

Managing urinary incontinence in older people

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Urinary incontinence is defined by the International Continence Society as involuntary urinary leakage.¹ The condition is common among older people. It affects more than a fifth of people aged over 85 years, according to a recent cohort study,² although this is probably an underestimate. Urinary incontinence has both physical and psychological consequences, including damage to skin, urinary tract infections, an increased risk of falls, avoidance of going far from home, and a feeling of alienation.³ Urinary incontinence can also be difficult for carers to manage, and a cohort study of about 6000 patients found that urinary incontinence was second only to dementia as a reason for admission to long term care.⁴

In the United Kingdom, the 2001 report *National Service Framework for Older People* highlighted a need for continence services to be integrated across primary, acute, and specialist care.⁵ A recent national audit of continence care for older people found that urinary incontinence is poorly managed both in the community and in secondary care. Fundamental assessments such as rectal examination and measurement of the post-void residual volume (the volume of urine remaining in the bladder after voiding) were rarely performed and management plans relied on containment rather than treatment of the underlying cause.⁶

This review will examine evidence from systematic reviews, randomised controlled trials, cohort studies, and case series and discuss current guidelines for the management of stress and urge urinary incontinence in older people.

SUMMARY POINTS

Urinary incontinence is common in older people and is associated with considerable morbidity
Older people are more likely to delay seeking help for urinary incontinence, and symptoms are often poorly managed in primary and secondary care
Chronic urinary incontinence can be classified into stress, urge, mixed, overflow, and functional types on the basis of history, examination, and simple investigations
Good evidence exists that conservative treatment and drug treatments are effective in older people; older people, however, are often undertreated
First line treatment for stress incontinence is pelvic floor muscle exercises
Bladder retraining, alone or in combination with antimuscarinic drugs, is the first line treatment for urge urinary incontinence
If conservative treatment is unsuccessful, selected surgical interventions may be appropriate in older people

SOURCES AND SELECTION CRITERIA

I searched Medline, PubMed, and the Cochrane database for evidence from systematic reviews and clinical trials. I also searched the websites of the National Institute for Health and Clinical Excellence, the Royal College of Physicians, and the British Geriatrics Society for published guidelines. My search terms included “stress urinary incontinence”, “urge urinary incontinence”, and “elderly”. Where appropriate, we conducted additional searches relating to themes highlighted in the original searches

How common is it?

Estimates of the prevalence of urinary incontinence vary widely owing to differing study populations, definitions of incontinence, and methods of study. A study of individuals living in community dwellings reported a prevalence of 21%, with higher prevalence in women and in individuals aged over 65 years.⁷ In a recent cohort study of individuals aged over 85 years, severe or profound urinary incontinence was reported by 21%.² Urinary incontinence is probably under-reported, and older people are more likely to delay seeking help. Embarrassment, the erroneous belief that urinary incontinence is part of normal ageing, and a lack of awareness that treatment is available are reasons for under-reporting.⁸

How is urinary continence maintained?

Continence is maintained by bladder wall stability and an intact pelvic floor and nerve supply to the bladder (figure). Continence also requires mobility, manual dexterity, and the cognitive ability to react to bladder filling. Often the cause of urinary incontinence is multifactorial, but loss of any one of these mechanisms can compromise continence.

As people age, physiological changes in the lower urinary tract can predispose to urinary incontinence. Bladder capacity and urethral closure pressure decrease with age, while the post-void residual volume and overactivity of the detrusor muscle increase.⁹

How do patients present?

Chronic urinary incontinence is classified according to how it presents and its cause (box 1). Stress incontinence is caused by weakness of the pelvic floor muscles and bladder neck and is associated with obesity, pregnancy, vaginal delivery, and hysterectomy in women^{10 11} and

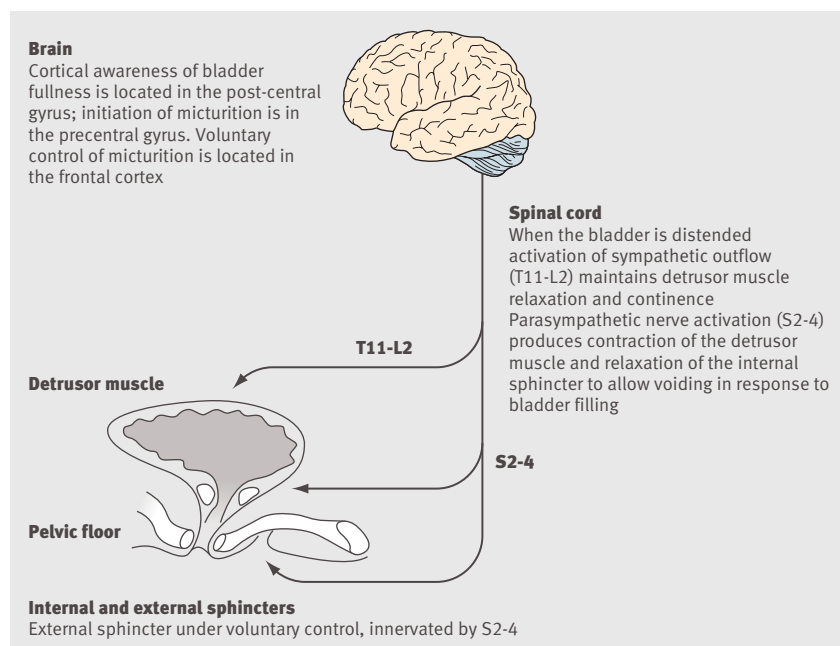


Fig 1 | Mechanisms of continence

prostatectomy in men.¹² Typically patients complain of leaking small volumes of urine when they exert themselves, cough, or sneeze. In contrast, patients with urge incontinence tend to complain of voiding large volumes of urine involuntarily owing to uninhibited contractions of the detrusor muscle. They complain of a strong desire to void urine (urgency), which may be accompanied by frequency and nocturia (overactive bladder syndrome). Urge incontinence may be idiopathic, secondary to bladder outflow obstruction, or neuropathic.⁹

How should patients be assessed?

History

Eliciting specific information will help to determine the underlying cause of urinary incontinence (box 2). Asking about bowel habits may be helpful as constipation and straining may weaken pelvic floor muscles, predisposing to stress urinary incontinence.¹³ Faecal incontinence may follow from constipation (overflow) or may suggest underlying cognitive impairment or neurological disturbance. Frequent use of caffeinated drinks is associated with an increased risk of urinary incontinence.¹⁴ A medical history, obstetric and gynaecological history, and drug history may also identify an underlying cause. It is also necessary to determine the impact of symptoms, and tools such as the international consultation on incontinence questionnaire (ICIQ) can be useful.¹⁵

Box 1 | Classification of urinary incontinence

Stress—Involuntary urinary leakage on effort or exertion, sneezing, or coughing

Urge—Involuntary leakage accompanied by or immediately preceded by urgency

Mixed—Involuntary leakage associated with urgency and also with exertion, effort, sneezing, or coughing

Overflow—Leakage owing to bladder outflow obstruction of any cause resulting in large post-void residual volume

Functional—Incontinence resulting from an inability to reach or use the toilet in time (for example, poor mobility, cognitive impairment)

Box 2 | Key areas to cover when taking a history

Urinary symptoms

Storage symptoms: frequency, nocturia, urgency

Voiding symptoms: hesitancy, poor urinary stream, dribbling

Precipitants of urinary leakage (such as cough, exertion)

History of haematuria and recurrent urinary tract infections (may indicate serious underlying disease and necessitate specialist referral)

Bowel symptoms

Constipation, straining, faecal incontinence

Fluid intake

Specific drinks (such as caffeinated drinks) and volume

Medical history

Previous surgery such as hysterectomy and prostatectomy

In women: details of pregnancies, mode of delivery, birth weight of children

Drug history

Sedatives and hypnotics, antimuscarinics, diuretics, alcohol

Social history

Access to toilets and aids; mobility

Impact on quality of life

Examination

Assessments of body mass index (weight/height²), mobility, and cognition are important. An abdominal examination may detect a distended bladder or a pelvic mass. A digital rectal examination will allow for evaluation of prostate size, and a vaginal examination may find prolapse of pelvic organs.

How should patients be investigated?

Basic investigations

Urine analysis, measurement of the post-void residual volume, and completion of bladder diaries are necessary for all patients presenting with urinary incontinence. Urine analysis can be used to detect or rule out infection. Abnormalities such as the presence of protein, blood, or glucose in the urine will need further investigation and maybe specialist referral. The post-void residual volume can be measured using a portable ultrasound machine. In general a volume greater than 100 millilitres would be considered abnormal and indicative of incomplete bladder emptying and underlying bladder outflow obstruction.

Asking the patient to complete a bladder diary by recording details of fluid intake, voiding times, and volumes can help determine the cause of urinary incontinence. Guidelines from the National Institute for Health and Clinical Excellence (NICE) recommend that bladder diaries are completed over a minimum of three days.¹⁵

Specialist investigation: urodynamic testing

Urodynamic testing is not appropriate for all patients as urinary incontinence can often be classified on the basis of history, examination, and basic investigations alone. Urodynamic tests are not recommended before conservative treatment but can be requested by a urologist or gynaecologist before surgery for stress urinary incontinence. Urodynamic testing aims to show whether an underlying abnormality of storage or voiding is present. In multichannel cystometry, catheters are inserted into the bladder and rectum or into the vagina to measure the detrusor pressure.

Box 3 | Indications for long term indwelling catheterisation

- Patients or carers are unable to manage intermittent self catheterisation
- Medical management has failed and surgery is not appropriate
- Patients have skin wounds or pressure ulcers that are being contaminated by urine
- Patients are distressed by changes of bed linen and clothing

The test replicates the patient's symptoms by filling the bladder and observing changes in pressure and urinary leakage with provocation tests such as jogging on the spot. To undergo the test, patients must be mobile and without advanced cognitive impairment.

Urodynamic testing is considered in women before surgery for stress incontinence if (a) overactivity of the detrusor muscle is suspected, (b) symptoms of incomplete bladder emptying are present, and (c) the patient has had previous surgery for stress urinary incontinence or prolapse.¹⁵ Surgery for stress incontinence may not improve continence if either detrusor activity or bladder outflow obstruction is also present.

Who should be referred immediately to a specialist?

Most patients can be managed in primary care with close collaboration between general practitioners, continence nurse specialists, and district nursing teams. "Red flag" findings that will require immediate referral include a palpable bladder on abdominal examination after voiding, a suspected mass arising from the pelvis or urinary tract, microscopic or visible haematuria, or a symptomatic vaginal prolapse that is visible at or below the vaginal introitus.¹⁵

How can urinary incontinence be treated?

Conservative treatment can often be started (without further investigation) after a patient's initial presentation as the type of urinary incontinence can be often defined at that point with a careful history, examination, and basic investigations. All conservative management options used in younger adults can be used in selected older, motivated people.

Lifestyle modification and practical aids

The evidence base to support modification of lifestyle is poor, and high quality prospective trials are needed. Obesity is associated with an increased risk of stress and urge incontinence,¹⁶ so weight loss is advisable for overweight patients. Treating constipation may reduce the effect of straining on pelvic floor muscles. Advice on modifying fluid intake may be given if intake is either excessive or poor, as concentrated urine can irritate the bladder and worsen incontinence. Recent NICE guidelines recommend a trial of caffeine reduction in women with urge incontinence¹⁵ on the basis of a cross sectional study of over 6000 patients in which tea intake was positively associated with incontinence.¹⁴

Absorbent products (pads and pants) and toileting aids such as handheld urinals and penile sheaths may be considered as an adjunct to treatment or for long term management of symptoms refractory to treatment. They enable patients to manage their symptoms and to continue their normal daily life.

Catheterisation

Catheterisation may be considered for men and women who have incontinence secondary to chronic urinary retention.^{15 17} The choice of method will depend on the patient's (and/or carer's) choice and on potential complications.

Intermittent catheterisation is usually preferable to a long term indwelling catheter but requires the patient or carer to be able to learn the technique. A systematic review of eight cohort studies found that intermittent self catheterisation was associated with lower rates of urinary tract infections compared with long term indwelling catheters.¹⁸ If intermittent catheterisation is not appropriate, urethral or suprapubic long term indwelling catheters can be considered (box 3 lists the indications). Although urethral catheters are easily inserted, suprapubic catheters may provide long term benefits, such as reduced impact on sexual function and reduced rates of infection.¹⁵ Infection, accidental removal, recurrent blockage, and trauma to the urethra are complications of long term catheterisation. The patient and carer need to be informed of these potential complications and given information on how to recognise and prevent them.

Treating stress urinary incontinence

Pelvic floor muscle training is the first line treatment for stress incontinence in men and women (box 4). NICE guidelines recommend a trial of such muscle training for at least three months.¹⁵ This recommendation is based on a recent Cochrane review of randomised controlled trials involving 672 women with stress incontinence that found improvement among women who performed pelvic floor muscle training compared with those who did not.¹⁹ A small, single blind randomised controlled trial found that pelvic floor muscle training achieved significantly greater subjective and objective cure rates compared with no training (56% v 3% and 44% v 7% respectively).²⁰ For patients who are unable to contract their pelvic floor muscles, electrical stimulation and biofeedback can be used.^{15 17}

The evidence for pelvic floor muscle training in men is less clear than in women as most studies have been conducted before or after prostatectomy. A small randomised controlled trial compared pelvic floor muscle training started early after prostatectomy with no treatment and showed that intervention may reduce the duration and severity of urinary incontinence.²¹

Duloxetine, a serotonin and noradrenaline reuptake inhibitor, is licensed for moderate to severe stress incontinence. It is thought to act by increasing pudendal nerve

Box 4 | Pelvic floor muscle training

- The patient performs several contractions of their pelvic floor muscles several times a day (for example, eight contractions three times per day)
- Over time this causes an inward lift of the muscles, resulting in increased urethral closure pressure and reduced urinary leakage
- Training is continued for at least three months
- Supervision of pelvic floor muscle training by a continence nurse adviser or specialist physiotherapist can be useful to ensure the exercises are done correctly and to monitor progress

AREAS FOR FURTHER RESEARCH

Prospective interventional studies are needed to evaluate the effects of lifestyle modifications on urinary incontinence

The role of pelvic floor muscle training in male stress urinary incontinence not related to prostatectomy incontinence needs clarification

The role of botulinum toxin in urge incontinence needs further evaluation

The efficacy of duloxetine in elderly and male patients needs evaluation

activity, which results in improved contraction and closure of the urethral sphincter. A recent Cochrane review of 10 randomised studies, involving almost 4000 patients, found that duloxetine reduced the frequency of incontinence episodes by about 20% and significantly improved patients' quality of life when compared with placebo (weighted mean difference 5.26, 95% confidence interval 3.84 to 6.68).²² NICE guidelines recommend duloxetine in women with stress incontinence only when conservative treatment has failed and surgery is inappropriate.¹⁵ The efficacy of duloxetine in older and male patients with stress incontinence is unclear as the vast majority of patients included in studies were young (mean age of patients ranged from 49.4 to 54 years) and female. Possible side effects of treatment need to be explained to the patient and include nausea (23–25% of patients²²), dry mouth, constipation, insomnia, dizziness, and drowsiness.

Surgical intervention to augment urethral closure or support the bladder neck and urethra can be considered when conservative treatment has failed. Open colposuspension or sling operations such as insertion of tension-free vaginal tape are recommended by NICE on the basis of evidence from randomised controlled trials and long term follow-up data from cohort studies and case series.¹⁵ Complications of surgery include difficulty with voiding, urgency, pelvic organ prolapse, and bladder perforation. Tension-free vaginal tape seems to be safe and effective in older women. A recent study of 157 women aged ≥ 70 (mean 74.8) years and 303 younger women (mean age 57.2 years) who had surgery for insertion of tension-free vaginal tape found no significant differences in outcomes between the two groups.²³ In men with stress urinary incontinence, sub-urethral synthetic slings may be used, although evidence for their efficacy is limited to case series.²⁴

Injection of bulking agents, such as silicone, into the sub-mucosal tissues of the urethra or bladder neck, and artificial sphincters may also be considered in men and women with stress incontinence, but the evidence for these interventions is limited to small controlled trials and case series.^{15 17}

Treating urge incontinence

Bladder retraining is the first line treatment for men and women with urge incontinence.^{15 17} The aim of this treatment is to re-establish voluntary bladder control and increase bladder capacity. Commonly used regimens instruct the patient to increase the interval between voids gradually. NICE guidelines advise bladder retraining for a minimum of six weeks based on evidence from randomised controlled trials and systematic reviews.¹⁵ A small randomised controlled trial found that bladder retraining was an effective treatment in older women, reducing the number of incontinence episodes by 57% compared with

no treatment.²⁵ Although bladder retraining and pelvic floor muscle training are effective in older people, these treatments may not be appropriate in frail older people and those with cognitive impairment.

Prompted and timed voiding programmes can be used for patients with stress or urge urinary incontinence who are not able to use the toilet independently—for example, owing to cognitive impairment or frailty. In prompted voiding, a carer prompts the individual to void and the idea is to reduce episodes of urinary incontinence by increasing the individual's awareness of the need to void periodically. Timed voiding is a passive toileting programme in which toileting is fixed at regular time intervals with the aim of reducing episodes of incontinence rather than restoring bladder function. Prompted and timed voiding programmes may be effective with older people but require substantial effort and commitment from a carer.

Antimuscarinic drugs may be used either in combination with bladder retraining or as monotherapy if bladder retraining is unsuccessful or impossible. These agents act by blocking muscarinic receptors in the bladder, which reduces bladder muscle contractility. Randomised placebo controlled trials have shown that oxybutynin,²⁶ tolterodine,²⁷ trospium,²⁸ and solifenacin²⁹ reduce episodes of incontinence in both older men and women with urge incontinence. Box 5 lists the contraindications for antimuscarinic drugs and the side effects. On the basis of cost effectiveness, NICE recommends immediate release oxybutynin as the first line antimuscarinic drug.¹⁵ Dry mouth is more common with immediate release oxybutynin, and if this is a problem an alternative antimuscarinic drug or extended release oxybutynin should be used.¹⁵ In practice, older patients often experience side effects with immediate release oxybutynin, which prompts many elderly care physicians to use either trospium or solifenacin as a first line agent.

Surgery may be considered if conservative treatment is unsuccessful. Injection of botulinum toxin A into the bladder wall can be used in urge incontinence, but the long term efficacy of this treatment is unknown. Other surgical interventions include sacral nerve stimulation, augmentation cystoplasty, and urinary diversion (transposing the ureters to an isolated segment of ileum to create a permanent

Box 5 | Contraindication for and side effects of antimuscarinic drugs

Contraindications

- Acute (narrow angle) glaucoma
- Myasthenia gravis
- Urinary retention or outflow obstruction
- Severe ulcerative colitis
- Gastrointestinal obstruction

Side effects

- Dry mouth (22–82%¹⁵)
- Constipation
- Blurred vision
- Dizziness
- Nausea
- Confusion
- Palpitations and arrhythmia
- Insomnia

ADDITIONAL EDUCATIONAL RESOURCES

For healthcare professionals

- National Institute for Health and Clinical Excellence. Urinary incontinence: the management of urinary incontinence in women. (Clinical guideline 40.) 2006. www.nice.org.uk/nicemedia/pdf/CG40fullguideline.pdf.
- Scottish Intercollegiate Guidelines Network. Management of urinary incontinence in primary care. (National clinical guideline 79.) 2004. www.sign.ac.uk/pdf/sign79.pdf
- British Geriatrics Society. Continence. (Best practice guide 6.2.) 2007. www.bgs.org.uk/Publications/Compendium/compend_6.2.htm
- Bladder and Bowel Foundation (www.bladderandbowelfoundation.org)—UK charity that provides information and support for patients, carers, and healthcare professionals
- Fonda D, DuBeau CE, Harari D, Ouslander JG, Palmer M, Roe B. Incontinence in the frail elderly. In: Abrams P, Cardozo L, Khoury S, Wein A, eds. *Incontinence: 3rd International Consultation on Incontinence (ICI)*. Health Publication, 2005. www.icsoffice.org/ASPNET_Membership/Membership/Publications/ICI_3/v2.pdf/chap18.pdf
- European Association of Urology. Guidelines on Urinary Incontinence. 2010. www.uroweb.org/?id=218&gid=11.

For patients

- NHS choices (www.nhs.uk/conditions/incontinence-urinary)—Web page giving information (including causes and treatments) about urinary incontinence, plus a video by a consultant urologist talking about the condition
- Patient UK (www.patient.co.uk/health/Stress-Incontinence.htm, www.patient.co.uk/health/Urge-Incontinence.htm)—Web pages about stress and urge incontinence on a health information site
- Bladder and Bowel Foundation (www.bladderandbowelfoundation.org)—UK charity that provides information and support for patients, carers, and healthcare professionals

cutaneous stoma), but the evidence for efficacy of these treatments in older people is limited.

Sacral nerve stimulation inhibits the reflex behaviour of the bladder by electrical stimulation of the sacral reflex pathway via an electrode placed through the sacral foramina. A systematic review of randomised controlled trials and case series found that as many as 70% of patients with urge incontinence achieved continence or substantial improvements in urinary symptoms with sacral nerve stimulation; half of patients, however, reported adverse events.³⁰ The review noted a lack of long term quality of life data and limited evidence relating to the use of the technique in older patients.

Treating mixed urinary incontinence

In mixed urinary incontinence, treatment should be directed towards the predominant symptom but may involve a combination of approaches.

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