

Specialist assessment and treatment may be needed for problems such as bladder and bowel dysfunction. Management of urinary incontinence may include the use of drugs such as oxybutinin.

As we have seen, various medications can affect bladder function.

Below are some of the pharmacological strategies for different bladder dysfunction. Further details are available in a separate article.

### **Overactive bladder:**

anticholinergic drugs: such as Oxybutinin: Cystrin/ Ditropan (now available in slow-release form: Ditropan XL); typical dose of Ditropan is 5mg 2-3 times a day. Ditropan XL is taken once a day, and may have a beneficial effect after about a week.

Note that antidepressants such as amitriptyline and imipramine, which may be prescribed as adjuvant analgesics or for depression, have anticholinergic properties, so may be beneficial in reducing bladder instability.

Anticholinergics act by blocking the passage of nerve signals through the spinal nerves. However, their effects are non-specific and can result in a variety of side-effects: the one which causes most patients to discontinue treatment is dry mouth, which can be quite unpleasant, but managed by chewing sugar-free gum.

Other effects include constipation, blurred vision, nausea, drowsiness, confusion and weight gain. These drugs are not suitable for patients with cardiac problems, as they may cause abnormalities in heart rhythm.

Patients with glaucoma (closed-angle type) should not be treated with anticholinergics, nor should those with obstructive urinary tract disorders. Oxybutinin was the 'gold standard' drug for 25 years or more.

Reports suggest that there is subjective improvement in 50-80% of patients with detrusor instability, but some specialists maintain that there is only 40% objective urodynamic improvement, and that up to half the patients discontinue treatment due to dry mouth.

The new slow release preparation was brought out in the United States in 1999, but was more recently approved for use in the UK. It appears that the drug is absorbed in the large intestine rather than the stomach so that side-effects may be reduced.

Propantheline bromide (Probanthine) is another similar antispasmodic drug. Doses range between 15 and 30mg every 6-8 hours, but it has a very high side-effect profile, so is now considered as a low-priority second-line choice.

Tolterodine (Detrusitol) is a new drug which is a muscarinic (cholinergic) receptor antagonist: that is, it blocks the effect of neurotransmitters which act on receptors which control bladder contraction and salivation. Typical dose is 1-2 mg twice a day.

Side-effects include, as expected, dry mouth; the drug cannot be used in people with urinary retention, gastric retention or glaucoma. However, the drug is more bladder-selective than other similar drugs, and whilst it is as effective as oxybutinin, the incidence of severe dry mouth is lower.

Hyoscyamine sulfate (Levbid, Cytospaz): an anticholinergic; contra-indicated for obstructive disorders, in patients with glaucoma and ulcerative colitis.

Dicyclomine hydrochloride (Bentyl) has a direct relaxant effect on smooth muscle as well as antimuscarinic action. Dose is 20mg three times a day. This drug increases bladder capacity in

patients with detrusor hyperreflexia.

Flavoxate hydrochloride (Urispas): direct inhibitory action on smooth muscle as well as anticholinergic and local analgesic (painkilling) properties. Recommended dose is 100-200mg three-four times daily. Results vary, with some reports of benefit in patients with unstable bladders, but no effect in trials in the elderly.

Theoretically, the drug should have the advantage of maintaining good bladder contractility during micturition, but the US guidelines (AHCPR) do not recommend its use.

Other drugs used have included: prostaglandin inhibitors, scopolamine and bromocriptine.

Stress incontinence:

Alpha adrenergic drugs: phenylpropanolamine hydrochloride is found in many prescription and over-the-counter (OTC) cold/cough preparations and antihistamines (anti-allergy). Typical dose is 25-75mg in sustained-release form, twice a day.

It should not be used in patients with obstructive incontinence. Caution is necessary in patients with high blood pressure, overactive thyroid, and heart conditions.

*Pseudoephedrine hydrochloride*: 15-30mg three times a day.

Hormonal replacement therapy (HRT) /Oestrogen: this helps to maintain and restore urethral tissue health in post-menopausal women.

Combined oestrogen/alpha-adrenergic agonist therapy: may be beneficial in post-menopausal women who have malfunction of the urethral sphincter muscles. Phenylpropanolamine (PPA: found in OTC preparations such as Dimetapp and Robitussin-CF) 25-100mg twice a day plus oestrogen tablets (dose varies).

Emptying dysfunction:

Parasympathetic nerve stimulation may be helpful in patients with an upper motor neurone neurogenic bladder, i.e. an under-active bladder, which fails to empty properly.

Carbachol and bethanecol are choline esters which have been used to treat post-operative urinary retention. However, they have largely been superseded by the use of catheterisation.

Distigmine (Ubtetrid): inhibits the breakdown of the neurotransmitter acetylcholine (so works in the opposite way to anticholinergics): it may help patients with flaccid bladder. Dose is 5mg, half an hour before breakfast.

Dyssynergic bladder:

Alpha blockers: dybenzylamine, Clonidine, Hytrin. Note that clonidine is sometimes used as an adjuvant analgesic (painkiller in conjunction with morphine or related drugs).

Obstructive urinary problems:

Alpha-blockers: useful for urge incontinence and in cases of prostate enlargement; they reduce the tone of smooth muscles in the urethra, decreasing urethral resistance and relieving symptoms of obstruction.

Examples include: Doxazosin (Cardura), Terazosin (Hytrin), Tamsulosin (Flomax). Side-effects include: drowsiness, dizziness, postural hypotension (drop in blood pressure on standing up), depression, headache, dry mouth, nausea, rhinitis (runny nose), urinary frequency and incontinence, erectile disorders, palpitations.

They should not be used in patients with low blood pressure and micturition syncope (fainting when passing urine).

Chuang et al. ( [\[1\]](#) ) investigated the use of Botulinum toxin (BTX) in treating lower urinary tract dysfunction, reviewing medical literature on the topic. They found that injection of BTX is effective in the treatment of detrusor-sphincter dyssynergia, non-neurogenic pelvic floor spasticity, and refractory overactive bladder.

Urodynamic assessment after sphincter injection with BTX showed reduced bladder voiding pressure, urethral pressure profile, and post-void residual urine. A similar decrease in bladder voiding pressure was seen after bladder injection, with an increase of the functional bladder capacity. Clinical improvement lasted for 3 to 14 months without significant adverse effects.

As a further benefit, BTX-A treatment inhibits afferent-nerve-mediated bladder contraction. This has an analgesic effect which may be useful in genitourinary tract pain syndrome, such as interstitial cystitis and prostatodynia.

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[\[1\]](#) Chuang YC, Smith CP, Somogyi GT, Chancellor MB. *J Formos Med Assoc* 2003 Jan;102(1):5-11 Botulinum toxin treatment of urethral and bladder dysfunction

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