MedicineToday 2011; 12(11): 50-58

PEER REVIEWED FEATURE
POINTS: 2 CPD/2 PDP

ANDROLOGY AUSTRALIA
www.andrologyaustralia.org

Erectile dysfunction: a guide for GPs

DOUGLAS LORDING BMedSci, MB BS, FRACP

Erectile dysfunction is a serious matter. Not only can this cause great distress for a man and his partner, but it is an important marker of underlying comorbidities, including future cardiovascular disease.

Key points

- Erectile dysfunction (ED) is a common symptom, which increases in incidence with age.
- All men with ED need to be assessed, even if there is no desire to restore sexual function, because there may be serious comorbidities.
- For those men with ED who desire restoration of sexual function, effective and safe treatments are available.
- It is important that GPs fully understand the role of phosphodiesterase-5 inhibitors for ED and be confident prescribing them and monitoring their effectiveness.
- Patients with ED should be referred to an appropriate specialist if more specialised treatments are necessary.

Erectile dysfunction (ED) is a persistent or recurrent inability to attain and/or maintain a penile erection sufficient for satisfactory sexual activity and intercourse. It is a common condition with one in five men over the age of 40 years reporting significant ED in an Australian study.[1] Although 88% of men in this study had visited a GP in the past 12 months for various reasons, only 30% of men with ED had actually discussed this important symptom with the GP.[1]

ED is associated with chronic diseases, including cardiovascular disease (CVD), and with CVD risk factors (e.g. diabetes, hyper - tension, high lipid levels, smoking, obesity and low level of physical activity). ED is now known to be an early warning sign of future CVD in otherwise healthy men[2] and in those with diabetes.[3] An Australian study of men aged 20 years and older reported more than a twofold higher incidence of atherosclerotic events in men with ED compared with men in the general population.[4] Moreover, the relative risk conferred by ED is higher in younger men.[4,5] These data suggest that in a man presenting with ED there is a compelling need for medical assessment, as well as treatment for the ED.

Lack of sexual activity associated with ED can significantly affect the well-being of men, and also their partners whose needs are often overlooked. Sometimes in older patients doctors may not consider sexual health a priority and the impact of ED is underestimated. Fortunately, for most men presenting with ED and who desire restoration

Dr Lording is a Consultant Endocrinologist and Andrologist at Cabrini Health, Cabrini Hospital, Malvern, and a board member of Andrology Australia. He is also an Honorary Adjunct Professor of Medicine at Monash University, Melbourne, Vic.

of sexual function, simple and safe treatments are available.

ROLE OF THE GP

It is important for GPs to understand the implications of ED, both in terms of the need for a full clinical assessment, as well as the potential benefits of the restoration of sexual function.

GPs should be the point of first contact and should be prepared to enquire about their patient's sexual health. Men still appear to be reluctant to bring up what they perceive to be an embarrassing subject. Some GPs are also hesitant to approach their patients about ED. The box on this page gives some ideas about initiating a discussion about sexual function, either by direct questioning or positioning the question in a specific context relevant to the man's situation. A flexible and confident approach is usually appreciated by the patient. An experienced GP will know if a patient does not want to engage in discussion.

Men with ED may circumvent contact with their usual GP, going to the internet to purchase drugs or to clinics that do not follow appropriate clinical guidelines. These practices may mean that underlying medical problems and comorbidities are not detected, and that ineffective and expensive treatments are prescribed. Deaths from contaminated counterfeit medication have been reported.[6] GPs should promote their willingness to deal with ED, so their patients are not exposed to these risks.

Once the symptom has been raised, the GP has all the skills required to assess the man and to initiate treatment. Patient information resources (fact sheets and booklets) and professional guidance (clinical summary guides) on ED are freely available from Andrology Australia (see: www.andrology australia.org), and other reputable health organisations also provide patient resources.

ASSESSMENT

The steps to be taken in assessing a man with ED include the points outlined below.

- **Clearly define the nature of the sexual dysfunction.** It is important to distinguish ED from premature or delayed ejaculation, and loss of libido. When it has been established that the man has ED, a history of the development and severity of this symptom will help with the diagnosis. The box on page 52 lists some questions that may be useful to evaluate the man with ED. If these questions (or similar) are asked, a comprehensive picture of the problem will be evident. The box on page 52 compares the typical features of organic and psychogenic ED.
- **Understand the psychosocial issues.** It is important to know whether the man's partner has any sexual or medical problems. Single men or young men may have different issues with ED compared

INITIATING DISCUSSION ABOUT SEXUAL FUNCTION

Introductory question

'Many men (of your age/with your condition) experience sexual difficulties. If you have any difficulties, I am happy to discuss them'.

Direct questions

'Are you sexually active?'

'Do you enjoy an active sexual life?'

Contextual questions

To a younger man:

'Do you have any concerns about your development? Does everything down there work OK?'

To a man in a reproductive age group:

'Are you thinking of having a family soon? Do you have any concerns about your fertility? Do you think there could be any problems?'

To a middle-aged or older man having a general assessment:

'Are you still getting a good erection? This is an age where medical problems may be interfering'.

To a man with diabetes during review of complications:

'I want to check you in relation to the effects of your diabetes. Have you noticed any problems with your eyes…feet…erections?'

To a man with cardiovascular disease or risk factors:

'It is common for men with diabetes/high blood pressure/heart disease to experience erectile problems. I can help you, if you are having problems'.

'I want to assess your risk of future heart disease. There are lots of things that might prompt me to look more closely at your situation. Tell me what your erections are like?'

QUESTIONS USED TO UNDERSTAND THE SEXUAL FUNCTION OF A MAN WITH ED

- Tell me what happens when you try to have intercourse? Is your erection hard? Can you penetrate easily? Does your erection stay until sex is completed?
- How often are you having intercourse? How does that compare to the past? Past year? Five years ago? Why do you think this change has occurred?
- How often do you masturbate? What are your erections like then?
- Are you aware of erections through the night or early morning? What are those erections like?
- Are you able to climax when you want? Does that feel the same as before? Is it painful?
- Tell me about your overall interest in sexual things? Movies, books, girls in the street?
- What about your partner? Are you still sexually attracted?
- How long would you say that all this has been happening?
- What do you think is the cause of this problem?
- What does your partner think of all this? Have the two of you discussed this problem?
- Does your partner have an interest in sex? Enjoy sex? Does your partner have any sexual problems?
- What effect is this problem having on you?
- What effect is it having on your partner?

ORGANIC AND PSYCHOGENIC CAUSES OF ED

Organic

- Gradual onset (except trauma and surgery)
- Persistent and progressive
- Masturbatory, nocturnal and morning erections similarly affected
- Medical cause identifiable
- Often older men

Psychogenic

- Sudden onset, precipitating event identified
- Often intermittent or variable
- Masturbatory and/or nocturnal and morning erections usually spared
- Absence of medical cause
- Often younger men

with a man in a long-standing sexual partnership. There may be important ethnic or religious factors impinging on the issue. It may be important at this point to know why the man presented at this stage and whether his partner will be involved in the assessment.

- **Undertake a thorough clinical evaluation.** A thorough clinical evaluation is necessary, focusing on the key medical and psychiatric associations of ED. Men with ED may have previously undiagnosed diabetes, hypertension or hyperlipidaemia, as well as other comorbid medical conditions.
- **Evaluate the importance of restoring sexual function.** Not all men presenting with ED will seek treatment; however, most men who voluntarily present with ED will at least try simple treatments. The view of the man's partner is helpful in this assessment, but not all men will involve their partners in this decision.

CLINICAL EVALUATION

Medical history

Medical history should cover general health and well-being, any specific illnesses from which the patient suffers and medication history. Specific attention should be paid to the presence of vascular diseases and risk factors for CVD (e.g. diabetes, hypertension, high lipid levels, smoking, obesity and low level of physical activity). Drug and alcohol use should also be assessed. Previous reproductive health is important. Developmental issues, previous infertility and gonadal disease may suggest hypogonadism. Pelvic trauma, including trauma experienced from bike riding, should be noted. Pelvic surgery and radiotherapy may cause ED. The GP should ask if the penis has changed shape or has become bent with an erection.

Depression, and medications used to treat depression and other psychiatric disorders, often impact significantly on ED. Depression is a common cause of ED and the GP should be alert to clues when taking a history from patients.

Physical examination

Physical examination should focus on the known causes of ED, with emphasis on a vascular and genital examination. This examination should include blood pressure, heart rate, abdominal aortic aneurysm, carotid bruits, foot pulses and an assessment of body weight. Examination of the penis and testes is mandatory.

Unexpected neurological disease is not commonly found when assessing men with ED, but weakness, sensory symptoms and any lower limb signs might prompt investigation.

Depending on the age of the man, this consultation is an opportunity to broach other important issues such as prostate disease.

Investigations

It is important that the glucose and lipid status of men with ED is known, and morning total testosterone level should be measured. If testosterone levels are low a full assessment for hypogonadism should be completed before contemplation of testosterone replacement. This will include measuring levels of follicle-stimulating hormone and luteinising hormone, and then further testing depending on whether the cause is gonadal or pituitary in origin. Other investigations such as measurement of prolactin levels, and thyroid, liver or kidney function tests should be performed in appropriate clinical circumstances.

Special vascular or neurological testing is rarely helpful in determining the most appropriate treatment and is usually not indicated. Vascular assessment might help following pelvic trauma or in men who have always had ED, particularly if simple treatments are ineffective. Suspicion of spinal disease, such as multiple sclerosis, will require appropriate testing.

Diagnosis

At the end of the clinical assessment the GP can formulate a diagnosis, particularly looking for causes of ED that are specifically treatable. Comorbidities in men with ED are important to define and manage.

MANAGEMENT

A management plan should be established and ideally the man and his partner should be involved in formulating this plan. Conditions for which there is a specific treatment are important to recognise. In terms of restoration of sexual function, the potential treatment strategies and options should be discussed with the patient. The box on this page lists treatment options according to level of complexity and need for referral. A significant issue is for the man to understand the costs of treatment because most treatments will not be subsidised.

Even if the ED is predominately physical, most treatments will be enhanced by supportive counselling. This is not always easy in general practice, in part because of time constraints but also because of lack of training. However, basic reassurance, support and follow up are important in men with ED.

Before restoring sexual function, it is important for the GP to consider whether the man is fit enough to resume sexual activity. This is because of the strong association between ED and CVD. Usually the clinical history will give sufficient information to reassure the GP that starting treatment is safe, but screening for asymptomatic CVD may be required.

Modifiable risk factors and causes

Presentations in which specific treatment may restore normal erectile function include a pattern of psychogenic ED associated with an obvious precipitating factor, a prescribed medication leading to a change in sexual function, depression, and presence of hypogonadism. It is important to note that testosterone is only indicated for treatment of ED in men with hypogonadism and is not a treatment for ED in its own right. Acute medical conditions of any cause may lead to a deterioration of sexual function and it is important to reassess the patient after a full recovery.

Other factors may impinge on ED and some benefit may result from modification. These factors include obesity, cigarette smoking, lack of exercise, and drug and alcohol use. The appreciation of CVD implications in men with ED may motivate the patient to a more committed approach to his general health and well-being.

It is common in the middle aged and older man to identify a number of factors that may have a bearing on ED, the primary cause of which may be vascular. Often these factors will include relationship issues that will need resolution before sexual function is improved.

For most men, a specific treatment to promote erections will be required. It is usual to start with simpler first-line options that can be managed by the GP

TREATMENTS FOR ED

First-line treatment

- Modify medication, if applicable (e.g. antidepressants, antihypertensives)
- Diagnose and manage hypogonadism (note, this may not always improve ED)
- Address psychosexual issues (e.g. anxiety, stress, relationship issues)
- Address modifiable lifestyle risk factors (e.g. smoking, obesity, unhealthy diet and lack of exercise)
- Discuss sexual misinformation (e.g. realistic expectations for age)

Second-line treatment

PDE5 inhibitors

- Tadalafil: 10 and 20 mg for on demand use and 5 mg for once a day use
- Sildenafil: 50 and 100 mg for on demand use
- Vardenafil: 10 and 20 mg for on demand use

Penile rings and vacuum devices

- Suitable for men with partial ED, in those who are not interested in or have contraindications to PDE5 inhibitors

Third-line treatment

Intracavernosal injection of vasoactive drugs

- Alprostadil: 10 and 20 µg preloaded syringes

Fourth-line treatment

Penile prosthetic surgery and vascular surgery

- Require referral of patient to an experienced urologist

and then to use other treatments if these fail (see the box on page 54).

Phosphodiesterase-5 inhibitors

Phosphodiesterase-5 inhibitors (PDE5) are the cornerstone of treatment for men with ED. The three PDE5 inhibitors available in tablet form (sildenafil, tadalafil and vardenafil) have been available in Australia for more than a decade, and are widely used, well tolerated and safe to use. There are no other approved oral agents for ED, and other medications available in other forms, such as nasal sprays, are not supported by clinical trial data.

PDE5 inhibitors all work by promoting the normal response to sexual stimulation, usually leading to a harder, more sustained, erection. Across a large number of trials the success rate in allowing intercourse to occur satisfactorily is about 70%.[7] There is no convincing evidence that one PDE5 inhibitor is more efficacious than the others, but in an individual patient they may have different efficacy. The main difference is that tadalafil has an average half-life of about 17 hours compared with four to five hours for the others. This means that tadalafil gives the potential to allow a longer window for successful intercourse, which is important for some couples.

PDE5 inhibitors have been traditionally used 'on demand', taken in preparation for intercourse over the following few hours. More recently, low-dose tadalafil has been available for 'daily dosing', with the view that sexual activity can be more spontaneous. For men who respond to a PDE5 inhibitor, and who use two or more doses a week, daily dosing is cost neutral and is logical to try. Other men will choose this approach after they have weighed up what is best for them, particularly those troubled by the timing issues surrounding 'on demand' dosing.

The box on this page lists some important ways to ensure the best possible success when using PDE5 inhibitors. Most importantly men must understand that sexual stimulation is required for erection and that enough time must elapse after taking the medication for it to be at a therapeutic concentration. The response will often improve with experience of use, and the common practice of judging success on the basis of one or two 'samples' is flawed.

Nitrate medications may potentiate the hypotensive effects of PDE5 inhibitors and concomitant use is contraindicated. Some men get disturbed vision with sildenafil and backache with tadalafil. Other adverse effects include flushing, nasal congestion, headaches, dyspepsia and myalgia. A small number of men will not continue use of PDE5 inhibitors because of these effects. There remains a misconception that these medications have adverse CVD effects. Clinical trials did not support this, although men with recent cardiovascular events, severe heart failure and uncontrolled hypertension were generally excluded from trials. Therefore, caution should be exercised when considering PDE5 inhibitors for men with active coronary ischaemia, congestive heart failure, borderline low blood pressure, borderline low cardiac volume status, a complicated multidrug antihypertensive regimen or drug therapy that can prolong the half-life of PDE5 inhibitors.

Vacuum devices and penile rings

A penile ring alone or in conjunction with a vacuum device, may be suitable for men who have partial ED. These could be a first choice for some men or in those who have an unsuccessful trial of a PDE5 inhibitor. Penile pain, numbness, coldness and difficulty ejaculating may occur, and men need to be careful not to fall asleep with the ring in place.

Intracavernosal injection of vasoactive drugs

If the above treatments fail or are contraindicated, self-injection of vasoactive drugs into the corpora will usually lead to a strong erection. Intracavernosal injection of alprostadil is highly effective but may cause penile pain. Intracavernosal injections of atropine, phentolamine (both off-label use) and papaverine, in various combinations, can also be used for ED. These may be used in combination with alprostadil, if alprostadil alone is unsuitable. Many GPs will choose to refer a patient with ED at this stage. However, there is no reason why a GP cannot

OPTIMISING USE OF PDE5 INHIBITORS FOR ED

- Explain how the drugs work
- Encourage men to discuss medication use with their partners
- Emphasise the need for normal sexual stimulation
- Suggest not to take with or soon after a fatty meal, particularly when using sildenafil
- Suggest avoiding significant alcohol intake for first attempts
- Recognise that for some men manual stimulation is more effective
- Ensure enough time is allowed between dosing and stimulation, at least 30 minutes for first attempts
- Start with the highest dose in most men
- Consider initial dosing without a partner in anxious men
- Consider small starting doses in men who are concerned about side effects
- Try at least four doses to determine effectiveness
- Try a different PDE5 inhibitor if one PDE5 inhibitor is not effective
- Try a lower dose if it is working well
- Encourage men to have sexual activity sooner after dosing or later after dosing to better understand their response window once a response has been achieved

initiate injection of vasoactive drugs, particularly GPs in rural areas or those working in isolation from specialist urological services. It is important to teach men how to inject and to carefully establish the best dose, working upwards from about 5 µg. In this way a prolonged erection (priapism), which is potentially damaging, is avoided. Men who do inject themselves with this treatment should always be given a strategy for intervening if the erection is unduly prolonged.

Men with limited manual dexterity or who are visually handicapped or obese may find this procedure beyond them. It is possible to involve the partner in these circumstances. There are no significant systemic complications of this treatment; however, if vasoconstrictive drugs are used to treat priapism, hypertensive crisis has been reported.

Penile prosthetic and vascular surgery

The implantation within the corpora cavernosa of paired cylinders, attached to a scrotal pump and subcutaneous fluid reservoir (penile prosthesis), is another approach to allow restoration of sexual activity, and is highly effective in well-chosen patients. It is usually considered after other treatments have been tried. This procedure is associated with a small risk of infection and other surgical com - plications, and sometimes mechanical failure. Referral of patients to an experienced urologist is appropriate in these situations.

Arterial and venous surgery is rarely indicated for men with ED. Very occasionally, younger men with ED following pelvic injury will have surgically treatable disease. These procedures are highly specialised.

REFERRAL

GPs will often want to refer men with specific ED problems to appropriate specialists. Men with Peyronie's disease or other penile problems can be referred to an experienced urologist, men with hypogonadism to an endocrinologist, and men with depression or other mental health issues to a psychiatrist or a psychologist.

Another reason for referral of men with ED is failed treatment with PDE5 inhibitors. Some GPs prefer not to manage any men with ED. If necessary, patients could be referred within a multidoctor practice to a colleague who has a special interest in ED or to an ED specialist, which will usually be a urologist, an endocrinologist with an interest in andrology, a sexual health physician or a GP 'specialist'.

FOLLOW UP

It is common for the first attempts at treatment of ED to be not completely successful. Follow up will help enhance the outcome, particularly checking dosing techniques, side effects and partner's response. Concomitant psychosocial factors are more likely to be detected and resolved. Many potential treatment failures may be averted with comprehensive follow up.

CONCLUSION

Erectile dysfunction is a serious medical problem. It is important that GPs are open to talking about ED with their patients and are prepared to ask about sexual function when appropriate. Many important underlying conditions will be detected with appropriate evaluation.

For men and their partners who want to restore sexual function, PDE5 inhibitors will usually be indicated. GPs can confidently prescribe these drugs, thereby successfully treating most men presenting with ED. It is important to recognise that basic support and counselling, together with follow up will enhance the outcome. MT

ACKNOWLEDGEMENT

The author would like to thank Dr Veronica Collins from Andrology Australia for help with preparing this manuscript.

REFERENCES

1. Holden CA, McLachlan RI, Pitts M, et al. Men in Australia Telephone Survey (MATeS): a national survey of the reproductive health and concerns of middle-aged and older Australian men. Lancet 2005; 366: 218-224.
2. Thompson IM, Tangen CM, Goodman PJ, Probstfield JL, Moinpour CM, Coltman CA. Erectile dysfunction and subsequent cardiovascular disease. JAMA 2005; 294: 2996-3002.
3. Gazzaruso C, Giordanetti S, De Amici E, et al. Relationship between erectile dysfunction and silent myocardial ischemia in apparently uncomplicated type 2 diabetic patients. Circulation 2004; 110: 22-26.
4. Chew KK, Finn J, Stuckey B, et al. Erectile dysfunction as a predictor for subsequent atherosclerotic cardiovascular events: findings from a linked-data study. J Sex Med 2010; 7: 192-202.
5. Inman BA, Sauver JL, Jacobson DJ, et al. A population-based, longitudinal study of erectile dysfunction and future coronary artery disease. Mayo Clin Proc 2009; 84: 108-113.
6. Kao SL, Chan CL, Tan B, et al. An unusual outbreak of hypoglycemia. N Engl J Med 2009; 360: 734-736.
7. Hatzimouratidis K, Amar E, Eardley I, et al. Guidelines on male sexual dysfunction: erectile dysfunction and premature ejaculation. Eur Urol 2010; 57: 804-814.

COMPETING INTERESTS: Dr Lording has acted as a consultant to Pfizer, Eli Lilly and Bayer Schering Pharma.