TABLE 67-2 CHARACTERISTICS OF PDE-5i MEDICATIONS

Drug	Onset of Action	Half-Life	Dose	Adverse Effects	Contraindications
Sildenafil	T_{max}, 30-120 min Duration, 4 h High-fat meal decreases absorption ETOH may affect efficacy	2–5 h	25–100 mg Starting dose, 50 mg	Headache, flushing, dyspepsia, nasal congestion, altered vision	Nitrates Hypotension Cardiovascular risk factors Retinitis pigmentosa Change dose with some antiretrovirals Should be on stable dose of alpha blockers
Vardenafil	T_{max}, 30–120 min Duration, 4–5 h High-fat meal decreases absorption ETOH may affect efficacy	4.5 h	5–10 mg	Headache, flushing, rhinitis, dyspepsia	Same as sildenafil May have minor prolongation of QT interval Concomitant use of Class I antiarrhythmic
Tadalafil	T_{max}, 30–60 min Duration, 12–36 h Plasma concentration Not affected by food or ETOH	17.5 h	10 mg, 20 mg; 2.5 or 5 mg for daily dose	Headache, dyspepsia, back pain, nasal congestion, myalgia	Same as sildenafil
Avanafil	T_{max}, 30 min Duration, 2 h Plasma concentration not affected by food	3–5 h	50, 100, and 200 mg	Headache, flushing, nasal congestion, nasopharyngitis, back pain	Same as sildenafil

Abbreviations: ETOH, alcohol; T_{max}, time to maximum plasma concentration.

in the setting of normal testosterone is rarely efficacious in the treatment of ED and is discouraged. Methods of androgen replacement include transdermal patches and gels, parenteral administration of long-acting testosterone esters (enanthate and cypionate), and oral preparations (17 α-alkylated derivatives) **(Chap. 411)**. Oral androgen preparations have the potential for hepatotoxicity and should be avoided.

Men who receive testosterone should be reevaluated after 1–3 months and at least annually thereafter for testosterone levels, erectile function, and adverse effects, which may include gynecomastia, sleep apnea, development or exacerbation of lower urinary tract symptoms or BPH, prostate cancer, lowering of HDL, erythrocytosis, elevations of liver function tests, and reduced fertility. Periodic reevaluation should include measurement of CBC and PSA and digital rectal exam. Therapy should be discontinued in patients who do not respond within 3 months.

VACUUM CONSTRICTION DEVICES

Vacuum constriction devices (VCDs) are a well-established noninvasive therapy. They are a reasonable treatment alternative for select patients who cannot take sildenafil or do not desire other interventions. VCDs draw venous blood into the penis and use a constriction ring to restrict venous return and maintain tumescence. Adverse events with VCD include pain, numbness, bruising, and altered ejaculation. Additionally, many patients complain that the devices are cumbersome and that the induced erections have a nonphysiologic appearance and feel.

INTRAURETHRAL ALPROSTADIL

If a patient fails to respond to oral agents, a reasonable next choice is intraurethral or self-injection of vasoactive substances.

TABLE 67-3 ISSUES TO CONSIDER IF PATIENTS REPORT FAILURE OF PDE-5i TO IMPROVE ERECTILE DYSFUNCTION

- A trial of medication on at least 6 different days at the maximal dose should be made before declaring patient nonresponsive to PDE-5i use
- Confirm that patient did not take medication after a high-fat meal
- Failure to include physical and psychic stimulation at the time of foreplay to induce endogenous NO
- Unrecognized hypogonadism

Abbreviations: NO, nitric oxide; PDE-5i, phosphodiesterase type 5 inhibitor.

Intraurethral prostaglandin E_1 (alprostadil), in the form of a semisolid pellet (doses of 125–1000 μg), is delivered with an applicator. Approximately 65% of men receiving intraurethral alprostadil respond with an erection when tested in the office, but only 50% achieve successful coitus at home. Intraurethral insertion is associated with a markedly reduced incidence of priapism in comparison to intracavernosal injection.

INTRACAVERNOSAL SELF-INJECTION

Injection of synthetic formulations of alprostadil is effective in 70–80% of patients with ED, but discontinuation rates are high because of the invasive nature of administration. Doses range between 1 and 40 μg. Injection therapy is contraindicated in men with a history of hypersensitivity to the drug and men at risk for priapism (hypercoagulable states, sickle cell disease). Side effects include local adverse events, prolonged erections, pain, and fibrosis with chronic use. Various combinations of alprostadil, phentolamine, and/or papaverine sometimes are used.

SURGERY

A less frequently used form of therapy for ED involves the surgical implantation of a semirigid or inflatable penile prosthesis. The choice of prosthesis is dependent on patient preference and should take into account body habitus and manual dexterity, which may affect the ability of the patient to manipulate the device. Because of the permanence of prosthetic devices, patients should be advised to first consider less invasive options for treatment. These surgical treatments are invasive, are associated with potential complications, and generally are reserved for treatment of refractory ED. Despite their high cost and invasiveness, penile prostheses are associated with high rates of patient and partner satisfaction.

SEX THERAPY

A course of sex therapy may be useful for addressing specific interpersonal factors that may affect sexual functioning. Sex therapy generally consists of in-session discussion and at-home exercises specific to the person and the relationship. Psychosexual therapy involves techniques such as sensate focus (nongenital massage), sensory awareness exercises, correction of misconceptions about sexuality, and interpersonal difficulties therapy (e.g., open communication about sexual issues, physical intimacy scheduling, and