Canadian Geriatrics Society

URINARY INCONTINENCE IN THE FRAIL ELDERLY

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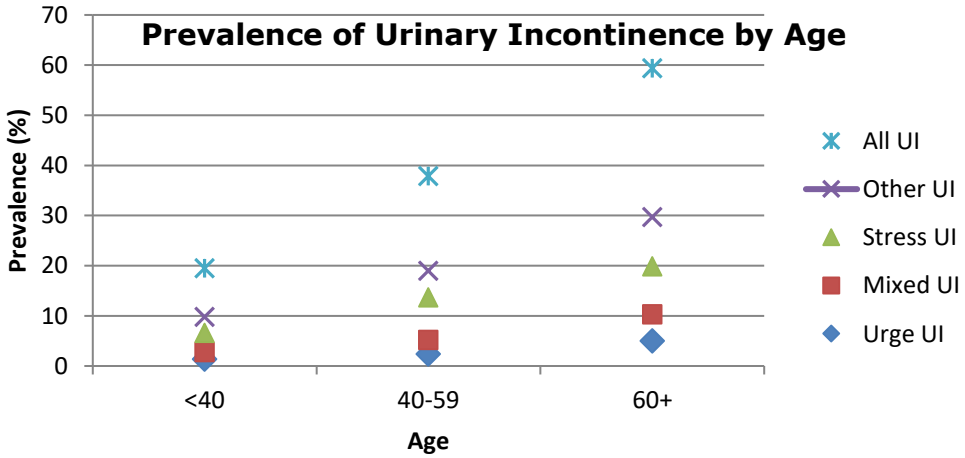
Introduction

Urinary incontinence (UI), the complaint of any involuntary loss of urine[1], is a common problem in both robust and frail older people. Several epidemiological studies have demonstrated an increasing prevalence with age in both men and women, including the multinational European Prospective Investigation into Cancer and Nutrition (EPIC) study[2], which found a prevalence of urinary incontinence of any cause of 9.7% in the under 40 years old, compared to 30% in the over-60-year-old cohort (Figure 1). More recently, data from longitudinal cohort studies have revealed a temporal association with accumulation of symptoms and, in particular, overactive bladder (frequency-urgency syndrome) and urgency incontinence[3,4] The frail elderly, and in particular those living in institutional care, have the highest prevalence of urinary incontinence of any group other than those with spinal cord injury.

Figure 1. Prevalence of urinary incontinence rises with age



Based on [2]

Prevalence/epidemiology/risk factors

Age-related changes to the lower urinary tract can act as risk factors for the development of lower urinary tract symptoms (LUTS), although they are rarely sufficient in isolation to cause UI. They are summarized in Table 1. There is good evidence that changes to the brain, such as the development of white matter hyperintensities, is implicated in the pathogenesis of urgency incontinence.[5] However, it is not known if mid-life intervention, such as control of cholesterol or blood pressure, maintenance of a healthy weight or avoidance of diabetes can prevent the development of LUTS. The risk of UI or LUTS is also considerably higher in the presence of stroke, dementia and other neurological conditions such as Parkinson's disease. UI may also reflect underlying frailty.[6]

Table 1. Age-related changes in the lower urinary tract (LUT)

Decreased	Increased
Bladder capacity	Urinary frequency
Sensation of filling	Post-void residual volumes
Speed of detrusor contraction	Outflow tract obstruction (in men)
Pelvic floor muscle bulk and tone	
Sphincteric resistance	
Urine flow rate	

Classification of type of incontinence

a. Overactive bladder and detrusor overactivity

Overactive bladder (OAB), is a clinically defined symptom complex comprised of urinary urgency, with or without urgency incontinence, usually with increased daytime frequency and nocturia in the absence of urinary tract infection or other obvious pathology.[7] Diagnosis is not reliant on the results of investigations such as multichannel cystometry or other invasive tests. OAB is often thought to be reflective of spontaneous phasic detrusor contractions during bladder filling but there is only moderate correlation between OAB diagnosis and detrusor overactivity (DO), the urodynamically diagnosed condition. Approximately 60% of people with clinical OAB have demonstrable DO on cystometry and 36% of people with DO do not have symptomatic OAB.[8] A detailed discussion of the pathophysiology underlying the sensation of urgency is beyond the scope of this paper, but is most likely multifactorial, due to a combination of urothelial, detrusor or central nervous system factors. For more information see chapter 4, Pathophysiology of urinary incontinence, faecal incontinence, and pelvic organ prolapse, in the 5th International Consultation on Incontinence (www.ics.org/Publications/ICI_4/book.pdf).[9]

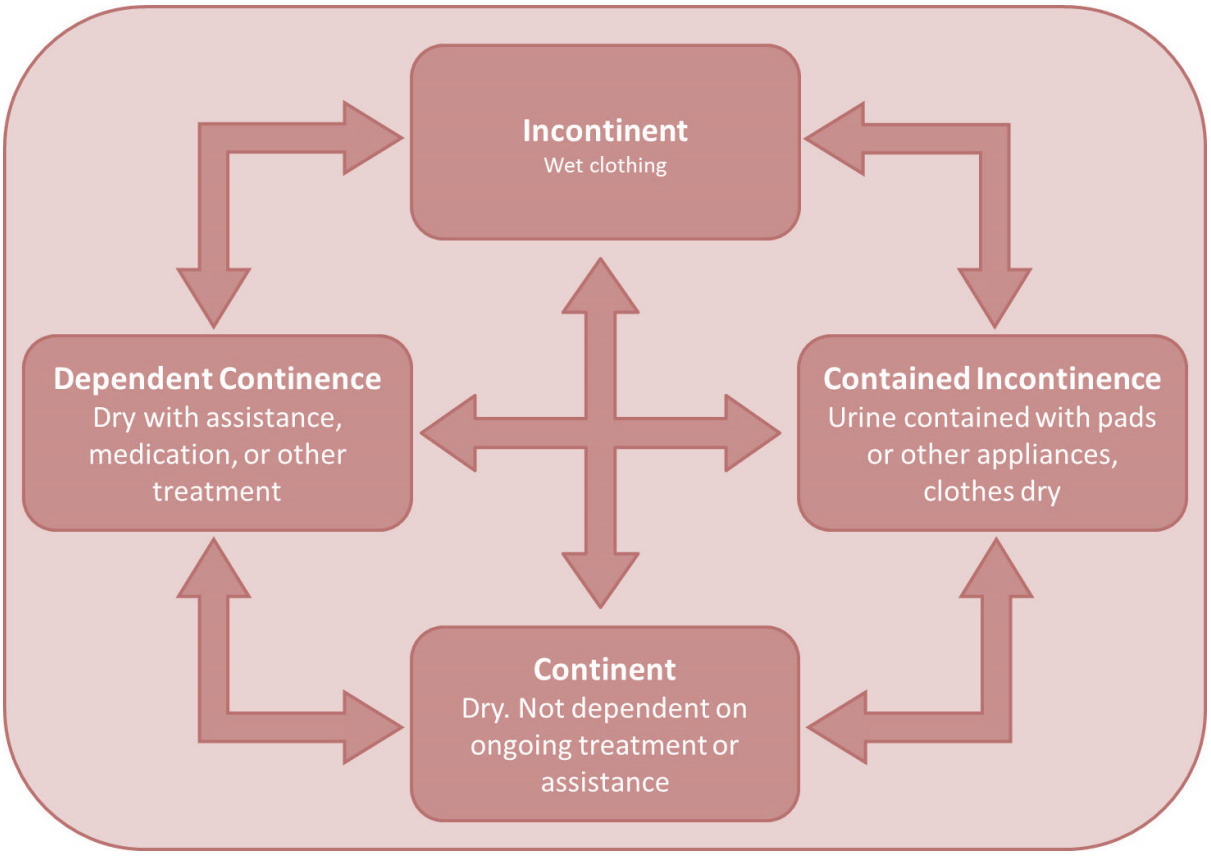
b. Stress urinary incontinence

Stress urinary incontinence (SUI), the complaint of involuntary loss of urine on effort or physical exertion, such as on sneezing or coughing or positional change[10] is more common in women than men, with risk factors including genetics, parity, obesity and smoking. Stress urinary incontinence is either due to urethral sphincter incompetence or excessive mobility of the pelvic floor musculature, thus removing the support necessary for protection against excessive fluctuations in intra-abdominal pressure. It is rarely seen in men other than following prostate surgery. In women, parity (particularly any pregnancy lasting over 20 weeks) is a significant risk factor for the development of SUI. Delivery by Caesarean section is only partially protective, and instrumental delivery is associated with greater incidence of SUI.[11]

c. Functional incontinence

The maintenance of continence, and ability to successfully toilet, is reliant on an individual recognizing the need to void, locating and getting to a toilet, and undressing all at an appropriate occasion and in an appropriate manner. A failure to maintain continence due to behavioural, cognitive, environmental or associated disease related factors is termed "functional incontinence." Older people can be portrayed as *incontinent*, having *contained incontinence* or *dependent continence*, or be *continent* (Figure 2).[12] As such, a frail older person who is restrained (e.g., bedrails), is unable to gain access to their mobility aid, or who moves to an assisted living facility with inadequate signage to direct them to the toilets, may well lose their continence even with a normal lower urinary tract and pelvic floor.

Figure 2. Continence paradigm



d. Overflow incontinence

The post-void residual volume (PVR) rises with normal aging, although the level at which this age-associated rise becomes of pathological significance is dictated by consequence, rather than any arbitrary cut-off value.[13] Overflow incontinence, seen in large volume chronic painless retention where the intravesical pressure can no longer be contained by the urethral sphincter classically leads to frequent, small volume voids and dribbling incontinence.

Acute incontinence

In those presenting with new-onset urinary incontinence, the following diagnoses, using the mnemonic DIPPERS should be considered:

- Delirium
- Infection*
- Pharmaceuticals
- Psychological
- Excess urine output
- Reduced mobility
- Stool impaction

*(Avoid the treatment of asymptomatic bacteriuria)

a. Case finding

Up to half of those with LUTS or UI never seek any assistance for their symptoms.[14] LUTS and UI are associated with high levels of embarrassment, not just of wetness and odour, but also embarrassment at going to the toilet frequently, fear of being seen to be "unclean" and, in men, a fear of being thought to be impotent.[15] Patients also fail to seek help because they believe that incontinence is either a normal part of aging, an unavoidable consequence of childbirth, or that UI and LUTS are untreatable.[16] In addition, UI is associated with social isolation and depression[17], which may further reduce the opportunity to seek help. It is therefore imperative that health care professionals dealing with those at risk of UI or other LUTS actively seek problems through focused questioning of at-risk groups, including the frail elderly, as well as those with neurological conditions such as Parkinson's disease, multiple sclerosis or dementia. Unfortunately, many clinicians also contribute to barriers to the delivery of care because of limited education and experience in treating the problem, an underlying preconception of the efficacy (or lack of effect) of treatments or the relative importance of the condition compared to more "important" conditions.[18] There are a number of validated case finding tools, which have been employed in primary care and specialist practice, including the bladder control self-assessment questionnaire[19] and the OAB v8.[20]

Assessment of UI in frail older persons

The cornerstone of the assessment of UI in the frail senior is a comprehensive history, with input from caregivers as appropriate. This should cover:

- Lower urinary tract symptoms[1,7]
    - Storage symptoms
        - Urgency; a sudden, overwhelming desire to pass urine that is difficult to defer and often accompanied by fear of leakage;
        - Frequency; the complaint of voiding too often[1] – a subjective symptom, but it is generally held that >8 voids a day is "too much";
        - Nocturia; the complaint of having to wake at night to void;
        - Urgency incontinence; and
        - Stress urinary incontinence.
    - Voiding symptoms
        - Hesitancy; difficulty in initiating micturition resulting in a delay in the onset of voiding after the individual is ready to pass urine;
        - Slow stream; a perception of reduced urine flow, usually compared to previous performance or in comparison to others;
        - Intermittent stream; urine flow that stops and starts during micturition; and
        - Straining; requiring muscular effort to initiate, maintain or improve the urine stream
        - Terminal dribble; a prolonged final part of micturition, when the flow has slowed to a trickle.

    - Post-micturition symptoms
        - Feeling of incomplete emptying; the sensation of having not fully emptied the bladder; and
        - Post-micturition dribble; an involuntary loss of urine immediately having finished voiding, usually after leaving the toilet in men or rising from the toilet in women.
- Other comorbidities and illnesses that may contribute to LUTS and UI (Table 2)
- Medications that may contribute to LUTS and UI. (Table 3)
- Impact on quality of life, either subjectively by asking "how much does this bother you," or with validated instruments such as the ICIQ-LUTS.[21,22]
- Self-management strategies, such as the use of pads, improvised containment with toilet tissue or voluntarily voiding frequently to avoid urgency.
- Physical function.
- Cognitive function.

This is provided as a "checklist" in Table 4. Several questionnaires have been developed to assist the clinician to distinguish between urgency and stress incontinence. There is limited evidence for their utility beyond taking a comprehensive history.

The minimal examination, which should be performed by a general physician or geriatrician is an abdominal examination for a palpable bladder, examination of the external genitalia for abnormalities such as phimosis (pictures: http://en.wikipedia.org/wiki/Phimosis), hypospadias (pictures: http://en.wikipedia.org/wiki/Hypospadias) and incontinence related dermatitis, an assessment for urogenital atrophy and pelvic organ prolapse in women, and a rectal examination to assess the size of the prostate in men and to exclude fecal loading. A bedside dipstick urinalysis (checking for bacteriuria, haematuria and glycosuria) should be performed. In addition, if there are voiding symptoms, a post-void residual volume (PVR) should be recorded using a hand-held ultrasound, or in-and-out catheterization if ultrasound is not available.[23] Catheterization is, or course, an invasive test and associated with a small risk of infection. The minimum required examination is summarized in table 5. The interpretation of PVR is discussed below.

If the complaint is of SUI, a lying or standing cough test may reveal this. To perform a standing cough test, ask the patient to stand, part the labia and cough. The test is positive if any degree of urine leakage occurs. Tests such as Q-tip test, Bonney test and other *soi dissant* tests of urethral hypermobility are of limited use and in accordance with current national and international guidelines, should not be performed.[23] In patients with evidence of neurological disease, a neurological examination is also required. Possibly the most valuable part of the examination is the observation of the patient's ability to stand up, walk to the toilet, undress, void and then wash and dress afterwards, paying attention to the use of mobility aids and the cognitive ability to locate the toilet. This can be done whilst the patient goes off to provide a midstream specimen of urine.

For more information on the physical examination in urinary incontinence see the JAMA Rational Clinical Examination Series – http://jama.jamanetwork.com/article.aspx?articleid=271857

Table 2. Associated conditions that influence continence

Conditions	Comments	Implications for management
Diabetes mellitus	Poor control can cause polyuria and precipitate or exacerbate incontinence; also associated with increased likelihood of urgency incontinence and diabetic neuropathic bladder	Better control of diabetes can reduce osmotic diuresis and associated polyuria, and improve incontinence

Conditions	Comments	Implications for management
Degenerative joint disease	Can impair mobility and precipitate urgency UI	Optimal pharmacologic and non-pharmacologic pain management can improve mobility and toileting ability
Chronic pulmonary disease	Associated cough can worsen stress UI	Cough suppression can reduce stress incontinence and cough-induced urgency UI
Congestive heart failure and other causes of peripheral edema such as venous insufficiency	Increased night-time urine production at night can contribute to nocturia and UI	Optimizing pharmacologic management of congestive heart failure, sodium restriction, support stockings, leg elevation and a late afternoon dose of a rapid acting diuretic may reduce nocturnal polyuria and associated nocturia and night-time UI
Obstructive sleep apnea	May increase night-time urine production by increasing production of atrial natriuretic peptide	Diagnosis and treatment of sleep apnea, usually with continuous positive airway pressure devices, may improve the condition and reduce nocturnal polyuria and associated nocturia and UI

Table 3. Drugs that may predispose to urinary incontinence

Medications	Effects on continence
Alpha adrenergic agonists (e.g., midodrine)	Increase smooth muscle tone in urethra and prostatic capsule and may precipitate obstruction, urinary retention, and related symptoms
Alpha adrenergic antagonists (e.g., terazosin, doxazosin)	Decrease smooth muscle tone in the urethra and may precipitate stress urinary incontinence in women
Angiotensin converting enzyme inhibitors	May cause cough that can exacerbate UI
Anticholinergics (see www.canadiangeriatrics.ca/wp-content/uploads/2016/11/Anticholinergic-Medications-in-the-Older-Adult.pdf and Table 5 of www.canadiangeriatrics.ca/wp-content/uploads/2016/11/Better-Presribing-in-the-Elderly.pdf)	May cause impaired emptying, urinary retention, and constipation that can contribute to UI. May cause sedation, cognitive impairment and reduce effective toileting ability
Calcium channel blockers	May cause impaired emptying, urinary retention, and constipation that can contribute to UI May cause dependent edema, which can contribute to nocturnal polyuria
Cholinesterase inhibitors	Increase bladder contractility and may precipitate urgency UI
Diuretics	Cause diuresis and precipitate UI
Lithium	Polyuria due to diabetes insipidus
Opioid analgesics	May cause urinary retention, constipation, confusion and immobility, all of which can contribute to UI
Psychotropic drugs Sedatives	May cause confusion and impaired mobility and precipitate UI

Medications	Effects on continence
Hypnotics Antipsychotics Histamine$_1$ receptor antagonists	Anticholinergic effects Confusion
Selective serotonin re-uptake inhibitors	Increase cholinergic transmission and may lead to urgency
Others Gabapentin Glitazones Nonsteroidal anti-inflammatory agents	Can cause edema, which can lead to nocturnal polyuria and cause nocturia and night-time UI

Table 4. Factors to cover in a focused continence history

Storage symptoms	Voiding symptoms	Post-micturition symptoms	Non-bladder aspects
Urgency	Hesitancy	Feeling of incomplete emptying	Medications
Frequency	Slow stream	Post-micturition dribble	Impact on quality of life
Nocturia	Poor stream		Self-management strategies
Urgency incontinence	Intermittent stream		Physical function
Stress incontinence	Straining		
	Terminal dribble		

Table 5. Minimum examination required

General	Observe the patient walk to the bathroom and manage clothing
Abdominal examination	Palpable bladder
	Suprapubic tenderness
Genital and pelvic examination	Phimosis (♂)
	Hypospadias (♂)
	Urogenital atrophy (♀)
	Pelvic floor tone (♀)
	Skin integrity and incontinence-associated dermatitis
Rectal exam	Fecal loading
Post-void residual volume	Ultrasound is preferred to catheterization
Urine dipstick	To exclude hematuria and evidence of infection

b. Management

The management of incontinence in frail older people should first involve an assessment of the impact of symptoms on the quality of life of the patient and their caregiver, and the setting of realistic goals for treatment. Musculoskeletal exercise, including walking and chair-based exercise, as much as directed pelvic floor muscle therapy, has been shown to be of benefit in older people[24,25], and some patients find reducing caffeine intake helpful, although there is limited evidence to support this.[26] Fluid intake should be normalized to around 1.5-2 litres per day.[27]

Continence care for frail older people has concentrated around conservative and behavioural measures, which have no associated treatment related adverse events but require considerable effort on the part of both patient and caregiver:

Prompted voiding involves caregivers prompting people to use the toilet with positive reinforcement, and has been shown to reduce UI episodes and increase self-initiated toileting in nursing home residents. This may be combined with musculoskeletal therapy aimed at improving gait speed and stamina. Most studies have investigated the impact of once or twice weekly exercise sessions.[28] The Canadian Continence Foundation has useful tips on its website: www.canadiancontinence.ca/EN/tips-for-bladder-control.php

Habit retraining identifies the individual's toileting pattern, through both bladder diary and regular wet checks, and a toileting schedule is designed to pre-empt episodes of UI.

Timed voiding, also known as scheduled or fixed toileting, refers to a model of care whereby people are taken to the toilet by their caregivers at regular intervals, usually every 2-4 hours, with no attempt to improve or normalize bladder function.

All require caregiver involvement and enthusiasm, and must take into account the cognitive and physical abilities of the individual patient.

In addition, simple steps should be taken to make toileting as easy as possible, including the provision of walking aids, readily identifiable toilets and, where needed, easy-access clothing with press studs or Velcro, rather than more challenging buttons and zippers. Constipation should be identified and treated, and culprit drugs stopped where possible (Table 3).

c. Overactive Bladder

When appropriate, overactive bladder should first be managed with conservative methods such as fluid balance and bladder retraining (see www.giic.rgps.on.ca/sites/default/files/9c%20Handout%20Bladder%20Retraining%20for%20UI.pdf Bladder training, where an individual progressively lengthens the interval between voids, has been shown to be effective in OAB.[29] In addition, in the cognitively intact, methods to suppress urgency can be taught. These include distraction, by reciting poetry or doing sums, relaxation techniques such as breath awareness, or rapid contraction and relaxation of the pelvic floor muscles, as in pelvic floor muscle training (www.giic.rgps.on.ca/sites/default/files/9d%20Handout%20Pelvic%20Muscle%20Exercises%20Kegels.pdf).[29] Patients should be discouraged from visiting the toilet "just in case," and should try to delay urination for as long as possible.

Should these methods fail, or in those whose symptoms are so severe that they are unable to begin a program of bladder training and conservative management, pharmacological treatment should be pursued. The mainstay of pharmacological treatment remains the bladder antimuscarinics, including oxybutynin, tolterodine, trospium, fesoterodine, solifenacin and darifenacin. These act by reducing the sensation of urgency by inhibiting acetylcholine signaling in the urothelium and detrusor. They are all associated with side effects such as dry mouth and blurred vision. Oxybutynin has been shown to cause deleterious cognitive effects in older people, whereas others, including trospium, solifenacin, fesoterodine, topical oxybutynin, tolterodine and darifenacin have been found to be cognitively safe in cognitively intact older people.[30] There is also some evidence that solifenacin at a dose of 5 mg daily does not produce cognitive impairment in older people with mild cognitive impairment.[31] As such, although often mandated as first-line pharmacological treatment for OAB in even frail older people, the use of oxybutynin should be avoided in this patient group.[32] Treatment of OAB does not appear to result in an excess of falls[33] or delirium[34], reasons often cited by elderly care physicians for not using antimuscarinics.
The combination of bladder antimuscarinics and cholinesterase inhibitors, which intuitively may seem illogical, does not appear to result in either cognitive decline or delirium and can also result in favourable continence outcomes although evidence is of only moderate quality.[35,36] The decision to add a bladder antimuscarinic to a cholinesterase inhibitor can be a complex one, and must be guided by a careful weighing of the degree of symptom bother and impact on QoL of the individual's LUTS. Another

reasonable option may be to decrease the dose of the cholinesterase inhibitor (perhaps even weaning off if it is found to be ineffective in slowing cognitive decline). The beta3 agonist mirabegron offers a theoretical advantage in this situation, but is as yet untested in this patient group. It is our practice to use the newer antimuscarinics, such as solifenacin, darifenacin or fesoterodine, in selected patients also prescribed a cognitive enhancer.

d. Stress incontinence

The first line treatment for SUI is pelvic floor muscle therapy (PFMT – see http://giic.rgps.on.ca/sites/default/files/9d%20Handout%20Pelvic%20Muscle%20Exercises%20Kegels.pdf)[37], as this has been shown to be effective in older women when performed consistently for 20 weeks.[38] If PFMT is unsuccessful when performed correctly, and frequently and for long enough, then surgical treatment of SUI can be considered. The midurethral sling (pictures: www.bing.com/images/search?q=mid-urethral+sling&qpvt=mid-urethral+sling&qpvt=mid-urethral+sling&FORM=IGRE), a less invasive option than colposuspension (http://emedicine.medscape.com/article/1893728-overview)[39], can be performed under local anaesthetic and has been shown to be safe and effective in older women[40,41], although some authors report less positive outcomes in premenopausal women.[42] In men with post-prostatectomy stress incontinence, there is little evidence for benefit of post-operative PFMT, and either a urethral sling or artificial sphincter can be considered.[43] The evidence for either option in frail older men is sparse. Urethral bulking agents, the injection of inert substances into the urethra to increase urethral closing pressure, remain an option, with success rates of up to 80% although efficacy is seldom maintained at this level for longer than two years. The procedure can, however, be repeated.[44] The frequency of repetition is guided by symptoms and no guidelines are published.

e. Functional incontinence

There is little systematic evaluation or assessment of either the prevalence or management of this clinical entity and much that is practised is as a result of received wisdom, involving behavioural and conservative techniques employed for the general management of incontinence in the frail elderly. Approaches such as ensuring suitable safe freedom of mobility, mobility aids and assistance are available, clothing is easy to remove, and toilets are readily identifiable and lit should all be used.

f. Overflow incontinence

Overflow incontinence, presenting with a high PVR, is best managed by first addressing any underlying cause, through treating BPH, constipation and stopping any culprit drugs (Table 3). Should these measures fail, then catheterization may be required. Intermittent catheterization, either self-catheterization or by a caregiver, is considerably safer and more convenient that an indwelling catheter.

g. Detrusor failure or "the underactive bladder"

Although not strictly an incontinence syndrome, detection and management of this, not uncommon, clinical finding warrants mention. There is a progressive increase in PVR associated with aging, which for many older people, is asymptomatic and can be found in otherwise well community dwelling older adults.[45] Unless there are LUTS, which occur as a result of the elevated PVR, increased and bothersome urinary frequency or nocturia, recurrent infection or upper tract damage, there is no need to take action. The classical red flag, which occurs most commonly in men, suggestive of high pressure retention, potentially threatening the upper tracts, is nocturnal enuresis. Otherwise, a high PVR is due to either bladder outflow tract obstruction or detrusor failure. Should there be significant symptoms then either of these conditions can be dealt with in the relevant manner, usually following multichannel cystometry. Management is usually best in specialist, rather than generalist hands. Treatment decisions are based on symptoms, not on the absolute value of the PVR.

h. Pads, appliances and catheters

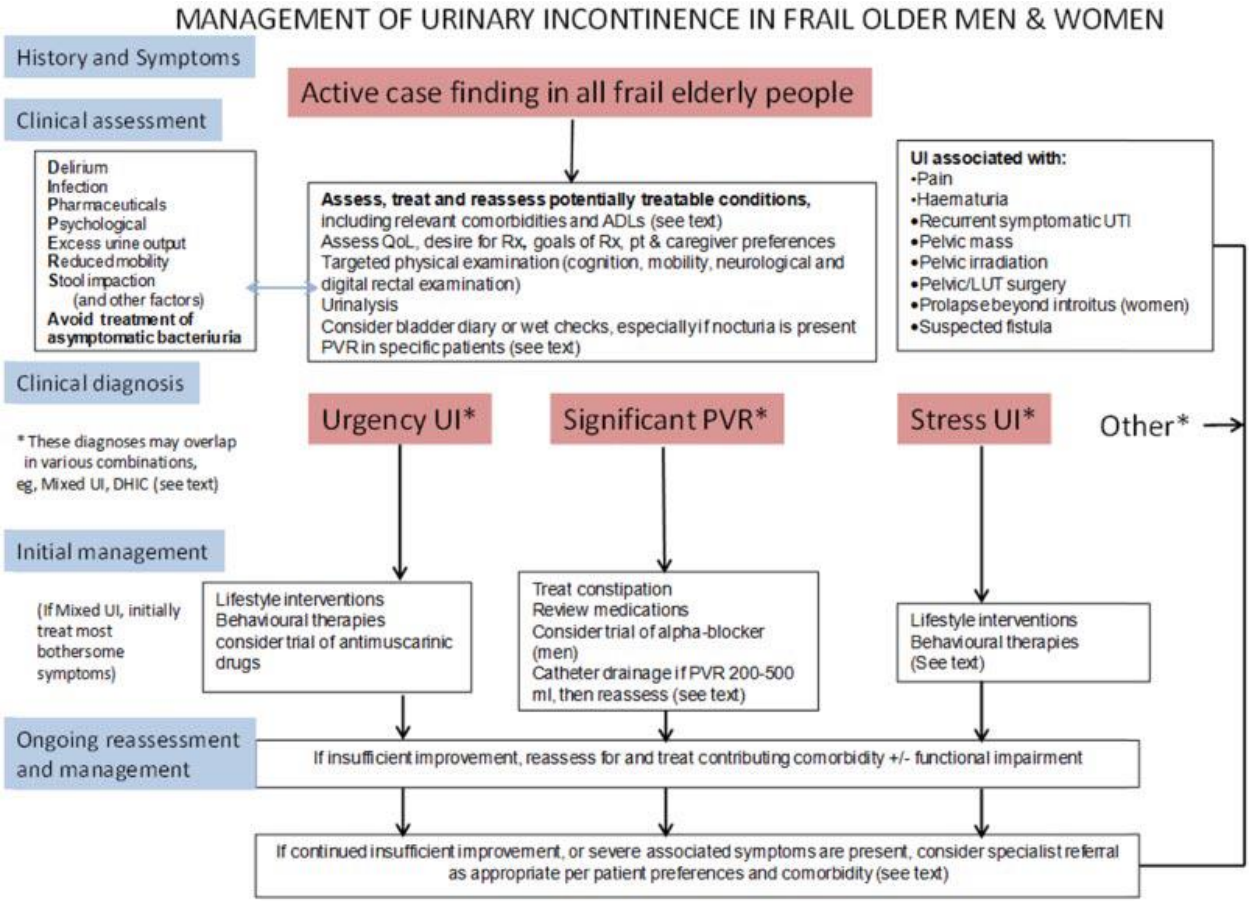
A wide variety of products are available to help people maintain social or contained continence, including hand-held urinals, body-worn collection devices and absorbent pads. The International Consultation on Incontinence, in collaboration with the International Continence Society hosts a comprehensive products directory for use by patients or their families, which enables them to gain advice on the suitability of different products (www.continenceproductadvisor.org/), a comprehensive review of the area is available in Chapter 20 of the 5th International Consultation on Incontinence.[46] Should absorbent containment products be necessary, older adults should be seen and assessed by a suitably trained professional. Attention should be paid to the type of pad, frequency of changing, ease of application and removal and overall, the personal preference of the intended user. However, the first step in assessment should not be the provision of free pads but these should be offered as part of a planned assessment and management plan again, in accordance with current guidance. The most expensive product is not the best and, likewise, neither is the cheapest the worst performing.[47-49] For people with incomplete bladder emptying, the possibility of intermittent catheterization, either by the patient or a caregiver or home care service, should be considered. The use of a single catheterization before bed, for example, to ensure an empty bladder before sleep, can transform the life of a patient with ineffective voiding and nocturnal frequency.

In truly intractable incontinence, a long-term catheter may be the only solution. Guidelines (www.cochrane.org/CD004201/INCONT_urinary-catheter-policies-for-long-term-bladder-drainage) suggest that suprapubic catheters are preferable to urethral, chiefly for the avoidance of urethral complications and the relative ease of replacement[50], but the effect of a catheter on a person's sex life should also be considered where appropriate. In patients without overactive bladder, the use of a flip-flow valve should be considered, assuming that the older person has the dexterity to open and close the tap. A sheath catheter may also form a practical solution to dribbling incontinence but these do present their own challenges to men in terms of application and remaining in situ, but generally, they should be preferred to indwelling catheter use for incontinence without urinary retention.[51] These devices can be associated with skin care problems, which should be borne in mind.[52]

When to refer to a specialist

A schematic guide to the treatment of UI in older people is provided in the frail elderly chapter of 5th International Consultation on Incontinence[6] Figure 3). This recommends referral to a specialist in the event of treatment failure, or in the presence of severe symptoms according to patient and caregiver preferences. Specialist referral should also be considered in the presence of alarm symptoms, such as haematuria; for LUTS, which cannot be readily classified as urgency, stress, of mixed, and for complex comorbidity such as dementia. The specialist referred to will partly depend on local experience and availability, but may be a geriatrician, urologist or urogynaecologist.

Figure 3. Schematic for management of UI/LUTS in the frail elderly



Conclusions

Incontinence is a common, distressing and under-reported condition in both robust and frail older people. Physicians who deal with older patients should case-find actively, particularly among high-risk groups such as the frail and those with cognitive impairment or neurological disease. A combination of embarrassment, nihilism on the part of the patient and their doctor, and a lack of awareness of solutions create significant barriers to treatment, which is often effective in even the oldest and frailest old. There are potentials for large gains in quality of life for patients and their caregivers.
For more information on this topic see:

1. www.ics.org/Documents/DocumentsDownload.aspx?DocumentID=2172
2. http://giic.rgps.on.ca/incontinence
3. 5th International Consultation on Incontinence, available from www.ics.org
4. www.canadiancontinence.ca/EN/tips-for-bladder-leakage-control-problems.php

Five key practice points:

1. Urinary Incontinence (UI) and Lower Urinary Tract Symptoms (LUTS) are common but under-reported. Active case finding among those at risk is essential.
2. The majority of those with UI/LUTS need no more than a comprehensive history and examination. Invasive testing such as urodynamics is rarely required.
3. Oxybutynin has significant cognitive side effects and should be avoided in the frail elderly.

4. Pelvic floor muscle therapy (PFMT) and surgery are both safe and effective for SUI, and age is a barrier to neither.
5. Goal-setting with realistic aims, considering the continence paradigm (Figure 2), is a useful way of structuring the desired outcome for patients, their caregivers and physicians.

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