

# Sexual dysfunction in men with diabetes

Lesley Mills

**Citation:** Mills L (2015) Sexual dysfunction in men with diabetes. *Journal of Diabetes Nursing* 19: 332–8

## Article points

1. Sexual dysfunction in men with diabetes has been talked about for many years and a great deal of important research has been carried out. It has been linked to neuropathic and vascular changes that occur in diabetes, as well as medication side-effects and psychogenic factors.
2. The healthcare professional carrying out the consultation should conduct a detailed assessment of the individual's problem, including the duration of symptoms, duration of diabetes and any precipitants.
3. Treatment options include phosphodiesterase-5 inhibitors, topical gels and pellets, vacuum therapy, intra-cavernosal therapy and testosterone replacement therapy. Psychological issues should also be considered.

## Key words

- Diabetes
- Erectile dysfunction
- Sexual health

## Authors

Lesley Mills is Consultant Nurse in Diabetes, Warrington and Halton Hospitals NHS Foundation Trust.

**Erectile dysfunction (ED) is a common complication in men with diabetes. It is three-times more common in men with diabetes than men without, and it occurs 10–15 years earlier in men with diabetes. It has been linked to the neuropathic and vascular changes that can occur in diabetes, but it can also be the result of medication side-effects or may also be caused by psychogenic factors. This article discusses the assessment of ED and treatment options available, as well as the psychological impact on both the individual and their partner.**

**M**aintaining good sexual health can be a challenge and this can be particularly so for men with diabetes.

Sexual dysfunction in men with diabetes has been talked about for many years and a great deal of important research has been carried out. If you do a Google search for “erectile dysfunction (ED) in diabetes”, over 10 million sites come up.

NICE (2009) reviewed ED in men with diabetes and have issued guidance concerning the management of ED in men with type 2 diabetes. This guidance states that:

*“A review of any issue with erectile dysfunction in men should be carried out annually. An assessment and education for men with erectile dysfunction should be provided to address contributory factors and treatment options.”*

The guidance goes on to suggest that phosphodiesterase-5 (PDE-5) inhibitors should be offered, if pharmacological management is required, in the absence of contraindications. If PDE-5 inhibitors have been unsuccessful,

a referral to a service offering other medical, surgical or psychological management of ED should be discussed with the individual.

## Sexual health

To achieve an erection that is good enough for penetrative sex, sexual stimulation is usually initiated and a vascular process starts, controlled by the autonomic nervous system. Blood vessels in the corpora cavernosa dilate and lead to increased arterial inflow and reduced venous outflow. Nitric oxide causes the smooth muscle to relax in the corpora cavernosa. Nitric oxide stimulates guanylate cyclase, which leads to increased production of cyclic guanosine monophosphate and it is thought that this induces smooth muscle relaxation through the opening up of calcium channels (Price, 2010).

ED is a prevalent complication of diabetes; it is three-times more common in men with diabetes than men without and it occurs 10–15 years earlier in men with diabetes (Feldman et al, 1994). The prevalence of ED varies from 35% to 90% of men (Malvige and

**Page points**

1. Studies of men with diabetes have shown that autonomic neuropathy and endothelial dysfunction may result in nitric oxide failing to induce a relaxation of the smooth muscle, resulting in erectile dysfunction (ED).
2. ED should be seen as a warning sign for more widespread vascular disease. Clinicians should ask about ED when consulting with all men with diabetes in order to improve primary prevention of cardiovascular events.
3. Hypogonadism, or testosterone deficiency syndrome, has also been identified as playing a part in ED. It is important that screening for hypogonadism is carried out due to the increased association between low testosterone and morbidity/mortality.

Levy, 2009). It has been linked to neuropathic and vascular complications of diabetes. Age, hypertension history and duration of diabetes are significantly associated with the presence and severity of ED. Other potential causes are medication side-effects. Furthermore, psychogenic factors often play a part in its cause.

Price (2010) documented that many studies of men with diabetes have shown that autonomic neuropathy and endothelial dysfunction may result in nitric oxide failing to induce a relaxation of the smooth muscle, resulting in ED. Although it is thought that vascular disease is the most common organic cause of ED, studies have suggested that ED should be seen as a warning sign for more widespread vascular disease (Pegge et al, 2006). Clinicians should ask about ED when consulting with all men with diabetes in order to improve primary prevention of cardiovascular events in this population. Montorsi et al (2003) document that in about 65% of men, ED precedes the onset of coronary artery disease.

More recently, the “Look AHEAD” trial looked at the relationship of ED to exercise fitness and cardiovascular risk factors in men with type 2 diabetes. The results of this trial showed that of the 69% of men who were sexually active at the time of the study, almost 50% reported mild or moderate degrees of ED and 25% had complete ED. Cardiovascular risk factors were highly associated with ED in this population and cardiorespiratory fitness was protective in the analysis (Rosen et al, 2009).

The Massachusetts Male Aging Study by Haro et al (2006) identified that only 10% of men will seek or receive treatment for their ED. It is important for healthcare professionals to be confident in having a routine discussion with men during a diabetes review, at least annually. In a study investigating the relationship between ED and coronary vascular disease in 372 people from GP practices in the UK, almost 50% of men with ED had missed opportunities for risk assessments and interventions because the men did not acknowledge or discuss the fact that they had a problem (Hodges et al, 2007).

**Testosterone deficiency**

Hypogonadism, or testosterone deficiency syndrome, has also been identified as playing a part in ED. This is not uncommon and is diagnosed in around 1 in 200 men (Nieschlag et al, 2006). In one study by Kapoor et al (2007), 20% of men with diabetes had a total testosterone level of <8 nmol/L and the level of 8–12 nmol/L was found in 31% of men. Unless otherwise contraindicated, if a man is found to have testosterone deficiency and reduced libido or ED, then testosterone replacement therapy (TRT) should be considered (Handelsman, 2002).

It is extremely important that screening for hypogonadism is carried out due to the increased association between low testosterone and morbidity/mortality. The initial assessment with all men with ED and/or diminished libido should include a serum testosterone. This should be taken in the morning, between 8am and 11am, as there is a diurnal variation and this will show testosterone at its highest level. General agreement is that a total testosterone above 12 nmol/L does not require replacement. Men with a serum testosterone level below 8 nmol/L often do benefit from replacement therapy. There is now some evidence that trialling therapy in men with a testosterone level between 8–12 nmol/L may also provide a benefit (British Society for Sexual Medicine, 2010). It is important to re-check the blood result for a second time before initiating any TRT and prolactin, luteinising hormone (LH) and follicle stimulating hormone (FSH) should also be checked at the same time.

**Pornography use and ED**

There have been few studies carried out to investigate relationship between pornography consumption and sexual dysfunction, and those that have, have shown a statistical significance (Landripet and Stulhofer, 2015). The direction of this association is unclear, as pornography use may also be a way to cope with sexual difficulties or decreased sexual satisfaction.

**Effects on partners**

The person experiencing sexual dysfunction

**Page points**

1. The person experiencing sexual dysfunction can have poor self-image and may even avoid physical contact, leading to withdrawal from social relationships. For those in a relationship, it can also affect partners.
2. The healthcare professional carrying out the assessment should conduct a detailed description of the individual's problem, including the duration of symptoms and duration of diabetes, along any precipitants.
3. People with diabetes are likely to be taking a number of different medications so it is important to consider how these will affect sexual function. It is also important to be aware that withdrawing a medication could compromise the treatment of a concurrent condition.

may have poor self-image and may even avoid physical contact, leading to withdrawal from social relationships. For those in a relationship, it can also affect partners; the anxiety and tension that this brings can cause low physical and emotional satisfaction to the couple, which can, in turn, lead to anger and depression. It is important to try and involve the partner in consultations and encourage them to talk about this with each other (Mills and Unwin, 2011).

Dean et al (2006) conducted the PAIRS (psychological and interpersonal relationships scale) study, where they developed a measure to assess the broader psychosocial and interpersonal outcomes of ED treatments. It also looks at the sexual self-confidence of men, their ability to achieve an erection and enjoy fulfilling sexual experiences.

**Assessment**

The healthcare professional carrying out the consultation should conduct a detailed assessment of the individual's problem, including the duration of symptoms and duration of diabetes, along any precipitants. The healthcare professional should ascertain other factors such as:

- Speed of onset of sexual dysfunction.
- Presence of physiological erections.
- Bladders symptoms and symptoms of autonomic or peripheral neuropathy.
- Symptoms of macrovascular disease.
- Any other endocrine issues.
- Drug history.
- Physical examination.

Routine blood tests should include a fasting early morning testosterone, cortisol, LH and FSH. All treatment interventions, along with the response to treatment, need to be documented. An expression of tumescence and rigidity with quality of morning awakening erections, and spontaneous, masturbatory or partner-related activity erections should be recorded. The man should be questioned around his sexual desire, if he has any ejaculatory and orgasmic dysfunction, and his previous erectile capacity.

It is important to ask whether he, or his partner, have any issues around sexual aversion or sexual pain. If the partner is female, she

may be experiencing vaginal pain or be peri-menopausal.

Concurrent medical, psychiatric and surgical history should also be recorded, as should the current relationship status (single, married, long-term relationship). A history of previous sexual partners and relationships may be of benefit and this is especially important if the healthcare professional suspects psychological factors are contributing to the ED. Finally, the man should be asked about alcohol, smoking and illicit drug misuse.

The use of validated questionnaires, particularly the International Index of Erectile Function (IIEF) or the validated shorter version of the Sexual Health Inventory for Men (SHIM), can be useful in assessing sexual function domains, as well as the impact of treatments and interventions (Rosen et al, 2003). It is important to note, however, that these measures do not replace the need for a thorough history and medical examination.

**Polypharmacy**

Many people with diabetes are prescribed a number of different drugs for other conditions, such as hypertension, dyslipidaemia and depression. These include antidepressants, such as selective serotonin re-uptake inhibitors, tricyclics and monamine oxidase inhibitors; lipid-lowering agents; beta-blockers; calcium channel blockers; thiazide diuretics; digoxin and phenytoin.

It is important to be aware that these can interfere with different aspects of sexual function. However, it is extremely important to note that withdrawing a drug that is causing sexual dysfunction could compromise the treatment of another important condition. Once these issues have been addressed, treatment options should then be discussed with the individual.

**Treatment for men with ED**

**Drug therapy**

There are four oral PDE-5 inhibitors on the market – sildenafil, tadalafil, avanafil and vardenafil. All four appear to have similar efficacy and tolerability. Now that sildenafil is

---

off-patent, this is the first-line choice of oral therapy. Caution should be used in cardiovascular disease, as these drugs are contraindicated in individuals receiving nitrates (Electronic Medicines Compendium, 2015).

### **Topical gels and pellets**

Topical gels containing alprostadil can cause vasodilatation of blood vessels in the corpora cavernosa and an increase in cavernosal artery blood flow, resulting in penile rigidity. The onset of action of this form of alprostadil can be within 30 minutes and the effect can last for about an hour. The same drug can be given as a transurethral pellet, about the size of a grain of rice. It is introduced down the urethra via a special applicator. This should start to work within about 10 minutes and lasts around 30–60 minutes, before natural subsidence occurs.

### **Vacuum therapy**

Vacuum devices are available on prescription under the NHS selected list scheme (SLS) and can be the most successful treatment option for those individuals who either choose not to try pharmacological treatments, or in those where other forms of treatment are contraindicated. Even in the presence of extensive vascular disease or severe autonomic neuropathy, vacuum therapy in men with diabetes has shown good results (Mills and Unwin, 2011). It is important to ensure that if an individual is going to use a vacuum pump, education and training is provided on good technique in order to achieve a successful erection.

### **Intra-cavernosal therapy**

Alprostadil (prostaglandin E1) can be given by intracavernosal injection. Although some men may find the thought of injecting a 12.7-mm needle into the base of their penis daunting, this is actually a popular treatment and, with appropriate counselling and demonstration in clinic, can be very successful.

### **Testosterone replacement therapy (TRT)**

There are various preparations for TRT, including topical gels, patches and injections. Individuals need to be monitored 3–6 months for 12 months and then annually. TRT is contraindicated in anyone who has had prostate cancer or some other types of cancers. Guidance around the use of testosterone replacement is available now the British Society for Sexual Medicine ([www.bssm.org.uk](http://www.bssm.org.uk)).

### **Conclusion**

Sexual dysfunction is now widely discussed and most diabetes

**Page points**

1. Men can be treated with phosphodiesterase-5 (PDE-5) inhibitors. Topical gels and pellets containing alprostadil are also effective. Alprostadil can also be given by intracavernosal injection
2. Vacuum therapy is often a successful treatment for those who do not want, or are unable to take, a pharmacological treatment.
3. There are various preparations of testosterone replacement therapy, including topical gels, patches and injections.

clinics will, at least, ask the question at annual review. Although a lack of knowledge and training remains a problem and there is an issue of embarrassment, as healthcare professionals we should be discussing this as routinely as retinopathy screening. There are a number of simple treatment options for professionals to offer men, as mentioned previously. If these treatments fail, however, then a referral to secondary care, or a more specialist referral, can often help to improve the outcome for these individuals.

Finally, it is not just about treating the symptom, but finding the cause. By doing this, not only can it then be prevented from

becoming any worse, but also can help with other aspects of diabetes management and prevention of other long-term complications. ■



Figure 1. Vacuum devices can be a successful treatment option for people who choose not to use pharmacological treatments or when they are contraindicated.

British Society for Sexual Medicine (2010) *Guidelines on the management of sexual problems in men: the role of androgens*. BSSM, Fisherwick, Staffordshire. Available at: <http://bit.ly/1N7CGuT> (accessed 02.10.15)

Dean J, Hackett GI, Gentile V et al (2006) Psychosocial outcomes and drug attributes affecting treatment choice in men receiving sildenafil citrate and tadalafil for the treatment of erectile dysfunction: Results of a multicenter, randomized, open-label, crossover study. *J Sex Med* **3**: 650–61

electronic Medicines Compendium (2015) *Viagra 25mg, 50mg, 100mg*. eMC. Available at: <http://bit.ly/1iQxa2H> (accessed 02.10.15)

Feldman HA, Goldstein I, Hatzichristou DG et al (1994) Impotence and its medical and psychosocial correlates: results of the Massachusetts Male Aging Study. *J Urol* **151**: 54–61

Handelsman DJ (2002) Androgen physiology, pharmacology and abuse. In: De Groot LJ, Beck-Peccoz P, Chrousos G et al (eds). *Endotext*. MDtext.com, South Dartmouth, Massachusetts, USA

Haro JM, Beardsworth A, Casariego J et al (2006) Treatment-seeking behavior of erectile dysfunction patients in Europe: Results of the Erectile Dysfunction Observational Study. *J Sex Med* **3**: 530–40

Hodges LD, Kirby M, Solanki J et al (2007) The temporal relationship between erectile dysfunction and cardiovascular disease. *Int J Clin Pract* **61**: 2019–25

Kapoor D, Aldred H, Clark S, et al (2007) Clinical and biochemical assessment of hypogonadism in men with type 2 diabetes. Correlations with bioavailable testosterone and visceral adiposity. *Diabetes Care* **30**: 911–7

Landripet I, Stulhofer A (2015) Is pornography use associated with sexual difficulties and dysfunctions among younger heterosexual men? *J Sex Med* **12**: 1136–9

Malavige LS, Levy J (2009) Erectile dysfunction in diabetes mellitus. *J Sex Med* **6**: 1232–47

Mills LS, Unwin CA (2011) Fundamentals in diabetes. Part 4: Sexual dysfunction. *Journal of Diabetes Nursing* **15**: 387–90

Montorsi F, Briganti A, Salonia A et al (2003) Erectile dysfunction prevalence, time of onset and association with risk factors in 300 consecutive patients with acute chest pain and angiographically documented coronary artery disease. *Eur Urol* **44**: 360–4

NICE (2009) *Type 2 diabetes: The management of type 2 diabetes*. NICE, London. Available at: <http://www.nice.org.uk/cg87> (accessed 29.09.15)

Nieschlag E, Swerdloff R, Behre HM et al (2006) Investigation, treatment, and monitoring of late-onset hypogonadism in males: ISA, ISSAM, and EAU recommendations. *J Androl* **27**: 135–7

Pegge NC, Twomey AM, Vaughton K et al (2006) The role of endothelial dysfunction in the pathophysiology of erectile dysfunction in diabetes and in determining response to treatment. *Diabet Med* **23**: 873–8

Price D (2010) Sexual function in men and women with diabetes. In: Holt RIG, Cockram CS, Flyvbjerg A, Goldstein BJ (eds). *Textbook of Diabetes* (4<sup>th</sup> edition). Wiley Blackwell, Oxford

Rosen R, Altwein J, Boyle P et al (2003) Lower urinary tract symptoms and male sexual dysfunction: The multinational survey of the aging male (MSAM-7) *Eur Urol* **44**: 637–49

Rosen RC, Wing RR, Schneider S et al (2009) Erectile dysfunction in type 2 diabetic men: Relationship to exercise fitness and cardiovascular risk factors in the Look AHEAD trial. *J Sex Med* **6**: 1414–22