

Erectile dysfunction treatments other than pharmaceuticals

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Policy contains: surgical revascularization; penile vacuum pump; erectile dysfunction; impotence.

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Coverage policy

Vacuum erection devices and penile arterial reconstruction for erectile dysfunction are clinically proven and, therefore, may be medically necessary when the following criteria are met:

- The member is diagnosed with erectile dysfunction.
- Conservative treatments have been attempted for at least 12 months and have failed (Burnett, 2018).

Note: This policy does not address penile prosthesis implants.

Limitations

Other nonmedicinal interventions for erectile dysfunction are investigational/not clinically proven, and therefore, not medically necessary — including venous surgery, low-intensity extracorporeal shock wave therapy, intra-cavernosal stem cell therapy, and platelet-rich plasma therapy (Burnett, 2018).

Alternative covered services

Various medications (not addressed in this policy).

Background

Erectile dysfunction, also referred to as impotence, is defined as the inability to achieve or maintain an erection that is sufficient for satisfactory sexual performance. Some form of erectile dysfunction will affect 40% of men in their 40s; 50% of men in their 50s; 60% of men in their 60s; and higher rates for men over 70 (Ferrini, 2017).

Erectile dysfunction was once believed to be a psychological disease, but more than 80% of cases are now considered to have an organic etiology. Conditions associated with the disorder include hypogonadism, lower urinary tract symptoms, benign prostatic hypertrophy, hypertension, cardiovascular disorder, smoking, excess alcohol intake, obesity, dyslipidemia, diabetes mellitus, metabolic syndrome, stress, anxiety, and depression. Reactions to various surgeries and medications can also cause erectile dysfunction (Yafi, 2016).

Diagnosing erectile dysfunction includes a work-up of patients seeking medical care for the disorder. The diagnosis can only be made with establishment of an accurate medical and sexual history; a careful general and focused genitourinary examination; and a minimum number of hormonal and routine biochemical tests. Provider questioning to the patient must be done in a manner to minimize patient embarrassment (Yafi, 2016).

Erectile dysfunction is a highly under-treated condition. A study of 6.2 million males diagnosed with erectile dysfunction found that only 25.4% were treated (at least one filled prescription for phosphodiesterase type 5 inhibitor, injection or urethral prostaglandins, or androgen replacement) over a 12-month period. Men older than age 60 were significantly less likely ($P < .0001$) to be treated than males ages 40 – 59 (Frederick, 2014).

Recommended treatment of men with erectile dysfunction should always include encouragement of patient lifestyle changes that address known causes of the disorder. These changes include diet, increased physical activity, and cessation of alcohol consumption or tobacco use. The most conservative first-line treatment for the disorder is prescribed oral phosphodiesterase type 5 inhibitors; testosterone therapy can be added if the patient also has hypogonadism (Burnett, 2018).

When conservative treatments with medications cannot be tolerated or do not result in improvements, erectile dysfunction can be treated using several non-invasive as well as invasive approaches such as:

- Vacuum Erection Device. An acrylic cylinder with a pump may be attached directly to the end of the penis, and a constriction ring or band is placed on the cylinder at the other end, which is applied to the body. The cylinder and pump create a vacuum to help the penis become erect, while the band or constriction ring helps maintain the erection (Hoyland, 2013).
- Penile Arterial Reconstruction. Vascular surgery can reconstruct arteries to improve blood flow to the penis. Recent types of this surgery include circumferential incision plus a median pubic longitudinal approach with acupuncture-assisted local anesthesia and penile venous stripping surgery (Molodysky, 2013).

Dietary supplements and other natural treatments are also used to treat erectile dysfunction; efficacy reviews in the professional literature are limited.

Findings

The American Urological Association guideline on erectile dysfunction recommended six types of treatments that may be considered. Three are medications, while the others include vacuum erection devices and penile arterial reconstruction — for both, the guideline states that patients must be informed of potential risks and benefits before treatment starts. Treatments not recommended are venous surgery, low-intensity extracorporeal shock wave therapy, intracavernosal stem cell therapy, and platelet-rich plasma therapy (Burnett, 2018).

The Canadian Urological Association agreed that oral medications should be first-line therapy. However, second-line therapies and surgery are also important options in treating confirmed cases of erectile dysfunction (Bella, 2015). The European Association of Urology also supported these first-, second-, and third-line therapies (Hatzimouratidis, 2016). The British Society for Sexual Medicine guideline supported use of vacuum erection devices but did not mention penile arterial reconstruction (Hackett, 2018).

The American Academy of Family Physicians guideline recommended lifestyle changes (including tobacco cessation, exercise, weight loss, control of diabetes, hypertension, and hyperlipidemia), plus oral phosphodiesterase-5 inhibitors as first-line treatments for erectile dysfunction. The Academy recommended alprostadil and vacuum devices for second-line therapy, and surgically implanted penile prostheses when other treatments have failed (Rew, 2016).

The American Society of Clinical Oncology endorsed a guideline, including a recommendation that people with cancer be counseled about sexual health and dysfunction related to cancer. The guideline states that if medical management does not succeed, medication such as phosphodiesterase type 5 inhibitors may be beneficial, and surgery remains an option for males with erectile dysfunction (Carter, 2018).

A number of systematic reviews or meta-analyses and other large-scale studies have appeared in the professional literature addressing safety and effectiveness of various treatments for erectile dysfunction.

Vacuum Erection Device

- A systematic scoping review of 16 studies documented improvements after vacuum erection, both with and without PDE5i medication, in International Index of Erection Function scores, conservation of penile length, and satisfactory intercourse (Pirola, 2023).
- A systematic review/network meta-analysis of 24 randomized trials ($n = 3,500$) of males with erectile dysfunction after prostatectomy found vacuum constriction devices were the most effective intervention in improving erection function scores three months of surgery. Devices improved outcomes when added to drugs, with no change after medication was added to vacuum device monotherapy (Feng, 2021).
- A systematic review/meta-analysis of 39 randomized trials of erectile dysfunction after prostatectomy revealed erection function scores were significantly higher when vacuum constriction devices were used, compared to controls, six to nine months after surgery ($P = .003$) (Feng, 2022).
- A systematic review of 11 studies of patients with erectile dysfunction following robot-assisted prostatectomy concluded that of all treatments combined with phosphodiesterase-5 inhibitors, vacuum pump erection devices had the “most promising association” (Marchioni, 2020).

Penile Arterial Reconstruction

- A systematic review and meta-analysis of 16 articles ($n = 374$) assessed efficacy and safety of endovascular therapy in patients with veno-occlusive dysfunction or arterial insufficiency. Overall clinical

success rates for the groups were 59.8% and 63.2%; complications occurred in 5.2% and 4.9% (Doppalapudi, 2019).

- A study of 96 patients with (veno-occlusive) erectile dysfunction found pelvic venoablation, without any drugs, allowed 80.21% to have erections sufficient for vaginal insertion within three months (Herwig, 2015).
- A study of 110 patients tracked an average of 73.2 months after penile revascularization surgery showed an increase in erection function from 7.3 to 16.8 points. The three-month success rate (> 5-point increase), was 81.8% at three months, and 63.6% at five years (Kayigil, 2012).

Extracorporeal shock wave therapy (low-intensity)

- A systematic review/meta-analysis of 16 studies (n = 1,054) found treatment of erectile dysfunction with shock wave therapy versus placebo (sham treatment or no treatment) improved scores of International Index of Erectile Function ($P < .00001$) and Erectile Hardness Scale ($P = .002$) (Yao, 2022).
- A systematic review of nine studies (three randomized) revealed post-prostatectomy erectile dysfunction was sometimes more effectively treated by a combination of shock wave therapy and medication versus medication only. Authors agree that the literature is limited for shock wave therapy, and that studies are limited by small sample sizes, high risk of bias, and high heterogeneity (Sighinolfi, 2022).
- A systematic review/meta-analysis of seven studies showed shock wave therapy for erectile dysfunction, versus vibration without energy transmission showed higher scores using International Index of Erectile Function and Erectile Hardness Scale, both $P < .001$ (Liu, 2022).
- A systematic review/meta-analysis of five randomized controlled trials (n = 354) found shock wave therapy for erectile dysfunction, compared with sham treatment, improved International Index of Erectile Function ($P = .0073$) and Erectile Hardness Scale ($P < .001$) scores (Kalka, 2021).

References

On September 11, 2023, we searched PubMed and the databases of the Cochrane Library, the U.K. National Health Services Centre for Reviews and Dissemination, the Agency for Healthcare Research and Quality, and the Centers for Medicare & Medicaid Services. Search terms were “erectile dysfunction,” “extracorporeal shock wave therapy,” “penile arterial reconstruction,” “penile prosthesis implantation,” and “vacuum erection devices.” We included the best available evidence according to established evidence hierarchies (typically systematic reviews, meta-analyses, and full economic analyses, where available) and professional guidelines based on such evidence and clinical expertise.

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Policy updates

12/2019: initial review date and clinical policy effective date: 1/2020

12/2020: Policy references updated.

12/2021: Policy references updated.

12/2022: Policy references updated.

12/2023: Policy references updated. Penile implants removed from policy, due to InterQual overlap.