

Erectile dysfunction in the primary sector

Any member of the primary care team can, if they choose, use this section to gain accreditation/feedback.

Section 1. List the signs and symptoms, advice to be given, investigations and referrals for the aetiologies of erectile dysfunction listed in the table below:

Aetiologies	Signs and symptoms	Advice and action	Investigation/referral
Vascular disease			
Neurological			
Drug interactions			
Psychological			

Section 2. This section is provided for readers wishing to refresh their knowledge of erectile dysfunction in people with diabetes. Reading of this section may be deferred until after completion of the remainder of the module.

Erectile dysfunction (ED) is the inability to obtain or maintain an erection sufficient for penetration and/or satisfactory sexual activity (NIH, 1993). It is a dysfunction secondary to a primary cause, which may be either psychological (psychogenic ED) or physical (organic ED). In many instances, it is a combination of both.

Embarrassment and lack of knowledge about treatment options may contribute to a low treatment rate. It is estimated that at least 50% of men with diabetes of age 40–70 years develop ED at some stage. By the age of 70 years, this figure has increased to almost 70% (Kelleher and Oxenham, 1993).

Diabetes and ED

A broad range of conditions can contribute to ED, e.g. diabetes mellitus, vascular disease, surgery, traumatic injury, and low testosterone levels. Diabetes constitutes 40% of all primary physical causes of ED (Zonszein, 1995).

Assessment and diagnosis

Initial discussions should establish that there is a genuine failure to achieve an erection — other sexual problems may require a different approach. Examination of the man's genitalia (penis size, testes size and consistency) should be carried out. Testosterone, follicle-stimulating hormone, luteinizing hormone (LH) and prolactin levels should be measured routinely in men with a lack of libido, previous inguinal or scrotal surgery, or small testicles. Testosterone should not be too low; LH and prolactin should not be too high. Men with primary hypogonadism causing low concentrations of testosterone will have high levels of LH

because of reduced negative feedback (Jeffcoate, 1995). Although rare, endocrine causes are easily excluded.

Good nerve supply and patent blood circulation are required for an erection to occur. The vascular network of the penis and surrounding tissue is essential to normal erectile function.

If ED is caused by vascular or neurological disease, hormone levels should be normal. Abnormal Doppler studies would tend to confirm a vascular cause; abnormalities in basic neurological tests or nerve conduction studies would generally indicate a neurological cause.

Diabetes complications can affect both the blood and nervous supply to the penis. The vascular and neurological components of diabetes make it the single most common systemic disorder associated with ED (Kelleher and Oxenham, 1993). The development of ED associated with diabetes is insidious, occurring over a period of months to years. Patients describe diminished rigidity and reduced ability to sustain an erection. They usually complain of absence of early morning erections, although libido remains intact.

Addressing diabetes complications

Reducing long-term complications of diabetes is an ongoing challenge. One of the most important factors that can be addressed is glycaemic control. Good control may be achieved with diet and/or oral therapy — if these measures fail, insulin therapy may be commenced. It has been shown that improving glycaemic control can prevent further complications and reduce existing ones (DCCT, 1993; UK PDS, 1998a,b).

In men with diabetes, the raised carbohydrate state may lead to angiopathy, a condition characterised by thickening of

the basement membranes of capillaries. Disease involving the network of small vessels in the body of the penis may result in decreased erectile capacity. Macrovascular damage could compromise the erectile function severely. This may be caused by the generalised process of atherosclerosis, especially atheroma of the pudendal or iliac arteries. Risk factors of atherosclerosis include hypercholesterolaemia, cigarette smoking and hypertension (Close and Ryder, 1993).

Psychological reasons

Psychological issues should not be ruled out simply because a man has diabetes. Although ED does not affect life expectancy, it can have a strong negative effect on wellbeing and quality of life. It also often affects interaction with family and associates. The problem tends to be compounded by unrealistic expectations of continuing sexual prowess, partly as a result of most men’s reluctance to admit to or even discuss the problem with their peers.

Drug side-effects

A reduction in erections can often be attributed to blood pressure medication such as diuretics, β-blockers, and calcium channel blockers (all have been well documented as causing ED). Other classes of drugs that can give rise to ED include lipid-lowering drugs such as fibrates and anti-depressants. It is therefore apparent that a thorough assessment of prescribed medications should be carried out (Mersdorf et al, 1991; Grimm and Grandits, 1997).

If a drug is believed to be causing ED, it should be changed wherever possible. This may entail referral back to the doctor who commenced treatment.

Treatment options

Once the diagnosis has been made, including aetiology, appropriate treatment can be given. Table 1 gives characteristics of organic ED and psychogenic ED.

In the past few years, there have been significant advances in the treatment of ED such that the majority of men can now be effectively treated. Simple lifestyle changes such as giving up smoking, reducing alcohol consumption and trying to reduce stress and anxiety can help (Williams and Pickup, 1999).

Sex therapy

If the main cause of a man’s ED is considered to be either psychological or due to difficulties in his relationship with his partner, a course of sex therapy is recommended. This

can also be initiated in combination with other forms of drug or device treatments as it is very useful in helping couples to re-establish a sexual relationship where there has been a lengthy period without sexual activity because of the ED.

Referral to a sexual counsellor should be discussed in all cases, even when the main cause is organic, as there may be a psychological overlay.

Vacuum constriction devices

Vacuum constriction devices are one of the most commonly used treatments. The devices are often used by men who fail to respond to drug therapy, or decide against it. Vacuum constriction devices are particularly useful for organic ED.

The device consists of a plastic cylinder attached to a pump, which may be hand or battery driven, and one or more tension rings. The plastic cylinder is placed over the penis. As air is pumped out of the cylinder, a vacuum is created and blood enters the penis. When the penis is rigid, a ring is slipped off the cylinder to encircle the base of the penis, thus trapping the blood and maintaining the erection.

Pharmacological therapy

Sildenafil was the first oral treatment for ED to be licensed in the UK. Under current guidelines (DoH, 1999), diabetes is one of the conditions for which sildenafil can be provided on an FP10 prescription. The mode of action involves relaxation of blood vessels in the penis. Taken about an hour before anticipated sexual activity, it helps a man to achieve an erection in response to sexual stimulation.

Intracavernosal and transurethral therapy are non-oral pharmacological therapies. In intracavernosal therapy, alprostadil is injected directly into the penis through a very fine needle. This usually brings about the normal changes in the penis that occur during an erection. The technique can be easily learnt for home use.

Transurethral therapy entails the introduction of a small pellet of alprostadil into the urethra with a special disposable applicator. It is equally effective for all patients with organic ED, although recent studies have shown a reduced success rate with organic causes such as diabetes (Padma et al, 1997).

Hormone treatment

Only a small proportion of cases are caused by hormone abnormalities. Of these, the most frequent hormone abnormality is a reduced level of testosterone which can be restored by appropriate testosterone replacement.

Conclusion

Improved understanding of the causes of ED has led to a dramatic increase in the research and development of drugs and devices to treat the condition. As a result, a wider choice of therapies has become available.

Medical reasons and personal preference will guide the choice of therapy. ED affects not only the man but also his partner and what is suitable for one patient/couple may not be recommended or chosen by another. However, the current range of therapeutic options should help to relieve the burden of ED. ■

Table 1. Comparison of characteristics of erectile dysfunction of psychogenic and organic origin.

Psychogenic	Organic
Sudden onset	Gradual onset
Specific situation	All circumstances
Normal nocturnal and early morning erections	Absent nocturnal and early morning erections
Relationship problems and reduced libido	Normal libido and ejaculation
Problems during sexual development	Normal sexual development

Close CF and Ryder REJ (1995) Impotence in diabetes mellitus. *Diabetes Metabolism and Research Reviews* 11: 279–85

EDUCATION MODULE NO. 5: ERECTILE DYSFUNCTION IN THE PRIMARY SECTOR

DCCT (1993) (Diabetes Control and Complications Trial) The effect of intensive treatment of diabetes on the development and progression of long-term complications in insulin-dependent diabetes mellitus. *New England Journal of Medicine* **329**: 977–86

Department of Health (1999) *Treatment for Impotence (HSC1999/148)* 30 Jun 1999 NHS Executive

Jeffcoate W (1995) *Lecture Notes in Endocrinology*, 5th edn Blackwell Science, Oxford

Grimm RH Jr, Grandits GA (1997) Long term effects on sexual function of five antihypertensive drugs and nutritional hygienic treatment in hypertensive men and women. *Hypertension* **29**: 8–14

Kelleher A, Oxenham J (1993) An open approach to a delicate subject — management of diabetes related sexual problems. *Practitioner* **8(7)**: 465–8

Mersdorf A, Goldsmith PC, Diederichs W, Padula CA, Lue TF, Fishman IJ, Tanagho EA (1991) Ultrastructural changes in impotent penile tissue: a

comparison of 65 patients. *Journal of Urology* **145**: 749–58

NIH (1993) NIH Consensus Development Panel on Impotence *Journal of the American Medical Association* **270**: 83–90

Padma-Nathan H, Hellstrom WJG, Kaiser FE, Labask RF, Lue TF, Nolten WE, Norwood PC (1997) Treatment of men with erectile dysfunction with transurethral alprostadil (for the Medicated Urethral System for Erection (MUSE) Study Group) *New England Journal of Medicine* **336**: 1–7

UKPDS (1998a) (The Prospective Diabetes Study Group) Tight blood pressure control and risk of macrovascular and microvascular complications in type 2 diabetes (UKPDS 38) *British Medical Journal* **317**: 703–13

UKPDS (1998b) (The Prospective Diabetes Study Group) Efficacy of atenolol and captopril in reducing risk of macrovascular and microvascular complications in type 2 diabetes (UKPDS 39) *British Medical Journal* **317**: 713–20

Williams G and Pickup (1999) *Handbook of Diabetes*, 2nd edn.

Zonszein J (1995) Diagnosis and management of endocrine disorders of erectile dysfunction. *Urology Clinics of North America* **22(4)**: 789–802

Section 3. The answers to the case studies below should include the underlying aims of treatment, although specific goals may be used for individuals.

Case study 1

Brian, 68 years old, obese (BMI=34), with type 2 diabetes of 8 years duration. Diabetes control is poor (HbA_{1c} of 8.9%). He has had gradual onset of failing erections for 3 years. However, he has a strong libido. Brian is in a stable relationship with a physically healthy woman. He is also under the care of the foot clinic for a neuropathic foot ulcer.

Questions about case study 1

a) What are the key factors to take into account?

b) What would you expect to find on clinical examination and investigation?

c) What therapeutic approach would you take?

Case study 2

Matthew, 50 years old, has diabetes of 10 years duration treated with maximum oral therapy. His HbA_{1c} is 8%. He has hypertension and, for many years, has been complaining of gradual progression of erectile dysfunction. He takes a multitude of drugs to try to keep the hypertension under control. For the past 6 months, Matthew has been prescribed antidepressants.

Questions about case study 2

a) What are the key factors to take into account?

b) What would you expect to find on clinical examination and investigation?

c) What therapeutic approach would you take?

Case study 3

Troy is a 33 year old stressed manager of an international company. He has had type 1 diabetes for 12 years. His HbA_{1c} is 7.4%. He is taking mild sedatives. Since his divorce 4 years ago, Troy has had an active sexual life with several women. He has a new partner and is finding it difficult to maintain his erections, although he can still achieve spontaneous erections, e.g. on awakening or while asleep. Troy has 30 units of alcohol at the weekends and smokes about 10 cigarettes per day.

a) What are the key factors to take into account?

b) What would you expect to find on clinical examination and investigation?

c) What therapeutic approach would you take?

EDUCATION MODULE No. 5: ERECTILE DYSFUNCTION IN THE PRIMARY SECTOR

Section 4. Think of five patients with type 1 and type 2 diabetes who you see in your practice, and answer the questions below for each:

	Patient 1	Patient 2	Patient 3	Patient 4	Patient 5
a) Do you think that this patient is at risk of developing erectile dysfunction?					
b) What factors indicate their risk?					
c) What is the underlying aetiology?					
d) What advice will you give?					
e) Who else may need to be involved?					

Section 5. After completing the above exercise, identify two or three key points, stating how this will influence your future practice.

1.
2.
3.

EDUCATION SUPPLEMENT APPLICATION FORM

Please send the completed education supplement and application form (or a copy of it) to the address below if you wish it to be assessed. Feedback on your work, plus a set of specimen answers, will be sent to you within 3 months.

Name.....
 Job title.....
 Address.....

 Postcode.....
 Telephone..... Fax.....
 GMC or UKCC registration number.....

Has the programme been effective in meeting your needs? Yes No
 Comments.....

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DISTANCE LEARNING PACKAGE FOR THE PRIMARY CARE TEAM

How to complete the learning module...



Each issue of **Diabetes and Primary Care** contains a continuing education module. Each module carries 2 hours PGEA accreditation for GPs; nurses can complete the supplement to use towards their PREP requirements. Participants should be able to complete the supplement within 2 hours. This can then be submitted to the address on the application form for assessment and feedback. Certificates will be awarded to all health professionals completing the supplement to the required standard. No payment is required.

Standards to be achieved

To receive a certificate, the answers provided must meet the following criteria:

1. All questions within the supplement must be answered.

2. The minimum number of answers to individual questions should be given where specified.
3. Factual knowledge around the subject area, plus the case studies, will be compared with specimen answers for accuracy.
4. Questions around your own practice will be assessed for an adequate level of completion. Brief answers are acceptable.

The feedback will indicate one of two things:

- a) You have successfully completed the questions and will be awarded accreditation and a certificate.
- b) Your answers have been inadequate, and comments will be provided.

You will also receive a set of specimen answers against which to compare your own work.

Each module follows a standard format, relating to one area of diabetes care

- Section 1: Seeks information about your factual knowledge around the subject area
- Section 2: Provides factual information to enable you to revise and refresh your existing knowledge (this section will contain no questions for you to answer)
- Section 3: Presents two or three case studies to provide you with an opportunity to apply your knowledge to different patient scenarios
- Section 4: Invites you to answer questions about the treatment of a number of patients within your practice around the subject area
- Section 5: Asks how completion of the supplement will influence your future practice