Investigation and management of urinary incontinence in men

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Male urinary incontinence can be an embarrassing and debilitating condition. Management should be based on the type of incontinence and level of bother experienced. The authors provide an algorithm to assess, categorise and manage male patients with urinary incontinence.

Urinary incontinence is defined by the International Continence Society as the ‘involuntary loss of urine’. It may be divided into several types (Box 1).

ANATOMY AND FUNCTION OF THE BLADDER

The bladder is a hollow muscular organ. It has two main functions: the storage and expulsion of urine. The bladder spends 99 per cent of time in the storage phase, storing urine arriving from the ureters. During this time, the bladder undergoes receptive relaxation (to accommodate urine) without an appreciable rise in pressure inside the bladder. Concomitantly the urethra and sphincteric mechanism should be closed, thus maintaining a high outlet resistance and continence.

In the male, there are two important sphincteric mechanisms:

- a proximal bladder neck mechanism
- a distal urethral mechanism at the apex (distal end) of the prostate.

The proximal sphincter provides a powerful mechanism to maintain continence and prevent retrograde ejaculation of semen during sexual activity. Histologically, it consists of a powerful inner layer of muscle bundles arranged in a circular orientation. The distal mechanism extends for 3–5mm from the distal prostate down to the membranous urethra. It is composed of mainly extrinsic, striated muscle capable of sustained contraction in order to maintain continence (Figure 1). The two mechanisms are such that one competent mechanism should maintain continence in the absence of the other.

Finally, the prostate gland and long male urethra add resistance to the bladder outlet. The prostate is made up of smooth muscle and glandular tissue, the former increasing with age as well as with associated glandular hyperplasia in the condition known as benign prostatic hyperplasia.

BOX 1. Types of urinary incontinence

- Urgency incontinence: involuntary leakage accompanied, or preceded, by urgency (compelling desire to void that is difficult to defer)
- Stress incontinence: involuntary leakage on effort or exertion
- Mixed incontinence: a mixture of urgency and stress incontinence
- Continuous incontinence: the complaint of continuous urinary leakage
- Situational incontinence: eg giggle incontinence or during sexual intercourse (mostly women)
- Overflow incontinence: involuntary loss of urine associated with overdistension of the bladder secondary to inefficient bladder emptying
- Unconscious incontinence: unperceived involuntary loss of urine
Neuronal control of the lower urinary tract is via a complex series of co-ordinated peripheral and central pathways. In general terms, the storage phase is under sympathetic control and the voiding phase under parasympathetic control.

The bladder has sensory afferents travelling in the hypogastric nerves (sympathetic T10–12), pelvic nerves (parasympathetic S2–4) and pudendal nerves (somatic S2–4). Hypogastric and pudendal nerve stimulation lead to contraction of the sphincteric smooth and striated muscle respectively, in contrast to the pelvic nerve, which leads to relaxation of both sphincters. Conversely, the detrusor muscle is relaxed by the sympathetic system and contracted by the parasympathetic.

**INVESTIGATION OF URINARY INCONTINENCE**

**History and examination**

As with all medical complaints, a detailed history and physical examination form the cornerstone of investigation of this often embarrassing condition. A physician must be holistic and able to appreciate the significant impact incontinence has on an individual’s lifestyle. Questions on the number of pads used and when, or the volume of leakage, may provide a useful insight into the underlying pathology, as well as questions on the coping mechanisms adopted by patients to help with their symptoms.

When focusing on urinary symptoms, it may be valuable to categorise them into three different sections to define the predominant component, as elderly men are likely to have a combination of these (Table 1). In addition to the above, a detailed surgical and drug history is also invaluable. Patients should also be questioned on concomitant faecal incontinence.

A focused examination should include palpation for a palpable bladder (post-void), a digital rectal examination, and to look for stress incontinence on asking the patient to cough (preferably with a full bladder). A neurological examination is also essential.

### Table 1. Lower urinary tract symptoms

<table>
<thead>
<tr>
<th>Storage symptoms</th>
<th>Voiding symptoms</th>
<th>Post-void symptoms</th>
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</thead>
<tbody>
<tr>
<td>Frequency</td>
<td>Slow/splitting/intermittent stream</td>
<td>Feeling of incomplete emptying</td>
</tr>
<tr>
<td>Urgency</td>
<td>Hesitancy</td>
<td>Post-micturition dribble</td>
</tr>
<tr>
<td>Incontinence</td>
<td>Straining</td>
<td></td>
</tr>
<tr>
<td>Increased/reduced/absent/painful bladder sensation</td>
<td>Terminal dribble</td>
<td></td>
</tr>
<tr>
<td>Nocturia</td>
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**First-line investigations and red flags**

First-line investigations performed in the community clinic should include a urine dipstick test and a frequency volume chart or bladder diary (Figure 2). Conditions that must be excluded (red flags) include bladder carcinoma suggested by haematuria, and chronic retention with overflow incontinence suggested by a palpable bladder. A urinary tract infection should be excluded as it may lead to the above symptoms, but is rare in the male patient without underlying pathology.

**Management**

We will discuss the management of each type of incontinence separately. As mentioned earlier, symptoms may affect patients to a different degree. Some patients may be happy with reassurance and with incontinence care products as opposed to taking medicines or more invasive measures. There are a variety of continence products available to patients, and a continence care specialist nurse is an invaluable resource when dealing with such situations.

**Urgency incontinence**

Urgency incontinence occurs in the presence of, or is preceded by, a compelling desire to void. The pathophysiology involves overactivity in the detrusor muscle, which is proven only on urodynamic assessment. Patients have frequency and nocturia, often with little time between the desire to void and actual voiding. If the patient is delayed in finding a voiding facility, it often leads to embarrassment. A typical behaviour is knowing where all the toilet facilities are in a given area (e.g. a shopping centre) before visiting such a venue. Examination is often unremarkable. The prevalence of urgency incontinence was found to be 4.5 per cent in a large Swedish study of men between 45 and 99 years of age.3

As the parasympathetic system is responsible for detrusor activity, the first-line treatment of urgency incontinence involves anticholinergic...
therapy. The benefits of subtype muscarinic receptor antagonists are being investigated, but no specific recommendations can be made at present. If one anticholinergic agent fails, benefit may be gained from another. Patients failing to respond to antimuscarinic therapy undergo urodynamic assessment and are then counselled on botulinum toxin therapy by a specialist.

**Stress incontinence**
Stress urinary incontinence is far less common in men due to two strong urethral sphincters. Post-prostatectomy incontinence is the most common cause of stress incontinence in men. During prostatectomy, the proximal sphincter is ablated; therefore, continence is maintained only by the distal sphincter. However, if there is pre-existing incompetence of the distal urethral sphincter, incontinence may occur. Factors predisposing to distal sphincteric damage involve pelvic trauma, denervation from pelvic surgery, intervertebral disc disease and radical radiotherapy. The other factor is injury sustained during surgery, such as neural injury or sphincteric denervation.

The investigation for stress incontinence in men involves video-urodynamics to delineate the anatomic cause of the incontinence. Management options include pelvic floor exercises in patients with intact peri-urethral striated muscles, peri-urethral bulking agents, urethral slings and artificial urinary sphincters.

**Mixed urinary incontinence**
Mixed urinary incontinence has components of both urgency and stress incontinence. Management involves determination of the most bothersome complaint and treatment respectively. It often involves a combination approach by a specialist, as the treatment of one may make the other worse.

**Continuous urinary incontinence**
Continuous urinary incontinence may suggest the development of a fistula that enters the urethra beyond the distal sphincteric mechanism, or a grossly deficient sphincteric mechanism leading to no restriction of flow. Management involves surgery or continence devices.

**Overflow incontinence**
Overflow incontinence is a significant red flag for a GP. The patient often has no voiding symptoms and, in fact, the presenting symptom is often nocturnal incontinence. As a result of bladder decompensation over a long time period, the patient develops 'chronic urinary retention' with poor bladder contractility. With increasing residual volumes, patients may

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**KEY POINTS**
- Men have a strong sphincteric mechanism
- Incontinence has a lower prevalence in men
- Emphasis should be directed towards delineation of the type of incontinence affecting the individual and to what degree the symptoms are causing bother
- Haematuria and a palpable bladder with incontinence form important red flags not to be missed
- A continence care specialist may be invaluable for patients in obtaining continence care products
- Management is based on type of incontinence and level of bother

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**Figure 3. Algorithm for investigating and managing male urinary incontinence**
LOWER URINARY TRACT SYMPTOMS

develop high pressures in the bladder, which may cause renal impairment through a back pressure effect. These patients may have incontinence on straining, as the pressure in the bladder exceeds the sphincteric pressure due to an increase in abdominal pressure squeezing a full bladder. A proportion of, but not all, patients with overflow incontinence will have renal impairment and at this stage are considered to have 'high pressure chronic retention'.

The findings on evaluation of these patients include renal impairment – seen on blood tests. The diagnosis is made by a palpable bladder that drains a large residual and usually leads to improvements in renal function. Caution must be applied when draining a large residual in a patient with high pressure retention because of large fluid shifts as a consequence of a post-obstructive diuresis; this is instituted in a hospital setting where fluid support may be administered.

CONCLUSION
Male urinary incontinence may be debilitating for an individual. The bother caused to each individual is variable and should be explored and managed according to the type of incontinence experienced. An algorithm to assess, categorise and manage male patients with urinary incontinence is given in Figure 3. It is important to be aware of red-flag symptoms. With a better understanding of the underlying mechanisms leading to urinary incontinence, we hope a practitioner is better equipped to advise, investigate and manage these patients. The reader is strongly advised to review the recently released guidelines on male lower urinary tract symptoms.6

Declaration of interests
Christopher Chapple has acted as a consultant for Pfizer, Astellas, Novartis, Tanabe, Recordati and ONO; received speaker honoraria for Pfizer and Astellas; participated in trials for Pfizer, Astellas, Tanabe and Recordati; and received research grants from Pfizer and Astellas.

REFERENCES