and manage patients with ED in the community. Patients are more comfortable to discuss topics relating to sexual health with their regular physician and may be more receptive to share if the conversation is initiated by their doctor. Furthermore, ED can be managed as part of the concerted treatment plan for a patient's chronic diseases in the primary care setting. Understanding the relationship between ED and cardiovascular disease can motivate patients to achieve behavioural modifications such as weight loss, smoking cessation and regular exercise, all of which will concomitantly improve their cardiovascular control. Family physicians can provide holistic care for patients with ED by optimising comorbidities, identifying psychosocial stressors and assessing the impact of ED on the patient's mood, relationships and quality of life.

WHAT CAN I DO IN MY PRACTICE?

Screening for ED in patients with risk factors

While ED was traditionally dichotomised into 'organic' and 'psychogenic' causes, it is now recognised that the vascular, neurological, hormonal and psychological systems all have a part to play in normal male sexual function. As such, the underlying cause of ED is often multifactorial. A non-exhaustive list of the common risk factors for ED is listed in Box 1.[9] Family physicians can incorporate screening questions into the care of patients at increased risk of ED. In particular, men with diabetes mellitus are 3.5 times as likely to have ED compared to men without.[10] Asking about sexual function before starting medications that may potentially exacerbate ED, such as beta-blockers and thiazides, may also lead to earlier diagnosis.

Taking a comprehensive history

History taking should begin by clarifying what the patient means by ED. Complaints of low libido or problems with ejaculation may be wrongly labelled as ED. Problems with penetration may be due to female sexual dysfunction, such as vaginismus or vaginal dryness. The International Index of Erectile Function (IIEF) 5-item tool [Table 1] can be used as a guide on the questions to ask to diagnose and determine the severity of ED.[11] A score <21 is suggestive of ED. Additional history includes onset, duration, progression, variability in different situations (e.g. only with a partner, during masturbation) and previous treatments. The continued presence of nocturnal erections suggests a psychogenic element, whereas andropause symptoms such as fatigue, weight gain and loss of libido point towards possible hypogonadism.

As mental health issues are closely related to ED, psychosocial history, relationship issues, personal or professional stressors

and any previous psychological diagnoses and treatments should be elicited during history taking. The impact of ED on the patient and his partner should also be explored. Anxiety and depression can be either causes or consequences of ED, and complex cases may require co-management with a psychiatrist. Patients with predominantly psychogenic ED are likely to be younger, without cardiovascular comorbidities, and may have developed performance anxiety after several failed attempts at sex.[12]

Finally, cardiovascular fitness for sexual activity should be assessed by asking about patients' baseline exercise tolerance. Patients who can exercise at moderate intensity without symptoms are likely to be fit for sexual activity. Patients with known cardiovascular disease can be stratified into low, intermediate and high risk based on the recommendations by the Princeton III Consensus.[2] High-risk patients and those with reduced exercise ability should defer sexual activity until further review by a cardiologist.

Box 1. Common risk factors for erectile dysfunction.

Vascular
- Smoking
- Obesity
- Cardiovascular diseases (hypertension, coronary artery disease, peripheral vascular disease)
- Diabetes mellitus, metabolic syndrome, hyperlipidaemia

Hormonal
- Diabetes mellitus
- Hyperthyroidism
- Hypogonadism

Neurogenic
- Degenerative disorders (e.g. Parkinson's disease)
- Stroke
- Spinal cord trauma or diseases

Urological
- Peyronie's disease, other structural abnormalities of the penis
- Major pelvic surgery (e.g. radical prostatectomy) or radiotherapy

Drug-related
- Excessive alcohol intake
- Antihypertensives (e.g. thiazides, beta-blockers)
- Antidepressants (e.g. selective serotonin reuptake inhibitors, tricyclic antidepressants)
- Antipsychotics
- Antiandrogens (e.g. GnRH analogues, 5α-reductase inhibitors)

Psychosocial
- Relationship issues, stress
- Anxiety, depression
- History of sexual abuse

Examination and investigations

A basic examination should include measurement of blood pressure, heart rate and waist circumference or body mass index. Features of hypogonadism include gynaecomastia, obesity, stunted development of secondary sexual characteristics, including facial, axillary or pubic hair, and reduced testes size. The penile shaft should be palpated for the presence of fibrotic plaques, which may suggest Peyronie's disease. Peyronie's disease is a connective tissue disease characterised by the development of scar tissue (plaques) within the tunica albuginea of the penis, causing pain and deformities during erection. While uncommon, diabetes mellitus is a known risk factor for this condition.

Most cases of ED are diagnosed clinically. Laboratory investigations help to confirm underlying aetiology and identify comorbid conditions that require treatment. Routine investigations include fasting glucose or glycated haemoglobin, fasting lipids and serum morning testosterone.

MANAGEMENT

Patient education

As many people have misconceptions about normal sexual function, clinicians should first educate patients about the multifactorial nature of ED, focusing on both the physical and psychological aspects. Understanding patients' goals and expectations can help to guide subsequent investigations and treatment.

Screening for cardiovascular disease

Apart from sharing similar risk factors, symptoms of ED have been shown to precede the diagnosis of cardiovascular disease by an average of 2–5 years.[13] This provides a window of opportunity to diagnose and treat silent coronary artery disease, especially in younger men. For patients with vasculogenic ED, their cardiovascular risk should be assessed using the Framingham

Table 1. The International Index of Erectile Function 5-item (IIEF-5) tool.

Over the past 6 months	1	2	3	4	5
1. How do you rate your confidence that you could get and keep an erection?	Very low	Low	Moderate	High	Very high
2. When you had erections with sexual stimulation, how often were your erections hard enough for penetration?	Almost never or never	Much less than half the time	About half the time	Much more than half the time	Almost always or always
3. During sexual intercourse, how often were you able to maintain your erection after you had penetrated (entered) your partner?	Almost never or never	Much less than half the time	About half the time	Much more than half the time	Almost always or always
4. During sexual intercourse how difficult was it to maintain your erection to the completion of intercourse?	Extremely difficult	Very difficult	Difficult	Slightly difficult	Not difficult
5. When you attempted sexual intercourse, how often was it satisfactory for you?	Almost never or never	Much less than half the time	About half the time	Much more than half the time	Almost always or always

The IIEF-5 score is the sum of questions 1–5. Lower scores indicate higher perceived erectile dysfunction.

Risk Score. High-risk patients should be referred to a cardiologist to discuss options for non-invasive cardiac screening.[2]

Addressing modifiable risk factors

Physicians should advise patients to adopt lifestyle modifications to reduce cardiovascular risk and improve erectile function and overall health. Weight loss and exercise are associated with improvement in IIEF scores.[14] Smoking cessation and moderate consumption of alcohol should also be advised. In patients with diabetes mellitus, optimisation of glycaemic control can improve erectile function and delay the onset of microvascular complications like peripheral neuropathy, which can also exacerbate ED.[15] Lastly, medications should be reviewed, and alternatives offered where possible.

Pharmacological therapy

Phosphodiesterase-5 inhibitors (PDE5i) are the first-line treatment for patients with ED, regardless of the underlying pathology. They work by inhibiting the breakdown of cyclic guanosine monophosphate (cGMP), which promotes smooth muscle relaxation in the vessels of the corpus cavernosum, resulting in increased and sustained erection hardness. They are highly effective in the treatment of ED, with improvement of IIEF scores of up to 7–10 points compared to placebo when used at a maximum dose.[16] Correct administration of PDE5i is the key factor in its efficacy. Sexual stimulation is necessary to promote the release of nitric oxide in the erectile tissues of the penis, allowing PDE5i to take effect through the pathway described above. To promote absorption, it should be taken on an empty stomach or at least away from high-fat meals.

The main contraindication to PDE5i is the concomitant use of nitrates, as this can result in a precipitous drop in blood pressure, which can be life-threatening. Men on regular nitrates should not be prescribed PDE5i. Patients who use sublingual nitroglycerin as required for angina should be advised not to use it within 24 h of taking sildenafil and longer if using tadalafil.

Table 2 lists the available PDE5i in Singapore, of which sildenafil is the most frequently prescribed due to lower cost. Choice of drug depends on the frequency of intercourse and patients' preferences. Patients should be informed about the onset and duration of efficacy of the drug they are being prescribed. Common side effects include headaches, flushing, dyspepsia, epistaxis and abnormal vision. As these occur more frequently at higher doses, the lowest dose that provides adequate response should be used.

Psychological therapy

There is growing evidence that a multidisciplinary approach towards ED can reduce dependence on medications and improve sexual satisfaction for patients.[17] Psychoeducation is the first step in managing patients with predominant psychogenic ED. Many men have difficulty accepting that the problem lies 'in their head' and may focus extensively on physical causes, even when these are deemed to be less likely. Building rapport and providing supportive counselling in a nonjudgemental manner can help patients feel less vulnerable, and they may become gradually aware of the impact that psychosocial factors can have on one's sexual experience.

Patients who are open to psychological therapy can be referred to a sexual health therapist or a counsellor. Treatment involves a combination of cognitive and behavioural approaches that address the maintaining factors of ED such as anxiety from negative thoughts, unrealistic expectations and self-confidence issues. Involving partners in treatment is encouraged to facilitate exploration of underlying communication and relationship issues while also developing strategies to increase sexual stimulation with their partner. In addition, family practitioners may search local listings for psychosexual treatment and services.

WHEN SHOULD I REFER TO A SPECIALIST?

Cardiology referral is appropriate for patients with high-risk cardiac conditions intending to resume sexual activity, as well as for screening in newly diagnosed patients without known cardiovascular disease. Patients with hypogonadism or testosterone deficiency should be referred to either an endocrinologist or a urologist for further evaluation and treatment. Patients with penile abnormalities, poor response despite correct administration and repeated attempts at using PDE5i, or who are keen to seek second-line treatments for ED should be referred to urology.

Table 2. Pharmacology of phosphodiesterase-5 inhibitors (PDE5i).

PDE5i	Starting dose (mg)	Dose range (mg)	Onset (min)	Duration (h)
Sildenafil (Viagra)	50	25–100	30–60	4
Tadalafil (Cialis)	10	5–20[a]	30–60	Peak: 2 h Up to 36 h
Vardenafil (Levitra)	10	5–20	30–60	4
Avanafil (Spedra)	100	50–200	15–30	6

[a]For tadalafil, the 5-mg dose is licensed for daily use in the concomitant treatment of benign prostatic hyperplasia and erectile dysfunction.

TAKE HOME MESSAGES

1. Erectile dysfunction is a common yet underreported condition that can be managed in primary care.
2. Diagnosis of ED is clinical, and questionnaires like IIEF-5 can be used to monitor disease severity and response to treatment.
3. Erectile dysfunction is an independent risk factor for cardiovascular disease and should be taken as an opportunity to discuss cardiovascular screening and promote lifestyle changes to improve one's cardiovascular health.
4. Treatment of ED is not just about prescribing sildenafil but involves a holistic approach to the biological and psychosocial factors affecting a man's normal sexual function.
5. Most men will respond adequately to PDE5i when they are correctly administered.

Closing Vignette

You take a detailed sexual history from Michael. He has been having trouble achieving a firm erection for penetration during sexual intercourse with his wife. He has been more irritable lately, which has affected the relationship with his wife. You counsel him that work stress may be affecting his sexual function, although his medical conditions and smoking history can also cause erectile dysfunction. Together, you make a plan to stop smoking by substituting smoking for alternative ways to cope with his stress. You advise him to speak to his wife and offer to follow-up with them at your next appointment. You also check his serum testosterone level and prescribe Viagra, advising him on how to take the medication correctly.

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Conflicts of interest

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SMC CATEGORY 3B CME PROGRAMME

Online Quiz: https://www.sma.org.sg/cme-programme

Deadline for submission: 6 pm, 22 April 2024

	Question: Answer True or False
1.	Erectile dysfunction is the recurrent inability to achieve penile erection due to decreased sex drive.
2.	Erectile dysfunction affects only older men with cardiovascular risk factors.
3.	Patients should be referred to overseas or online sources to obtain sexual enhancement products and medications at a more affordable rate.
4.	Anxiety and depression can be both causes and consequences of erectile dysfunction.
5.	Hypothyroidism is a risk factor for erectile dysfunction.
6.	Assessment of patient's psychosocial history is not necessary if vascular risk factors have already been identified.
7.	Patients who can exercise at a moderate intensity without symptoms are likely to be fit for sexual activity.
8.	Peyronie's disease can cause painful erections.
9.	All patients presenting with erectile dysfunction should be screened for hypertension, hyperlipidaemia and diabetes mellitus.
10.	Erectile dysfunction often presents 2–5 years after the diagnosis of coronary artery disease.
11.	Glycaemic control (glycated haemoglobin) has an inverse relationship with erectile function.
12.	Routine investigations for erectile dysfunction include screening for diabetes mellitus, lipids and a random serum testosterone.
13.	Taking phosphodiesterase-5 inhibitors (PDE5i) with fatty meals improves their absorption.
14.	Common side effects of PDE5i include headaches, flushing, dyspepsia, epistaxis and abnormal vision.
15.	Sexual stimulation is not required to attain an erection when one is using PDE5i.
16.	Psychotherapy can be used as an adjunct treatment with PDE5i.
17.	PDE5i should not be prescribed to young men with purely psychogenic erectile dysfunction.
18.	Beta-blockers should not be prescribed to patients at risk of developing erectile dysfunction as they may worsen the symptoms.
19.	Patients on sublingual nitroglycerin can be prescribed sildenafil if they have symptoms of unstable angina, as long as they do not use it within 24 h of taking sildenafil.
20.	Patients who do not respond to PDE5i despite correct administration and repeated attempts should be referred to urology.