Six alpha-blockers are licensed for use in the treatment of benign prostatic hyperplasia (BPH, see Table 1). In its 2010 clinical guideline, NICE recommends four – alfuzosin, doxazosin, tamsulosin and terazosin – for men with moderate to severe symptoms. Prazosin (Hypovase) and indoramin were excluded because they are now little used for this indication and they are not discussed further.

Tamsulosin is available in combination with the 5-alpha-reductase inhibitor dutasteride as Combodart; NICE recommends this for men with bothersome moderate to severe symptoms who also have a large prostate (>30g) or a prostate specific antigen (PSA) level >1.4ng per ml.

Tamsulosin is also available from pharmacies without prescription under the brand Flomax Relief MR for symptomatic relief in men aged 45–75 for up to six weeks pending a clinical medical assessment.

Mechanism of action
Alpha-blockers have a common mechanism of action and adverse reaction profile. By relaxing smooth muscle they increase urine flow rate and reduce symptoms due to obstruction.

They lower blood pressure and should be avoided in patients with a history of postural hypotension; patients should be warned that the first dose may cause markedly reduced blood pressure, and those taking antihypertensives may need lower doses.

Cardiovascular side-effects are generally less troublesome with tamsulosin and alfuzosin.

Other side-effects include tiredness, dizziness and nasal stuffiness.

Adverse effects
Adverse effects involve the cardiovascular system (hypotension, syncope, dizziness, tachycardia, palpitations, oedema), the gastrointestinal system (dry mouth, gastrointestinal disturbances) and the CNS (drowsiness, depression, headache, blurred vision) and also include erectile dysfunction and rhinitis.

Treatment with doxazosin and terazosin should be introduced at a low dose, which should be increased at intervals of one to two weeks according to the response. Alfuzosin should be initiated at a low dose in elderly patients. No dose adjustment is recommended for tamsulosin.

Patients should be warned that the first dose may cause a marked reduction in blood pressure and they should lie down if this occurs.

Steve Chaplin and Professor Roger Kirby provide an overview of the properties of alpha-blockers and how they compare in the management of benign prostatic hypertrophy.
They should also be warned that alpha-blockers may affect driving and other skilled tasks.

The BNF recommends caution when prescribing alfuzosin or doxazosin (but not other alpha-blockers) in patients with heart failure. Additional caution is needed with alfuzosin if angina worsens and in patients with a history of prolonged QT interval or taking concurrent treatment that may prolong the QT interval.

Doxazosin should be prescribed cautiously in patients with hepatic impairment; it – and tamsulosin – should be avoided in patients with severe hepatic impairment.

Alfuzosin should be avoided in patients with severe renal impairment (eGFR <30ml per min per 1.73m²) and tamsulosin should be prescribed with caution in patients with very severely impaired renal function (eGFR <10ml per min per 1.73m²).

**Drug interactions**

The BNF lists many drug interactions with alpha-blockers. Classes of drugs associated with potentially clinically significant interactions include MAOIs, antiviral agents, beta-blockers, calcium-channel blockers, diuretics, moxisylyte (Opilon) and H₂-antagonists.

Concurrent sildenafil (Viagra) and other PDE5 inhibitors increase the risk of hypotension and they should be used only when alpha-blocker therapy has been stabilised.

The doses of sildenafil and vardenafl (Levitra) should be separated from those of alpha-blockers by four and six hours respectively; tadalafil (Cialis) should be avoided by patients taking an alpha-blocker.

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**Drug points**

<table>
<thead>
<tr>
<th>Alpha-blocker</th>
<th>maintenance</th>
<th>Dose maximum</th>
<th>elderly</th>
<th>modified release</th>
<th>Cost per 28 days (maintenance)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alfuzosin</td>
<td>2.5mg tds</td>
<td>10mg/day</td>
<td>initially 2.5mg twice daily</td>
<td>10mg once daily</td>
<td>IR £9.88 MR £11.68</td>
</tr>
<tr>
<td>Doxazosin</td>
<td>initially 1mg/day, maintenance 2–4mg/day</td>
<td>8mg/day</td>
<td>no dose change</td>
<td>4–8mg once daily</td>
<td>IR 78p–£1.13 MR £5.00–£9.98</td>
</tr>
<tr>
<td>Tamsulosin</td>
<td>400µg/day</td>
<td></td>
<td></td>
<td></td>
<td>IR £4.15 MR £3.99</td>
</tr>
<tr>
<td>Tamsulosin plus dutasteride</td>
<td>400/500µg daily (MR only)</td>
<td></td>
<td></td>
<td></td>
<td>MR £18.48</td>
</tr>
<tr>
<td>Terazosin</td>
<td>initially 1mg at bedtime, usual maintenance 5–10mg/day</td>
<td>10mg/day</td>
<td>no dose change</td>
<td>-</td>
<td>£2.39–£7.51</td>
</tr>
<tr>
<td>Indoramin</td>
<td>initially 20mg twice daily</td>
<td>100mg/day in divided doses</td>
<td>20mg at night</td>
<td>-</td>
<td>£11.71 (20mg twice daily)</td>
</tr>
<tr>
<td>Prazosin</td>
<td>500µg twice daily for 3–7 days, usual maintenance 2mg twice daily</td>
<td>2mg twice daily</td>
<td>initiate at lowest possible dose</td>
<td>-</td>
<td>£2.51</td>
</tr>
</tbody>
</table>

IR = immediate release, MR = modified release  

**Table 1. Doses and cost of currently available alpha-blockers**
Place in therapy

BPH affects more than two million men in the UK. Men afflicted by this condition suffer lower urinary tract symptoms that may negatively affect quality of life.

The nonselective alpha-blocker phenoxybenzamine was derived from nitrogen mustard and binds irreversibly to both $\alpha_1$ and $\alpha_2$ adrenoceptors. This was the first agent in this class to be used to treat BPH. Subsequent studies revealed that it was both carcinogenic and mutagenic in mice and it was withdrawn from clinical usage.

Subsequently the alpha-1 selective alpha-blockers prazosin and doxazosin were introduced, but both required careful dose titration and were associated with postural hypotension in a significant number of patients.

More recently tamsulosin and alfuzosin have become available as first-line therapy for men with LUTS associated with BPH. The cardiovascular side-effects of tamsulosin and alfuzosin are generally less of a problem than those seen with other alpha-blockers.

The main symptoms that trouble men with this very prevalent condition are reduced urinary flow and frequency of urination. The need to get out of bed at night (nocturia), as well as the feeling of incomplete bladder emptying, are especially troublesome.

These agents provide rapid relief of these symptoms but at the expense of side-effects including tiredness, dizziness and nasal stuffiness, and occasionally syncope. Patients with a past history of recurrent fainting attacks should therefore not be treated with these drugs.

Tamsulosin usage is often associated with reduced ejaculation and patients should be informed about this reversible side-effect. Alfuzosin is less troublesome in this respect.

Declaration of interests

Professor Kirby has worked on publications on BPH in conjunction with GlaxoSmithKline.

Professor Kirby is director of The Prostate Centre, London