Second Steps
in the Management
of Urinary Incontinence
in Community-Dwelling
Older People

A clinical practice guideline for
clinicians with a special interest
in incontinence

Second Edition 2008
Evaluation

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Second Steps in the Management of Urinary Incontinence in Community-Dwelling Older People

A clinical practice guideline for clinicians with a special interest in incontinence

Second Edition 2008
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Preface

Urinary incontinence is a health issue for many older Australians living in the community. It also impacts upon their carers. Of the Australians who needed assistance with bladder management and/or used continence aids in 2003, 79% were aged over 50 years and 65% were aged over 70 (Moore, Ho, Lapsley et al., 2006). Women tend to experience urinary incontinence proportionally more than men, regardless of age. Risk factors associated with urinary incontinence include pregnancy, childbirth, menopause, high body mass index, lower urinary tract symptoms, constipation, mobility impairment, cognitive impairment, and specific surgical procedures such as prostatectomies and hysterectomies (Moore, Ho, Lapsley et al., 2006).

Urinary incontinence has further social, physical, emotional and environmental implications for an older person’s health, as reflected in the number of health conditions associated with incontinence including dementia, stroke, cardiac disease, respiratory disease, diabetes and various neurological and musculoskeletal conditions. It is well documented that urinary incontinence increases the risk of being unable to remain at home. Therefore the large number of clients experiencing or at risk of developing urinary incontinence has far-reaching implications for continence clinicians and for many health care workers in a variety of residential and in-home care locations.

This resource is the second guideline produced by the Home and Community Care (HACC) and Medical Aids Subsidy Scheme (MASS) Continence Project team to assist Queensland health care professionals respond to the challenges of managing urinary incontinence. This guideline has been developed in accordance with the National Continence Management Strategy Phase Three Action: 2006-2010 and documents some of the complex and diverse research and treatment options surrounding urinary incontinence. The guideline was designed as a guide to secondary level management of urinary continence based on the best available current evidence and should not be considered definitive. It is envisaged that the guideline forms a part of the resources for continence clinicians working within the health care system to provide better health outcomes for older people living in the community, who experience urinary incontinence. The project team plan to review the guideline in two years time. Best practice is a continuous process and after two years some information in this guideline will be out of date.

I recommend this guideline to all clinicians with a special interest in continence, particularly continence nurse advisors and continence physiotherapists, to assist with the management of urinary incontinence in community dwelling older people.

Gayle Leggat
Executive Officer
Medical Aids Subsidy Scheme
1. Introduction

1.1 Rationale

There is an intentional link between the ‘First Steps in the Management of Urinary Incontinence in Community-Dwelling Older People: A clinical practice guideline’ (MASS, 2007) and this clinical practice guideline. The ‘First Steps’ clinical practice guideline (CPG) is for initial, generalist continence assessment and management. This ‘Second Steps’ guideline is for use by clinicians with a special interest in the assessment and management of urinary incontinence. In essence, this guideline is an expansion of Section 11.5.6, in the ‘First Steps’ CPG (MASS, 2007). The referral algorithm from the ‘First Steps’ CPG outlines the recommended steps, and is reproduced as Figure 6 in Section 15 of this guideline.

Together, these two clinical practice guidelines provide a combined resource for comprehensive assessment and management of urinary incontinence.

The ‘First Steps’ CPG provides guidance for those working with clients who have reversible or treatable urinary incontinence due to a variety of medical and health related factors. These factors are commonly referred to as DIAPPERS, which include delirium, infection, atrophic urethritis/vaginitis, pharmacological influences, psychological conditions, excess urine output, reduced mobility, stool impaction and post prostate surgery. Further information about recognising these factors can be found in the ‘First Steps’ CPG, and are not repeated here. Also covered in the ‘First Steps’ CPG are factors requiring medical investigation, which are termed ‘Red Flags’.

This ‘Second Steps’ CPG focuses on complex urinary incontinence caused by disease to, or injury of, the lower urinary tract.

1.2 Icons

The following icons have been used in this document.

Links

Throughout the guideline, different aspects of one particular topic may be covered in different sections. This icon is used to guide the reader to these related sections of the document.

Recommendation

This icon refers to a guideline recommendation.

Point of Interest

This icon is used to indicate a point of interest. These are small sections of information, sourced mainly from research articles, that highlight an issue discussed in the body of the guideline.

Good Practice Point

This icon indicates that the information presented is a good practice point. These points support and supplement the recommendations and cover clinical issues that are considered by health professionals, experienced in continence care, to form part of good practice.
1.3 Glossary of terms

**Bladder diary:** this document records the times of micturition and voided volumes, incontinence episodes, pad usage and other information such as fluid intake, the degree of urgency and the degree of incontinence.

**Continuous incontinence:** the client describes continuous leakage of urine.

**Detrusor overactivity:** a urodynamic finding whereby an involuntary detrusor muscle contraction occurs while the bladder is filling.

**Functional incontinence:** this term, which describes incontinence due to mobility/dexterity problems, is not used by the International Continence Society as it cannot be assumed to reflect any specific underlying pathology.

**Hesitancy:** when the client describes difficulty in initiating micturition resulting in a delay in the onset of voiding after the individual is ready to pass urine.

**Idiopathic detrusor overactivity:** a urodynamic observation characterised by involuntary detrusor contractions during the filling phase, which may be spontaneous or provoked. There is no defined cause. The newer term for detrusor instability.

**Increased daytime frequency:** the complaint by the client who considers that he/she voids too often by day.

**Intermittent stream:** the client’s description of urine flow that stops and starts, on one or more occasions, during micturition.

**Mixed urinary incontinence:** describes involuntary urine leakage associated with urgency and also with exertion, effort, sneezing or coughing.

**Neurogenic detrusor overactivity:** this term has now replaced the term detrusor hyperreflexia. It is the newer term for overactive bladder syndrome, (see definition below), and describes a urodynamic observation characterised by involuntary detrusor contractions during the filling phase, which may be spontaneous or provoked, and which are caused by a relevant neurological condition.

**Nocturia:** the complaint that the client has to wake at night one or more times to void.

**Overactive bladder syndrome/urge syndrome/urgency-frequency syndrome:** describes a group of bladder problems characterised by urgency, with or without urge incontinence, usually with frequency and nocturia.

**Overflow incontinence:** use of this term is not recommended as it does not specify the underlying pathophysiology.

**Post void residual (PVR):** the volume of urine left in the bladder at the end of micturition. This is usually diagnosed by bladder scan (ultrasound) or in-out catheterisation. Abnormal volumes are variously defined by researchers as >100-200mL.

**Slow stream:** the client’s perception of reduced urine flow usually compared to previous performance or in comparison to others.

**Straining to void:** the muscular effort used to initiate, maintain or improve the urinary stream.

**Stress urinary incontinence:** involuntary urine leakage on effort or exertion, or on sneezing or coughing.

**Terminal dribble:** when the client describes a prolonged final part of micturition, when the flow has slowed to a trickle/dribble.

**Urgency:** a sudden compelling desire to pass urine that is difficult to defer.

**Urgent urinary incontinence:** involuntary urine leakage accompanied by or immediately preceded by urgency.

**Urodynamic (genuine) stress urinary incontinence:** stress urinary incontinence confirmed by urodynamics observations.

(Abrams, Cardozo, Fall et al., 2003)
2. Background

2.1 Scope of document: exclusion clause

This guideline does not focus on general medical practitioner management of urinary incontinence; however it does recognise the importance of referral to general medical practitioners and medical specialists.

An additional exclusion is the topic of ‘neurogenic bladder’, even though neurological disease is a recognised cause of established urinary incontinence. Due to the complexity of management and treatment of the neurogenic bladder, there needs to be a separate guideline addressing evidence based clinical practice for this particular type of urinary dysfunction.

2.2 Methods

This guideline has been developed using a combination of systematic and narrative review. The majority of the recommendations for management are the end result of a systematic review process where a structured, rigorous search process was followed by extensive critical appraisal and synthesis of the research findings by two literature reviewers and appraised by an expert panel using the process which can be found in Appendix 2. The remaining management sections are in the form of narrative review, where a less structured review of the literature has occurred. Recommendations for practice in this case are presented in the form of ‘Good Practice Points’. Where limited published evidence is available, expert opinion has been sought to provide up-to-date clinical practice information.

Not all research and information is of equal value, with variations occurring in the quality of studies, reporting practices, standards of journal indexing and editing. Table 1 indicates the most common difference between narrative reviews and systematic reviews, while table 2 lists the sections of this guideline developed using systematic review versus non-systematic methods/narrative review.

Table 1 Differences between narrative and systematic reviews

<table>
<thead>
<tr>
<th>Feature</th>
<th>Narrative review</th>
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<tr>
<td>Question</td>
<td>Often broad in scope, without a clearly stated hypothesis</td>
<td>Often a focused clinical question</td>
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<td>Sources and search</td>
<td>Not usually specified, and do not usually attempt to locate all relevant literature, so can be potentially biased</td>
<td>Comprehensive sources and explicit search strategy to limit impact of publication and other biases</td>
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<tr>
<td>Selection</td>
<td>Not usually specified as to why some studies are included and others excluded, so can be potentially biased</td>
<td>Explicitly described criterion based selection, uniformly applied</td>
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2. Background

Table 2 Comparison of sections by type of review process

<table>
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<tr>
<td>Toileting programs for cognitively impaired (prompted voiding and habit retraining) Table 12 Section 10.2.1</td>
<td>Post void residual Section 4.4.8</td>
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<td>Pelvic floor muscle training Table 12 Section 10.3.1</td>
<td>Management recommendations: clean intermittent self catheterisation Section 8</td>
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<td>Management recommendations: indwelling catheterisation Section 9</td>
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<td>Pelvic floor muscle rehabilitation Section 11</td>
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</tr>
</tbody>
</table>

Readers are encouraged to evaluate the type of review process undertaken when reading research articles, and to be aware that, as stated in table 2, not all sections of this guideline have been through a systematic review process, due to time and staffing constraints.

Point of Interest

Systematic reviews:
- Are generated to answer specific, often narrow clinical questions in depth
- Usually address four explicit variables:
  - A specific population and setting
  - The condition of interest
  - An exposure to test of treatment
  - One or more specific outcomes
2. Background

Point of Interest cont.

- Assemble, critically appraise, and synthesise the results of primary investigations addressing a specific topic or problem
- Are prepared using strategies that limit bias and random error
- Can help practitioners keep up to date with the overwhelming volume of medical literature
- Can help ground clinical decisions in research evidence, although they neither make decisions nor obviate the need for sound, compassionate clinical reasoning
- Are more likely to detect small but clinically meaningful treatment effects than narrative reviews.

Narrative reviews:
- Tend to deal with a broad range of issues related to a given topic rather than addressing a particular issue in depth
- May or may not provide an overview or summary of research on a topic. More typically they identify the range and diversity of the available literature, much of which will be inconsistent or inconclusive
- Are almost always selective in terms of the literature search, resulting in selection and/or publication bias
- May be most useful for obtaining a broad perspective on a topic
- Are less often useful in furnishing quantitative answers to specific clinical questions
- May better describe cutting-edge developments if research is scant or preliminary, or if studies are very limited by flawed design or execution
- May be particularly useful for discussing data in light of underlying theory and context
- Can draw analogies and conceptually integrate two independent fields of research
- May show only a tenuous or incomplete connection between clinical recommendations and evidence.

(Cook, Mulrow, & Haynes, 1997; Davies, 2003)

Studies are also reviewed for:

- Reliability: the degree to which the results obtained by a measurement procedure can be replicated under identical conditions. Lack of reliability may arise from differences between observers or instruments or instability of the attribute being measured. There are two forms of reliability; test-retest (the stability of a measure’s score across repeated administrations) and internal consistency (the extent to which the total score from a survey correlates with the total true score based on all possible items that could be asked about the domain of interest). Chronbach’s alpha is used as a measure of internal consistency, and an alpha of at least 0.7 is typically considered a minimal reliability criterion.
- Validity: the degree to which a measurement measures what it purports to measure. There are several types of validity, including construct, content and criterion validity.
- Responsiveness: the responsiveness to change is the ability to detect changes over time. External responsiveness measures the degree to which changes relate to other variables, while internal responsiveness measures the degree to which change occurs after a stimulus that is known to affect the related variable is introduced or removed.
- Utility: the degree to which the results are clinically useful.
3. Bladder function and urinary incontinence

Section three has been developed using non-systematic, narrative methodology.

3.1 Overview

Urinary continence requires conscious control over voiding. It is therefore dependent not only upon an anatomically intact lower urinary system, but also the complex integration of the central and peripheral nervous systems (Getliffe & Dolman, 2003). The lower urinary tract, consisting of the bladder, urethra and sphincters, is designed to store and excrete urine. The two bladder functions of storage and voiding are detailed in this section. Emphasis has been given to explaining the unique system of reflexes incorporating the bladder, internal and external sphincters, urethra, peripheral nerves, spinal cord and the brain.

The lower urinary tract is innervated by three sets of peripheral nerves including parasympathetic nerves (from the sacral area of the spinal cord which excite the detrusor and relax the external urethral sphincter), lumbar sympathetic nerves (inhibit the bladder body and excite the bladder base and urethra) and somatic nerves (such as pudendal nerves which excite the external urethral sphincter and associated mechanisms in the pelvic floor).

3.2 Voiding

During normal voiding, contraction of the detrusor muscle and a synchronous decrease in resistance inside the urethra occurs. The decrease in intra-urethral pressure occurs due to relaxation of the urethral sphincter muscles and pelvic floor muscles.

The flow rate of urine through the urethra is greater than 15mL per second when the volume of urine is over 200mL (Norton, 1996) and the pressure inside the bladder at maximum flow rate is 5-15mmHg (Evans & Castleden, 1998).

![Figure 1: Voiding](image-url)

*Figure 1: Voiding*

From the British Journal of Nursing, 1996 Vol 5(15) Reproduced with permission from the Mark Allen Group known as MA Healthcare.
The Sacral Micturition Reflex (SMR) is the basic spinal reflex involved in bladder emptying and occurs in the region of the spinal cord between S2 and S4. In the adult with an intact spinal cord, the decision to void involves a conscious process (voluntary control), involving the cortical micturition centre.

Nerve pathways (somatic, sympathetic and parasympathetic) pass from the spinal cord to both the detrusor muscle and the external urethral sphincter and levator ani muscles. The SMR, working via these pathways, ensures that synchronous relaxation of the external urethral sphincter and levator ani muscles occurs while the detrusor muscle contracts during bladder emptying. As the intravesical pressure increases during voiding, the intraurethral pressure simultaneously decreases.

Several supraspinal regions of the brain influence the sacral micturition centre (SMC), allowing voluntary voiding to occur. The conscious decision to empty the bladder is mediated by the right inferior frontal gyrus, and is accompanied by activity in the visceral motor centre (Blok, Sturms, & Holstege, 1998). The hypothalamus processes this information and excites neurons in the pontine micturition centre (PMC). Nerve fibres from the PMC descend via the spinal cord and form excitatory connections with the motor neurons to the detrusor, and inhibitory connections with the external urethral sphincter and levator ani (Blok & Holstege, 1998; Blok, Sturms, & Holstege, 1998; Holstege, 1998). This results in contraction of the detrusor and relaxation of the urethral sphincter. The PMC therefore augments the neural influences already present within the SMC, causing a strong, sustained detrusor contraction and external urethral sphincter relaxation, so that the bladder empties completely.

Other supraspinal regions of the brain have strong inhibitory influences on voiding. Their collective influence promotes bladder storage. It is therefore possible for the 'higher centres' of the brain to 'switch' on or off the output from the PMC to the SMC.

**Point of Interest**

Both voluntary contraction of the pelvic floor muscle (PFM) and pressure over the penis or clitoris exert an inhibitory influence on the somatic motor neurons to the PFM, resulting in a decreased bladder urge.

 Interruption of the parasympathetic pathways to the detrusor muscle can occur when the pelvic nerves are damaged. Damage to these motor pathways reduces the ability of the detrusor smooth muscle to contract, thereby reducing the pressure within the bladder when voiding. As a result, the bladder fails to fully empty, and residual urine may remain in the bladder at the end of voiding, increasing susceptibility to urinary tract infections.

The complexity of the neural involvement within the micturition process implies susceptibility to urinary dysfunction within many neurological diseases and systemic diseases with neurological complications.
3.3 Storage

As the bladder fills, sensory information is relayed through the spinal cord to the cortical micturition centre. The sympathetic and the somatic pathways mediate storage information. The sympathetic pathway involves excitation of the internal urethral sphincter, leading to a gradual contraction of the urethra with simultaneous relaxation and stretching of the detrusor (Chai & Steers, 1996). Relaxation of the detrusor smooth muscle throughout the whole of the storage phase is essential to allow the bladder wall to stretch while filling occurs. The somatic pathway involves pudendal nerve innervation via the external urethral sphincter to the pelvic floor.

![Figure 2: Storage of urine](image_url)

From the British Journal of Nursing, 1996 Vol 5(15) Reproduced with permission from the Mark Allen Group known as MA Healthcare.

There are other supraspinal influences during the storage phase. For example, the inhibitory influence on the pontine micturition centre (PMC) comes from the basal ganglia and cerebellum (Rosenweig, 1992) as well as the reduction in activity of the neurons in the visceral motor area and the conscious decision making area of the cortex (refer Figure 2).

Additionally, the pons transmits information to the sacral micturition centre and provides continuous excitatory input to the somatic motor neurons (those innervating the external urethral sphincter and levator ani) (Blok & Holstege, 1998; Blok, Sturms, & Holstege, 1998). Tonic activity of the external urethral sphincter gradually increases during bladder filling. It is likely that this pathway provides the continuous tonic contraction of the levator ani that is present at a subconscious level, known as the voluntary guarding reflex (Chai & Steers, 1996). Damage to the sacral and perineal nerves (eg. through radical prostatectomy, herniated lumbar disc, pelvic fracture or vaginal delivery) causes damage to somatic nerve pathways, reducing the ability of the levator ani and external urethral sphincter muscles to contract. This results in a decreased intra urethral pressure, which may lead to urinary incontinence.
3.4 Different types of urinary incontinence

The types of urinary incontinence described in this guideline are based on International Continence Society definitions from their 2003 terminology document (Abrams, Cardozo, Fall et al., 2003). The definitions reflect symptoms of urinary incontinence described by the client. The major types of urinary incontinence are stress urinary incontinence, urge urinary incontinence, or mixed urinary incontinence (a combination). Definitions of major incontinence types are included within the glossary. Other types of incontinence may occur in particular situations, such as incontinence during sexual intercourse.

Continuous incontinence, overflow incontinence and functional incontinence

In their recent terminology document the International Continence Society (ICS) added a new type of incontinence: continuous urinary incontinence, where the client describes continuous leakage of urine (Abrams, Cardozo, Fall et al., 2003).

The ICS no longer recommends the term ‘overflow incontinence’ as it is considered confusing and lacking a convincing definition. If used, it is recommended that the precise underlying pathophysiology should be specified (Abrams, Cardozo, Fall et al., 2003).

Functional incontinence is a concept commonly understood by continence clinicians to refer to urinary leakage where there is a clear contribution from the client’s limitation in function. These functional limitations may include poor mobility (inability to get to the toilet on time), poor dexterity (inability to remove clothing in time), cognitive impairment, psychological unwillingness, or environmental barriers (Lyons, Specht, Mentes et al., 2000). However, ‘functional incontinence’ is not a term that is included in the ICS terminology document, and cannot be assumed to reflect any specific underlying pathology.

3.5 Underlying causes of urinary incontinence

This section addresses established urinary incontinence, which is incontinence that does not resolve by itself but persists over time. It assumes that potentially reversible or treatable causes, which can aggravate established urinary incontinence, have already been assessed and managed. The reader is referred to the ‘First Steps in the Management of Urinary Incontinence in Community-Dwelling Older People; A clinical practice guideline’ (MASS, 2007), for more information on potentially reversible or treatable causes of urinary incontinence.

The most common underlying causes of urinary incontinence, which may be present together or in isolation in both men and women, include detrusor overactivity (neurogenic and idiopathic) and sphincteric incompetence (Koelbl, Mostwin, Boiteux et al., 2002). Table 3 summarises the causes of urinary incontinence.
Table 3: Causes of urinary incontinence

<table>
<thead>
<tr>
<th>Urological and gynaecological causes of incontinence</th>
<th>Urinary tract infection; bladder stones; bladder cancer; idiopathic detrusor overactivity; neurogenic detrusor overactivity with impaired contractility; detrusor-urethral dyssynergia; prostate gland enlargement; urethral stricture; urinary tract fistula; pelvic muscle weakness; oestrogen hormone deficiency; pelvic surgery and irradiation; under active detrusor (atonic bladder)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Medical conditions that cause or aggravate incontinence</td>
<td>Acute medical illness; acute confusional state; poor mobility (stroke, arthritis); immobilisation (fractured hip, pneumonia); medication; faecal impaction; dementia; depression; alcohol excess; diabetes mellitus; obesity</td>
</tr>
<tr>
<td>Neurological causes of incontinence</td>
<td>Muscle weakness; head injury; dementia; stroke; Parkinson’s disease; brain tumour; hydrocephalus; Multiple Sclerosis and other demyelinating diseases; peripheral nerve disorders (diabetes mellitus, alcohol neuropathy); spinal cord injury or tumours (paraplegia)</td>
</tr>
<tr>
<td>Environmental factors contributing to incontinence</td>
<td>Inappropriate furniture heights (bed, chair, toilet); excessive distance to toilet; poor lighting; toilet signs inadequate/absent; clothing difficult to manipulate; cool temperature; sight or sound of running water</td>
</tr>
</tbody>
</table>

Reprinted with permission from Associate Professor David Fonda 2006.

3.5.1 Detrusor overactivity

Detrusor overactivity (DO) refers to a urodynamic finding whereby an involuntary detrusor muscle contraction occurs in the filling phase of the bladder. When there is a relevant co-existing neurological disorder, such as Parkinson’s disease, Multiple Sclerosis, or stroke, the DO is further classified as neurogenic DO. Neurogenic DO will not be addressed in this guideline.

When there is no relevant neurological disorder, the DO is classified as idiopathic (the cause is unknown). Symptoms that commonly arise from this condition include urinary urgency with or without urge incontinence, frequency and nocturia. Collectively, this cluster of symptoms is known as the overactive bladder syndrome (OAB). However, OAB symptoms may also be present without proven detrusor overactivity.

**Point of Interest**

The International Continence Society no longer recommends the use of the terms ‘motor urgency’ and ‘sensory’ urgency, as the terms are often misused and have little intuitive meaning.

The terms ‘detrusor instability’ and ‘detrusor hyperreflexia’ have been replaced by ‘idiopathic detrusor overactivity’ and ‘neurogenic detrusor overactivity’ respectively (Abrams, Cardozo, Fall et al., 2003; Fonda, DuBeau, Harari et al., 2005).
3.5.2 Sphincteric incompetence

Sphincteric incompetence occurs when there is disturbance in the function of the urethral sphincter continence mechanism (Koelbl, Mostwin, Boiteux et al., 2002). It can arise due to various factors including childbirth related injury, loss of vaginal support, ageing, and in men, prostatic surgery. Commonly, this gives rise to symptoms of stress incontinence, though urgency/urge incontinence can also be present.

3.6 Bladder symptoms

3.6.1 Storage symptoms

Storage symptoms are lower urinary tract symptoms that are experienced during the storage phase of the bladder (Abrams, Cardozo, Fall et al., 2003). They include:

- daytime frequency
- nocturia
- urgency
- urinary incontinence (eg. onset, duration, etc.).

3.6.2 Voiding symptoms

Voiding symptoms refer to any lower urinary tract symptoms that occur during the voiding phase of the bladder, as opposed to the storage phase. Voiding symptoms are summarised for women (Dorflinger & Monga, 2001; Nitti, Le, & Gitlin, 1999) and men (Hirst, Butler, Lajoie et al., 2000) in table 4.

Table 4: Voiding symptoms summary

<table>
<thead>
<tr>
<th>Men</th>
<th>Women</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hesitancy</td>
<td>Hesitancy</td>
</tr>
<tr>
<td>Reduced stream</td>
<td>Weak/interrupted stream</td>
</tr>
<tr>
<td>Sensation of incomplete emptying</td>
<td>Sensation of incomplete emptying</td>
</tr>
<tr>
<td>Post-micturition dribble</td>
<td>Straining to void</td>
</tr>
<tr>
<td></td>
<td>The need to change position or use manual manipulation to void or complete voiding</td>
</tr>
</tbody>
</table>
4. Assessment

Section four has been developed using non-systematic, narrative methodology.

4.1 Outline

Recommended components of a continence assessment are examined in this section. These components are divided into two sections, being assessment recommendations for:

- Primary level clinicians (registered nurses or allied health professionals).
- Continence clinicians.

Both the primary and secondary level assessment and management components are included within this guideline for the secondary level clinician to consider. However, clinicians are referred to the ‘First Steps in the Management of Urinary Incontinence in Community-Dwelling Older People; A clinical practice guideline’ (MASS, 2007), for detailed information on initial assessments.

4.2 Initial assessment by the primary level clinician

Factors outside the lower urinary tract that can cause or contribute to urinary incontinence in frail, older people should be thoroughly investigated and managed by a general medical practitioner and/or medical specialist (Fonda, DuBeau, Harari et al., 2005). Specific health issues such as dementia and depression generally require further assessment and management beyond the scope of this guideline.

The following aspects of the initial assessment (refer table 5) are recommended to be undertaken by the primary level clinician prior to secondary level referral. They have been adapted from the 3rd International Consultation on Incontinence (ICI) guidelines (Abrams, Andersson, Brubaker et al., 2005; Abrams, Cardozo, Khoury et al., 2005) and are addressed in the ‘First Steps in the Management of Urinary Incontinence in Community-Dwelling Older People; A clinical practice guideline’ (MASS, 2007).

Table 5: Primary level continence assessment

<table>
<thead>
<tr>
<th>Nature and duration of symptoms</th>
<th>Impact on everyday life</th>
<th>Mobility</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cognitive status</td>
<td>Environmental issues</td>
<td>Support systems (including carers)</td>
</tr>
<tr>
<td>Medical history</td>
<td>Surgical history</td>
<td>Medication</td>
</tr>
<tr>
<td>Urinalysis</td>
<td>Bladder function</td>
<td>Bowel function</td>
</tr>
<tr>
<td>Genital assessment</td>
<td>Motivation and co-operation</td>
<td>Goals and expectations of treatment</td>
</tr>
</tbody>
</table>

The continence clinician may wish to include nutrition, height and weight, culture, and other relevant, holistic information within the initial assessment.
4.3 Further assessment by the continence clinician

The specialist continence clinician is a catalyst for providing improved care and coordination of services. Achieving optimal care for clients is dependent upon gaining a multidisciplinary approach to the promotion of continence and management of incontinence, supported by broad communication channels and networks, and developing resources. Therefore the specialist continence clinician should be available as a clinical support person for other clinicians who have incontinent clients, and as an educator and researcher. The role of educating others in the multidisciplinary team approach is a vital aspect of the work of the specialist continence clinician. By educating others, and using good communication and consultation skills, best practice and service outcomes can be achieved more widely (Norton, 1996).

The following aspects of assessment are more detailed and require a greater depth of theoretical knowledge. They are therefore appropriate for the continence clinician. Additionally, certain components of the initial assessment are expanded on in this section. Table 6 lists common medical conditions that may affect continence for older people, while table 7 outlines suggested components of a continence assessment.

**Table 6: Common medical conditions affecting continence in older people**

See end of table for explanation of abbreviations

<table>
<thead>
<tr>
<th>Condition</th>
<th>Effect on continence</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Impaired mobility</td>
<td>Unable to reach toilet in sufficient time</td>
<td>See organ-specific diseases below. Other potential causes include physical deconditioning, poor eyesight, fear of falling, foot and foot wear problems, drug-induced disequilibrium. Insure adequate access to toilet/ commode</td>
</tr>
<tr>
<td>Neurologic diseases</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cerebrovascular disease, stroke</td>
<td>DO caused by damage to cerebral inhibitory centres; impaired sensation to void from interruption of subcortical pathways; impaired function and cognition</td>
<td>UI should be temporally related to the stroke</td>
</tr>
<tr>
<td>Delirium</td>
<td>Impaired function and cognition</td>
<td>Characterised by acute onset with waxing and waning; screen using the CAM. Medical consult to evaluate and treat causes</td>
</tr>
<tr>
<td>Dementia</td>
<td>DO from damage to cerebral inhibitory centres; impaired function and cognition</td>
<td>Mobility more important factor than degree of cognitive impairment; regular toileting prompts/assistance from care givers important</td>
</tr>
</tbody>
</table>

4. Assessment
<table>
<thead>
<tr>
<th>Multisystem atrophy</th>
<th>Detrusor and sphincter areflexia from damage to spinal intermediolateral tracts</th>
<th>Occurs in persons with Parkinson disease and Parkinson-like syndromes; multidisciplinary management with primary care and neurologist</th>
</tr>
</thead>
<tbody>
<tr>
<td>Normal-pressure hydrocephalus</td>
<td>DO from compression of frontal inhibitory centres; impaired function and cognition</td>
<td>UI usually follows dementia and gait disorder (wide base, ataxia). If suspect, refer back to primary care and/or neurology</td>
</tr>
<tr>
<td>Parkinson disease</td>
<td>DO from loss of inhibitory inputs to pontine micturition centre; impaired function and cognition; retention and overflow from constipation</td>
<td>Requires multidisciplinary management with primary care and neurologist</td>
</tr>
<tr>
<td>Spinal cord injury</td>
<td>DO, areflexia, or sphincter dyssynergia (dependent on level of injury)</td>
<td>Suspect in patient with falls; unlikely with atraumatic osteoporotic vertebral fractures</td>
</tr>
<tr>
<td>Spinal stenosis</td>
<td>DO from damage to detrusor upper motor neurons (cervical stenosis); DO or areflexia (lumbar stenosis)</td>
<td>Case reports of resolution of urinary symptoms after decompression laminectomy</td>
</tr>
</tbody>
</table>

### Metabolic diseases

| Diabetes mellitus | DO most common and earliest finding; impaired detrusor contractility (late); osmotic diuresis with polyuria; altered mental status from hyperglycemia or hypoglycemia; retention and overflow from constipation | Medical consultation for maximising diabetic control and further evaluation and management |
| Hypercalcemia Vitamin B₁₂ deficiency | Poluria; altered mental status Impaired bladder sensation and detrusor underactivity from peripheral neuropathy | Medical consultation for evaluation and management Check serum vitamin B₁₂ if PVR elevated; deficiency may be present without anemia or other neurologic signs |

### Infectious diseases

<p>| Herpes zoster | Urinary retention if sacral dermatomes involved; retention and overflow UI from constipation | Occurs with acute disease in sacral dermatomes |
| Neurosyphilis | DO, areflexia, or sphincter dyssynergia | Suspect if high-risk population, concurrent dementia. Diagnosis by positive RPR or FTA ABS and positive CSF VDRL |</p>
<table>
<thead>
<tr>
<th>Tuberculosis</th>
<th>Inanition and functional impairments</th>
<th>Rare. Sterile pyuria found in ≤ 50% of genitourinary tuberculosis cases</th>
</tr>
</thead>
</table>

**Psychiatric diseases**

<table>
<thead>
<tr>
<th>Affective and anxiety disorders</th>
<th>Decreased motivation</th>
<th>Diagnosis of exclusion; medical consultation for evaluation and management</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alcoholism</td>
<td>Functional and cognitive impairment; rapid diuresis and retention in acute intoxication</td>
<td>Although older people tend to drink less, lifelong patterns of heavy drinking can persist</td>
</tr>
<tr>
<td>Psychosis</td>
<td>Functional and cognitive impairment; decreased motivation</td>
<td>Diagnosis of exclusion; medical consultation for evaluation and management</td>
</tr>
</tbody>
</table>

**Cardiovascular diseases**

<table>
<thead>
<tr>
<th>Arteriovascular disease</th>
<th>Detrusor underactivity or areflexia from ischemic myopathy or neuropathy</th>
<th>Suspect in patients with known vascular disease (coronary artery disease, renovascular disease, diabetes)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Congestive heart failure</td>
<td>Nocturnal polyuria, impaired mobility from decreased stamina</td>
<td>Suspect in patients with history of coronary artery disease, diabetes</td>
</tr>
</tbody>
</table>

**Other diseases**

<table>
<thead>
<tr>
<th>Gastrointestinal disease</th>
<th>Overflow UI from constipation</th>
<th>Treatment of constipation including adequate fluid intake and exercise; consider medical consultation for evaluation and management</th>
</tr>
</thead>
<tbody>
<tr>
<td>Musculoskeletal disease</td>
<td>Mobility impairment from osteoarthritis; DO from cervical myelopathy in rheumatoid arthritis and osteoarthritis</td>
<td>Medical consultation for evaluation and optimising pharmacological and other pain management; physiotherapy referral</td>
</tr>
<tr>
<td>Peripheral venous insufficiency</td>
<td>Nocturnal polyuria</td>
<td>Treat underlying cause; use support stockings, elevation, and decrease sodium intake; medical consultation regarding other possible causes of oedema</td>
</tr>
<tr>
<td>Pulmonary disease</td>
<td>Exacerbation of UI by chronic cough and/or smoking; nocturnal polyuria from obstructive sleep apnoea</td>
<td>Medical consultation for evaluation and management</td>
</tr>
</tbody>
</table>

CAM: Confusion Assessment Method; CSF VDRL: Cerebrospinal fluid Venereal Disease Research Laboratory Test; FTA ABS: fluorescent treponemal antibody absorption; RPR: rapid plasma reagin; TB: tuberculosis; DO: detrusor overactivity.
Adapted from DuBeau, 2007
### Table 7: Components of a continence assessment

<table>
<thead>
<tr>
<th>Initial assessment</th>
<th>Comprehensive clinical evaluation referral</th>
<th>Recommendations for further assessment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nature and duration of symptoms</td>
<td>• Investigate patterns of symptoms (including triggers, links with medical/surgical history)</td>
<td>General medical practitioner</td>
</tr>
<tr>
<td>Impact on everyday life</td>
<td>• Refer to table 10 for recommended symptom and quality of life questionnaires.</td>
<td>Social worker</td>
</tr>
<tr>
<td></td>
<td>• Refer to appendices 7 - 12 for examples of these questionnaires</td>
<td>Psychologist</td>
</tr>
<tr>
<td>Mobility</td>
<td>• Waterlow Pressure Ulcer Risk Assessment Tool (Waterlow, 1995)</td>
<td>Occupational therapist</td>
</tr>
<tr>
<td></td>
<td>• Barthel Index (McDowell &amp; Newell, 1996)</td>
<td>Physiotherapist</td>
</tr>
<tr>
<td>Cognitive status</td>
<td>• Mini Mental State Examination (MMSE) (Folstein, Folstein, &amp; McHugh, 1975)</td>
<td>General medical practitioner</td>
</tr>
<tr>
<td></td>
<td>• Hierarchic Dementia Scale (Cole &amp; Dastoor, 1996)</td>
<td>Neuropsychologist</td>
</tr>
<tr>
<td></td>
<td>• Rowland Universal Dementia Assessment Scale (Storey, Rowland, Basic et al., 2004)</td>
<td>Psychogeriatrician</td>
</tr>
<tr>
<td></td>
<td>• Geriatric Depression Rating Scale 1-15 (Gottfries &amp; Karlsson, 1997)</td>
<td>Psychiatrist</td>
</tr>
<tr>
<td>Environmental issues</td>
<td>• Falls Risk Assessment Tool (Community) ((ACSQHC), 2005)</td>
<td>Occupational therapist</td>
</tr>
<tr>
<td></td>
<td>• Consider assessment of sensory function (eg. vision, hearing, etc.)</td>
<td></td>
</tr>
<tr>
<td>Support systems</td>
<td>• Care-giver Strain Index (Robinson, 1983)</td>
<td>Social worker</td>
</tr>
<tr>
<td></td>
<td>• Consider gender appropriate staff allocation</td>
<td>HACC funded services eg. Meals on Wheels, Home Care, etc.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Support groups</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Carer support services</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Aged Care Assessment Services</td>
</tr>
<tr>
<td>Medical</td>
<td>• Guided questioning techniques</td>
<td>General medical practitioner</td>
</tr>
<tr>
<td></td>
<td>• Consider obtaining medical history from general medical practitioner</td>
<td>Community based support groups eg. Breathe Easy</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Community based resources eg. Diabetes Australia</td>
</tr>
<tr>
<td>Surgical</td>
<td>• Guided questioning techniques</td>
<td>General medical practitioner</td>
</tr>
<tr>
<td></td>
<td>• Consider obtaining surgical history from general medical practitioner and/or hospital medical records</td>
<td></td>
</tr>
<tr>
<td>Initial assessment</td>
<td>Comprehensive clinical evaluation referral</td>
<td>Recommendations for further assessment</td>
</tr>
<tr>
<td>-------------------</td>
<td>------------------------------------------</td>
<td>--------------------------------------</td>
</tr>
<tr>
<td>Medication</td>
<td>• Home Medicines Review</td>
<td>Pharmacist</td>
</tr>
<tr>
<td></td>
<td></td>
<td>General medical practitioner</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Medical specialist</td>
</tr>
<tr>
<td>Urinalysis</td>
<td>• Reagent strip analysis</td>
<td>General medical practitioner</td>
</tr>
<tr>
<td></td>
<td>• Consider urine sample collection for further investigation</td>
<td>Continence advisor</td>
</tr>
<tr>
<td>Bladder function</td>
<td>• Bladder diary Section 4.4.7. (and refer to Section 11.3.3 in ‘First Steps’ CPG)</td>
<td>General medical practitioner</td>
</tr>
<tr>
<td></td>
<td>• Post void residual assessment (consider bladder palpation, bladder scan, in-out catheterisation) Section 4.4.8</td>
<td>Continence advisor</td>
</tr>
<tr>
<td></td>
<td>• Abdominal examination (consider palpation, percussion and auscultation) Section 4.4.1</td>
<td></td>
</tr>
<tr>
<td>Bowel function</td>
<td>• Bristol Stool Form Scale (Lewis &amp; Heaton, 1997) (refer Section 5.6.2.1 of ‘First Steps’ CPG)</td>
<td>General medical practitioner</td>
</tr>
<tr>
<td></td>
<td>• Bowel Diary (refer Section 5.6.2.1 of ‘First Steps’ CPG)</td>
<td>Dietitian/Nutritionist</td>
</tr>
<tr>
<td></td>
<td>• Stepping out of Constipation (refer Section 5.7.1 of ‘First Steps’ CPG)</td>
<td>Continence physiotherapist</td>
</tr>
<tr>
<td></td>
<td>• Wexner Faecal Incontinence Severity Scoring System (Jorge &amp; Wexner, 1993)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Rectal examination</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Abdominal examination (consider palpation, percussion and auscultation)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Neurological testing eg. anal reflex</td>
<td></td>
</tr>
<tr>
<td>Genital</td>
<td>• Visual inspection</td>
<td>Continence physiotherapist</td>
</tr>
<tr>
<td></td>
<td>• Physical examination</td>
<td>General medical practitioner</td>
</tr>
<tr>
<td>Motivation and co-operation</td>
<td>• Refer to Section 12 Adherence Issues, including Table 14</td>
<td>Continence advisor</td>
</tr>
<tr>
<td>Goals and expectations</td>
<td>• Consider assessing perspectives from client, carer and clinician</td>
<td>Refer to assessment results from initial assessment, ‘impact on everyday life’</td>
</tr>
<tr>
<td></td>
<td>• Consider assessment results</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Consider frameworks that are realistic and achievable</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Consider formulating a plan that involves ongoing feedback/evaluation between the client, carer and clinician</td>
<td></td>
</tr>
</tbody>
</table>
4.3.1 Differentiating types of urinary incontinence

Underlying causes of urinary incontinence can be reliably diagnosed by urodynamics. However, careful questioning, as well as analysis of a bladder diary, may give some indication of the more likely diagnosis. For example, the presence of nocturia greater than one on a bladder diary increases the likelihood of the underlying cause of the incontinence being detrusor overactivity (Fink, Perucchini, Schaer et al., 1999).

**Point of Interest**

Can the type of incontinence be determined by questioning alone?

A study of women with urinary incontinence of varying causes investigated the reliability of a questionnaire to differentiate between stress, urge and mixed urinary incontinence. Urge incontinence was defined as detrusor overactivity on urodynamics (Ishiko, Hirai, Sumi et al., 2000). The responses to the questions were correlated with client’s actual diagnosis as confirmed by urodynamic testing.

Using this questionnaire, the sensitivity of the diagnosis was 83%, 86% and 61% for stress, urge and mixed incontinence respectively. The questionnaire was able to pick up the large majority of cases of both urodynamically proven stress incontinence and detrusor overactivity, but true mixed urinary incontinence was less likely to be correctly identified. In this study, all cases diagnosed as mixed incontinence on the questionnaire were diagnosed as true stress incontinence on urodynamic testing.

A second study (Sandvik, Hunskaar, Vanvick et al., 1995) similarly validated diagnostic questions about stress and urge urinary incontinence against gynaecologist diagnoses of types of urinary incontinence in female clients. The study demonstrated that a large percentage of women who report both stress and urge symptoms, and thus receive a clinical diagnosis of mixed incontinence, have pure stress incontinence only on urodynamics. It is therefore important for the clinician to be cautious if assuming that the presence of both urge and stress symptoms implies underlying detrusor overactivity.

Another study developed and tested a model to predict urge incontinence due to detrusor overactivity (Gray, McClain, Peruggia et al., 2001). It was found that the presence of three variables had an overall accuracy rate of 91% in predicting urge incontinence detrusor overactivity. These were diurnal frequency more often than two-hourly, nocturia more than twice a night in the over-65 year age group, and a symptom of urine leakage immediately preceded by a desire to urinate. In contrast, standard history-taking (usually considering the response to the latter question only) yielded only a 63% accuracy rate.

**Good Practice Point**

Although there is an imperfect relationship between urinary incontinence symptoms and type of incontinence as defined by urodynamic diagnosis, certain questions can help to guide the clinician as to the more likely diagnosis. Additionally, the bladder diary can help determine the likely type of incontinence present. Assessment interview questions and bladder diary data that help with differential diagnosis are summarised in tables 8 and 9. It should be noted that these are guides only and that urodynamics represents the gold standard for diagnosing type of urinary incontinence.
Table 8: Questions to guide clinicians in differentiating types of urinary incontinence

<table>
<thead>
<tr>
<th>Question</th>
<th>Response making urodynamic stress incontinence more likely</th>
<th>Response making detrusor overactivity more likely</th>
</tr>
</thead>
<tbody>
<tr>
<td>Do you lose urine during sudden physical exertion, lifting, coughing or sneezing?</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>Do you experience such a strong and sudden urge to void that you leak before you get to the toilet?</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>How much urine leaks at a time?</td>
<td>A few drops to a small amount</td>
<td>A considerable amount</td>
</tr>
<tr>
<td>At what intervals do you go to the toilet to pass urine every day?</td>
<td>At 3-6 hour intervals</td>
<td>At 1-2 hour intervals</td>
</tr>
<tr>
<td>Do you go to the toilet to pass urine after falling asleep at night?</td>
<td>Never or once a night</td>
<td>More than once a night or many times a night</td>
</tr>
<tr>
<td>Do you ever leak urine on the way to the toilet?</td>
<td>Never or rarely</td>
<td>Almost always</td>
</tr>
<tr>
<td>Do you ever leak urine because you feel sudden and strong urinary urgency and cannot control it?</td>
<td>Never</td>
<td>Sometimes or often</td>
</tr>
<tr>
<td>Do you often feel such urinary urgency that you want to go to the toilet immediately?</td>
<td>No, never</td>
<td>Yes, I do or Yes, very often</td>
</tr>
</tbody>
</table>

*Based on Fink, Perucchini, Schaer et al., 1999; Ishiko, Hirai, Sumi et al., 2000.*

Table 9: Using a bladder diary to predict type of urinary incontinence

<table>
<thead>
<tr>
<th>Feature of bladder diary</th>
<th>More likely to represent stress incontinence</th>
<th>More likely to represent detrusor overactivity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nocturia</td>
<td>0-1</td>
<td>&gt;1</td>
</tr>
<tr>
<td>Largest voided volume</td>
<td>&gt;400mL</td>
<td>&lt;350mL</td>
</tr>
<tr>
<td>Mean voided volume</td>
<td>&gt;200mL</td>
<td>&lt;200mL</td>
</tr>
</tbody>
</table>

*Based on Fink, Perucchini, Schaer et al., 1999; Larsson, Blixt, Janson et al., 1994.*
4.4 Physical examination

Good Practice Point

Physical examination provides an opportunity for the clinician to discuss personal hygiene habits with the client. Continence clinicians should incorporate the following aspects of physical examination into their assessment in consultation with the general medical practitioner.

4.4.1 Abdominal examination

This is required to assess for a palpable or percussible bladder after voiding, particularly if a bladder scanner is not available to assess for post void residual volume. Clinicians should refer to site specific guidelines regulating clinical assessment. However, abdominal assessment generally includes visual inspection for surgical scars, mass or distension, and palpation for pain/discomfort (Staskin, Hilton, Emmanuel et al., 2005). Auscultation may be conducted on the abdomen to determine presence or absence of bowel sounds. A referral to a general medical practitioner is recommended if any abnormality is detected.

4.4.2 External genitalia

Perineal area examination should be undertaken to assess the sensation and condition of the skin, (such as redness or excoriation), the presence of atrophy, and any abnormal anatomical features. The clinician should also observe any incontinence after requesting the client to cough (Hirst, 2006). Examination of men could include visual inspection of the glans and foreskin, if present.

4.4.3 Sensory function examination

An examination of sensory function must be carried out by a competent clinician; a clinician lacking this competency should liaise with the general medical practitioner for such an examination to occur.

Testing perineal sensation can give the clinician an indication of whether the S2–S4 neurological function is intact. S1–S3 supply the perineum and circum-anal skin. S2–S4 innervate both the external urethral and the anal sphincters. Specifically, the S2 dermatome can be tested by light touch with a tissue on the posterior part of the heel, while examination of perineal sensation assesses the S3 dermatome (Staskin, Hilton, Emmanuel et al., 2005). The bulbocavernous reflex, showing S2–S3 reflex activity, is elicited by pinching the dorsal glans penis or by pressing the clitoris, while palpating for contraction of the external anal sphincter (Wiesel & Bell, 2004). The classical anal reflex or ano-cutaneous reflex is elicited by lightly touching the anal mucosa or the perianal skin with a cotton bud and observing the contraction of the external anal sphincter as dimpling of the perianal skin. This reflex is present in all normal subjects and reflects an intact S4 nerve root (Henry & Swash, 1992). Conversely, absence of this reflex is suggestive of sacral nerve diseases. All four quadrants should be assessed (Wiesel & Bell, 2004).

4.4.4 Rectal examination

A digital rectal examination (DRE) should only be undertaken by a trained assessor. DRE allows for a description of observed and palpable abnormalities, and may include assessment of anal sphincter tone (internal and external), pelvic floor muscle function (particularly in males), distension of the rectum, and the presence of a loaded rectum (although DRE is an...
unreliable indicator of colonic loading), stool impaction, rectal mass or prolapse (Staskin, Hilton, Emmanuel et al., 2005). A DRE also may include inspection in the posterior wall of the vagina for any rectocele. Before performing any invasive examination such as rectal examination, it is essential to obtain consent from the client (Norton & Chelvanayagam, 2004; Getliffe & Dolman, 2007). A visual inspection includes checking for the presence of soiling, any congenital abnormalities, haemorrhoids, anal fissures and surgical scars (Norton & Chelvanayagam, 2004; Norton, Christiansen, Butler et al., 2002).

DRE can be used to palpate and assess prostatic enlargement in men. This is usually undertaken by the general medical practitioner, and is not routinely conducted by continence clinicians. All significant findings should be referred to a general medical practitioner for further assessment (e.g. abdominal x-ray). For practical guidelines on how to perform a DRE, clinicians are referred to the diagrammatic guide by Addison (1999), and the protocols from the Royal College of Nursing, United Kingdom (Young, 2004).

### 4.4.5 Vaginal examination

Vaginal examination is performed to assess pelvic organ prolapse, pelvic floor muscle function and oestrogen deficiency indicated by thin epithelium lining and discharge. Clinicians should refer to profession specific clinical practice guidelines. For example, nurses may refer to the evidence based protocol recommended by the Association of Women’s Health, Obstetric and Neonatal Nurses (Sampselle, 2000). Physiotherapists can refer to the clinical guidelines recommended by the Chartered Society of Physiotherapy, London (Laycock, Standley, Crothers et al., 2001). Vaginal examinations should be carried out by a competent clinician according to organisational policy (including consent, appropriate setting and procedure). The presence of any significant abnormality or prolapse should be referred to a general medical practitioner.

### 4.4.6 Urinalysis

Urine testing is recommended to detect urinary infection and any abnormality which may indicate an underlying problem (e.g. colour and smell of urine, ketones and specific gravity). The sensitivity and specificity of the reagent strip test have been shown to be acceptable in the older client (MASS, 2007). Urinalysis is a valuable tool for detecting the presence of protein, blood, pyuria and bacteriuria. Liaising with the general medical practitioner for laboratory microscopy and culture, etc., increases the accuracy of diagnosing for urinary tract infection.

**Good Practice Point**

If the client has not been recently screened for urinary tract infection, urinalysis should be undertaken, and/or referral to a general medical practitioner for full microscopy, culture and sensitivity should occur.

### 4.4.7 Bladder diary

The bladder diary, according to the International Continence Society definition, includes information on time and volume of voids, fluid intake, and other information such as leakage episodes. It can therefore be used to obtain a baseline measurement of any of these factors. Details of completing and analysing a bladder diary are found in the ‘First Steps in the Management of Urinary Incontinence in Community-Dwelling Older People; A clinical practice guideline’ (MASS, 2007, Section 11.3.3).
4. Assessment

A randomised control trial compared the quality of data recorded in bladder diaries over seven days (n = 40) with the data in three day diaries (n = 248). The seven day diaries contained significantly more incomplete daily data than the three day diaries. This difference was still present, although of smaller size, in the first three days of the longer diary.

These findings suggest that “diary fatigue” occurred over the seven day study period, and an element of “diary despair” at the prospect of completing seven days of data collection produced a negative influence upon the completion rates from the outset (Tincello, 2007).

Encourage the client to fill out the bladder diary accurately for three days if possible, as “diary fatigue” and “diary despair” occur with longer periods. The quality of data in a three day bladder diary has been shown to be superior to a seven day diary.

In order to obtain any clinically useful results, twenty-four hours is the minimum length of time required for bladder diary completion.

The reliability of different features of a bladder diary was investigated in a study of male and female clients with detrusor overactivity. Clients were required to complete two, three-day diaries a few days apart. It was found that individual mean voided volumes were reliable from one three day diary to another, and that this parameter did not change with differing fluid intake. Mean frequency was also highly correlated between the first three day diary and the second, but was dependent on the volume of fluid ingested. However, the 24 hour frequency varied within individuals by a mean of 25% or 2.5 voids (Bryan & Chapple, 2004).

Several features of the bladder diary, including frequency, nocturia and leakage episodes, and maximum, minimum and average voided volumes, may be evaluated over time to assess treatment effectiveness. Mean frequency and mean voided volume are particularly likely to accurately reflect the clinical situation, and the latter does not vary considerably with changes in fluid intake. A reduction in voiding frequency by only one or two voids in 24 hours may not reflect an effect of treatment, but rather, a natural fluctuation. Therefore, when evaluating a bladder diary, the mean voided volume, rather than just the 24 hour frequency, should be considered.

Where possible, clients should be responsible for their own record, but cognitively or physically impaired people may need assistance of a carer to increase accuracy and compliance. It may therefore be important for the carer/partner to be instructed in bladder diary completion and reasons for its importance (Getliffe & Dolman, 2003).
4.4.8 Post void residual (PVR)

Post void residual (PVR) is the volume of urine remaining in the bladder following voiding. Assessment of PVR is recommended as part of the initial assessment undertaken by a continence clinician.

4.4.8.1 Using the bladder scanner to assess PVR

A bladder scanner is an assessment tool used to accurately measure bladder volume. It is a non-invasive alternative to in-out catheterisation for identifying post void residual volume, which helps clinicians diagnose and manage urinary outflow dysfunction, including urinary incontinence obstruction and retention. This in turn may help to prevent bladder over distension and reduce the need for catheterisation.

A bladder scan has many applications including checking for catheter blockage and proper catheterisation, and undertaking voiding trials. If the bladder is assessed as being over distended, the continence specialist may use clean intermittent catheterisation as a means of emergency management in accordance with policy and procedure, and in consultation with the general medical practitioner.

The bladder scanner may be used for demonstrating and measuring bladder residuals. Scanning should be used together with the other assessments when diagnosing urinary incontinence; eg. empirical assessment (Nickless, Burke, & Bolton, 2002).

The bladder scan procedure:

- Is simple, non-invasive and painless
- Delivers a quick result
- Is cost-effective
- Assists in determining if further tests are required
- Reduces risk of nosocomial (hospital acquired) urinary tract infection
- Maintains the client’s dignity
- Prevents unnecessary trauma to clients
- Prevents unnecessary catheterisation and indicates when catheterisation is required (Patraca, 2005).

Good Practice Point

The 3rd International Consultation on Incontinence (Griffiths, Kondo, Bauer et al., 2005) recommends that Post Void Residual (PVR) be assessed in older men and women with urinary incontinence, as it may influence management. Indeed, a bladder scan is recommended as an essential component of assessment of any older person with incontinence (Fonda, 2006).

In clients with suspected voiding dysfunction, PVR is generally part of the initial assessment if the result is likely to influence management (eg. clients with neurological disorders).
4.4.8.2 Bladder scan procedure

Health care facilities with access to bladder scanners generally have learning packages specific to the brand and model of the scanner, available for staff development and learning. Refer to site specific practice guidelines or standard recommendations (Patraca, 2005). A bladder scan should only be performed by registered nurses, allied health professionals, general medical practitioners and medical specialists who are trained and proficient in the use of that particular model of scanner, and in the interpretation of the results (MASS, 2008).

Point of Interest

Is the bladder scan an accurate measure of PVR?

Accuracy of the procedure has been reported in a comparison of a hand held three-dimensional bladder scanner and a two-dimension conventional ultrasonography in the estimation of bladder volumes (Byun, Kim, Lee et al., 2003). The study demonstrated that the portable scanner measured the bladder volume in a reproducible and accurate manner for a wide range of bladder volumes and was more accurate than two-dimensional ultrasonography.

Because of the marked intra-individual variability of residual urine volume, the test should be repeated to improve precision if residual urine volume is significant at the time of the first measurement (Artibani, Andersen, Galewski et al., 2002; Tubaro, Artibani, Bartram et al., 2005).

Point of Interest

Variability in post void residuals

There have been some suggestions in the literature that post void residual volumes vary, and therefore a single measurement cannot be relied upon to make a definitive diagnosis. Griffith et al (1996) recruited 14 participants (seven women and seven men) with a mean age of 77 years (range 65 to 90 years). All were incontinent of urine and some had underlying medical disorders (three had Parkinson’s disease, two had Alzheimer’s disease, one had Cerebrovascular disease and one had multi-infarct dementia). Residual urine was measured on two days, two to four weeks apart, and each day it was measured three times, in the early morning, afternoon and evening. Results demonstrated that the PVR varied significantly with the time of day. Mean early morning volumes were significantly larger than evening and afternoon values. Of the 14 participants, six had residual volumes consistently larger than 100mL, five had residual volumes sometimes greater than and sometimes less than 100mL and three had volumes consistently under this value (Griffiths, Harrison, Moore et al., 1996).
Due to inherent variability of PVR, more than one scan should occur. Clinicians should scan early in the morning if there is no significant PVR but a high level of suspicion remains. There is no established reference range for normal or abnormal PVR. Over 200mL is considered inadequate emptying but a more conservative value may need to be considered for the frail older person (Staskin, Hilton, Emmanuel et al., 2005). The PVR volume relates to how well the patient is hydrated, how much fluid is in the bladder, where the patient is asked to void, and the individual’s level of comfort to void in that environment (Hirst, 2006).

4.4.9 Infection control

The effective use of cleaning, disinfecting and sterilisation procedures is of paramount importance in preventing healthcare associated infections. All clinicians have a requirement to use appropriate techniques when undertaking a physical examination, and are referred to their latest local area policies and relevant Australian Standards for best practice measures for optimal infection control (Queensland Health, 2006).
5. Lower urinary tract symptoms (LUTS)

This section has been developed using non-systematic, narrative methodology.

Common elements of conservative management of lower urinary tract symptoms (LUTS) are lifestyle intervention, physical therapies, scheduled voiding regimes, continence devices and products. Either a single therapy or a combination of therapies can be used within clinical practice.

5.1 Failed bladder emptying (voiding dysfunction)

The acronym ‘LUTS’ has been used to describe a group of symptoms demonstrated in lower urinary tract dysfunction. LUTS is common to both men and women, and irritative symptoms include nocturia, frequency, urgency and urge incontinence. Specific disease processes such as Alzheimer’s disease and other dementias may contribute to urinary symptoms and should be managed accordingly.

Assessment of LUTS is normally initiated by a continence clinician or general medical practitioner and referred on for tertiary level intervention, eg. a urologist/urogynaecologist. This model of service facilitates accurate evaluation and treatment for those presenting with lower urinary tract symptoms.

Abnormalities in voiding occur when the detrusor fails to contract effectively or the pressure inside the urethra fails to decrease. Loss of synchronicity of these two mechanisms (detrusor sphincter dyssynergia) also causes voiding dysfunction (Dorflinger & Monga, 2001). Failure of the detrusor muscle to contract occurs when there is damage to the structure of the smooth muscle itself and/or damage to the neural pathways that supply the muscle, while failure to decrease the pressure inside the urethra may be due to an inability of the urethral sphincter muscles to relax, and/or obstruction of the urethra by external structures.

Abnormalities in the mechanisms of voiding cause failure of the bladder to empty effectively. In the early stages, the female client may not detect the reduced maximum urine flow rate, and the disorder may therefore be asymptomatic. As failure of the voiding mechanism continues, the bladder decompensates, symptoms of voiding difficulty appear, and progression to acute or chronic urinary retention may occur. Urodynamic testing may reveal a maximum flow rate of less than 15mL per second, reduced voiding pressure, and a post void residual urine volume (PVR). Failed bladder emptying is, therefore, a continuum of disorders ranging from asymptomatic abnormalities in voiding to urinary retention (Dorflinger & Monga, 2001).

5.2 Acute urinary retention

Acute urinary retention is defined as a painful, palpable or percussible bladder, when the client is unable to pass any urine (Abrams, Cardozo, Fall et al., 2003). Acute urinary retention is usually sudden in onset and requires catheterisation with removal of a volume equal to or greater than normal bladder capacity (Dorflinger & Monga, 2001). However, acute urinary retention may be painless after regional anaesthetic such as epidural (Abrams, Cardozo, Khoury et al., 2005; Dorflinger & Monga, 2001) or in the case of a prolapsed intervertebral disc (Abrams, Cardozo, Fall et al., 2003).

5.3 Chronic urinary retention

Chronic urinary retention is defined as a non-painful bladder which remains palpable or percussible after the patient has passed urine (Abrams, Cardozo, Fall et al., 2003). It is often insidious in onset (Dorflinger & Monga, 2001). Catheterisation yields are of a volume equal to at least 50% of normal bladder capacity (Dorflinger & Monga, 2001).
Point of Interest

Risk factors for urinary retention

In a study of 167 elderly men and women admitted to a geriatric rehabilitation unit, prevalence of urinary retention was investigated (Borrie, Campbell, Arcese et al., 2001). Urinary retention was defined as two consecutive post void residual volumes of 150mL or greater. PVR was identified in nineteen patients or 11% (eleven women and eight men). The risk factors associated with urinary retention in this group were long-standing diabetes, faecal impaction and anticholinergic medications.

5.4 Bladder outlet obstruction

Bladder outlet obstruction (refer to figure 3) can be defined urodynamically from measured maximum urine flow rate and maximum pressure inside the bladder during maximum urine flow. Unlike bladder outlet obstruction (BOO) in men, there are no widely accepted urodynamics diagnostic criteria or definitions for bladder neck obstruction in women (Abrams, Cardozo, Fall et al., 2003; Bradley & Rovner, 2004; Homma, Batista, Bauer et al., 2002).

**Potential Causes of voiding difficulties are:**

Bladder Outlet Obstruction

- Bladder neck or urethral obstruction
  - Trauma to urethra
  - Structural abnormalities of the pelvic organs (i.e. prolapse)
  - Pelvic mass
  - Ovarian cysts
  - Fibroids
  - Post surgical
  - Constipation/faecal impaction

Neurological disorders
Bladder over distension
Pharmacological (such as codeine and other narcotic analgesics, anticholinergic medications)
Detrusor underactivity

*Figure 3: Potential causes of voiding difficulties*
(Dorflinger & Monga, 2001)

5.5 Pharmacological causes

Impairment of the contractile ability of the detrusor muscle can be caused by anticholinergic drugs that interfere with the action of acetylcholine at the cholinergic synapses. Therefore, PVR can be investigated prior to prescribing these medications (Dorflinger & Monga, 2001). Continence clinicians should consider pre-existing client medications (such as antipsychotics) prior to assessing PVR. If a client has detrusor underactivity (refer to Section 5.6), medications should be reviewed as a possible cause (Hirst, 2006).
5.6 Detrusor underactivity

The ability of the detrusor to maintain a sustained contraction declines with age associated degenerative changes (Groutz & Blaivas, 2002). It has been noted that women with confirmed voiding dysfunction are significantly older than those without voiding dysfunction (Dwyer & Desmedt, 1994), while age (over 55) is a significant risk factor for urinary retention in women with symptoms of overactive bladder (Milleman, Langenstroer, & Guralnick, 2004).

5.7 Other causes

Other causes of voiding dysfunction include psychogenic factors, detrusor myopathy, urethral sphincter hypertrophy and learned voiding dysfunction (Dorflinger & Monga, 2001). Psychogenic causes are diagnosed by an absence of organic disease, correlation with psychological disturbance, and response to appropriate medications or psychotherapy.

A large cystocele, as well as primary defects in the detrusor muscle or striated urethral sphincter muscle can lead to voiding dysfunction.

In learned or acquired voiding dysfunction, voluntary contractions of the striated urethral sphincter occur during voiding. This condition, also known as functional bladder outlet obstruction (Groutz & Blaivas, 2002), may respond to re-education therapy.

5.8 Assessment

5.8.1 Uroflowmetry

Repetitive flow rates below 15mL/sec for a volume in excess of 150mL indicate impaired voiding and may be a precursor for retention (Dorflinger & Monga, 2001).

5.8.2 Ultrasound/bladder scan for post void residual

Post void residual (PVR) can be assessed using a bladder scanner or an in/out catheter, and is used to support clinical assessment. Bladder scanning is the preferred method of assessing PVR.

5.9 Voiding difficulties in women

A study by Fitzgerald et al (2001) found an elevated PVR in 10% of women with urinary incontinence but without voiding symptoms. The prevalence of elevated PVR was even higher in women with both overactive bladder symptoms and voiding symptoms (Fitzgerald, Jaffer, & Brubaker, 2001). In women with overactive bladder symptoms, an elevated PVR was found in 19% (Milleman, Langenstroer, & Guralnick, 2004).

The relationship between elevated PVR and confirmed voiding dysfunction is imperfect. In one study (Al-Shahran & Lovatis, 2005), only 18% of the women with elevated PVR had voiding symptoms, while another study found that the majority (78%) of women with urge incontinence and elevated PVR had voiding symptoms (Fitzgerald, Jaffer, & Brubaker, 2001). The voiding symptoms assessed differed slightly between these studies, and sample sizes were small.

Point of Interest

Some voiding symptoms have been found to be more strongly associated with impaired bladder emptying than others. Women aged 17-86 (mean 57) attending urogynaecology clinics were queried about the presence of voiding dysfunction symptoms: hesitancy, a poor stream, intermittent stream, straining to void, the sensation of incomplete emptying and/or the need to re-void. Of these voiding symptoms only hesitancy, poor stream and intermittent stream were associated with a significant reduction in maximum flow rates (Dietz & Haylen, 2005).
5. Lower urinary tract symptoms (LUTS)

Point of Interest

One-third of 165 patients with urodynamically confirmed voiding dysfunction had no symptoms of voiding dysfunction (slow stream, incomplete bladder emptying, or straining to void) (Dwyer & Desmedt, 1994). Conversely, voiding symptoms (weak stream, hesitancy, difficulty initiating urinary flow, need for straining, change in position or use of manual manipulation to void such as in cases of prolapse) were identified in 14% of women who had no bladder neck obstruction (Nitti, Le, & Gitlin, 1999). However these symptoms were significantly more likely to be present in subjects with bladder neck obstruction (66%).

Good Practice Point

Continence clinicians should note that the absence of voiding symptoms in a client with urinary incontinence does not necessarily rule out the possibility of voiding dysfunction. In particular, an elevated post void residual (PVR) has been noted in a significant percentage of women with overactive bladder symptoms but without voiding symptoms. The likelihood of voiding dysfunction increases further if voiding symptoms are also present. Clients may also present with voiding symptoms but not actually have voiding dysfunction.

One possible manifestation of voiding dysfunction is an elevated post void residual volume PVR. All older female clients with urinary symptoms should therefore be screened for elevated PVR using a bladder scan.

5.9.1 Bladder neck obstruction: stenosis of the urethra

Stenosis or narrowing of the urethra (refer to figure 3) is thought to be uncommon in females (Dorflinger & Monga, 2001), but may occur due to:
- Atrophy of urogenital organs in postmenopausal women
- Urethral scarring following urethrotomy, anterior vaginal repair or traumatic catheterisation.

Point of Interest

Prolapse and bladder neck obstruction.

A retrospective review of video urodynamics studies in 261 women with bladder neck obstruction found urethral stricture or pelvic organ prolapse present in 53% (Nitti, Le, & Gitlin, 1999).

Similarly, studies of women with pelvic organ prolapse have demonstrated a significantly higher rate of obstruction in women with more severe grades of prolapse (grade 3 or 4) compared to less severe prolapse (grades 1 or 2). Subjective difficulties in voiding were more likely to be reported in those with higher grades of prolapse (Romanzi, Chaikin, & Blaivas, 1999).

The International Continence Society’s prolapse quantification system (grades 0-4) is as follows:
0 Normal anatomy
1 The most distal point of the prolapse is more than 1cm proximal to the hymen
2 The most distal point of the prolapse is 1cm or less proximal or distal to the hymen
3 The most distal point of the prolapse is more than 1cm outside the hymen
4 Complete procidentia/eversion of the total length of the lower genital tract (Ospelt, 2006).
5. Lower urinary tract symptoms (LUTS)

5.9.2 **Bladder neck obstruction: post surgery**

Difficulties with bladder emptying have been observed after surgery for management of urinary incontinence (Dorflinger & Monga, 2001). A retrospective review of video urodynamics studies in 261 women found that the cause of bladder neck obstruction in 14% of the 76 cases was surgery for treatment and management of urinary incontinence (Nitti, Le, & Gitlin, 1999). In particular, scarring of the urethra after anterior vaginal repair is cited as a causal factor (Dorflinger & Monga, 2001).

Surgical procedures for incontinence have also been shown to be associated with abnormal post void residual volumes (Dwyer & Desmedt, 1994; Milleman, Langenstroer, & Guralnick, 2004).

Radical pelvic surgery for gynaecological malignancy is associated with voiding difficulties in women (Dorflinger & Monga, 2001). One study found a subset of women with urodynamically confirmed voiding dysfunction had a significantly higher prevalence of previous radical abdominal hysterectomy than the group without voiding dysfunction (Dwyer & Desmedt, 1994).

Damage to the sensory and autonomic nerve supply has been cited as a factor in post surgical voiding dysfunction for some years. Additional influences are likely to be preoperative function and subsequent injury by bladder over distension (Hoffman, 2004). Recent advances in surgical techniques in women requiring radical hysterectomy has led to the development of the modified radical hysterectomy, with an emphasis on the preservation of the pubovesical ligament and less extensive vaginal resection. Rates of voiding dysfunction have been reported to be less with this operation (Hoffman, 2004).

5.9.3 **Neurological disorders**

Impaired bladder emptying in women has been found by a number of investigators to be associated with Multiple Sclerosis (MS), as well as other neurological disorders (Carlson, Rome, & Nitti, 2001; Dwyer & Desmedt, 1994; Milleman, Langenstroer, & Guralnick, 2004).

**Point of Interest**

A retrospective study was performed on 26 females with storage symptoms with or without voiding symptoms. Women with a known neurological disorder were excluded from the study. However, five subjects were found on investigation to have an occult neurological disorder. MS was present in two subjects, while the three remaining clients had a tethered spinal cord, a spinal cord hemangioma and tropical spastic paresis (Carlson, Rome, & Nitti, 2001).

**Good Practice Point**

Clinicians should consider the possibility of undiagnosed neurological disorders in community-dwelling female clients presenting with voiding dysfunction.

5.9.4 **Bladder over distension**

Bladder over distension can develop due to poor management of acute or chronic distension following pelvic surgery or epidural/peridural anaesthesia, but may also be idiopathic in older women (Dorflinger & Monga, 2001). Bladder over distension may result in irreversible detrusor damage due to ischaemic and neuropathic changes within the bladder wall (Groutz & Blaivas, 2002).
5.10 Surgical interventions for women

- Surgical management of pelvic organ prolapse: Prolapse symptoms vary depending on the type of prolapse, and include bladder, bowel and sexual problems, pain and prolapse sensation. The types of prolapse and associated symptoms dictate the type of surgery required. The challenge in prolapse surgery is that while the prolapse itself may cause difficulties with bladder, bowel and sexual function, surgical correction may also affect these functions in unpredictable ways (Maher, Baessler, Glazener et al., 2007).

- Bladder neck needle suspension: involves tying sutures between the vagina and the abdominal wall. Needle suspension surgery appeared to be less effective for urinary incontinence than abdominal (retropubic suspension) surgery. Although cure rates appeared to be similar after needle suspension when compared with anterior vaginal repair, the data was insufficient to be reliable (Glazener & Cooper, 2004).

- Anterior vaginal repair: lifts and supports the bladder by operating through the vaginal wall. This procedure is primarily designed for cystocele (anterior vaginal wall prolapse) repair, not stress urinary incontinence, although it may help SUI incidentally. There is some evidence that surgery through the abdomen may be better than vaginal repair, but insufficient evidence to allow comparison of anterior vaginal repair with physical therapy or needle suspension for primary urinary stress incontinence in women. Open abdominal retropubic suspension appeared to be better than anterior vaginal repair judged on subjective cure rates in eight trials, even in women who had prolapse in addition to stress incontinence. The need for repeat incontinence surgery was also less after the abdominal operation. However, there was not enough information about post-operative complications and morbidity (Glazener & Cooper, 2001).

- Laparoscopic colposuspension: aims to hold and support the tissues around the neck of the bladder. It appears to have short term benefits over open surgery, such as quicker recovery, less pain and perioperative complications, and shorter duration of catheterisation. Laparoscopic colposuspension may be as good as open colposuspension at two years post surgery. In short term comparison with newer ‘self-fixing’ sling procedures such as tension-free vaginal tape (TVT) and suprapubic arc (SPARC), the sling procedures appear to offer greater benefits of minimal access techniques with similar if not better cure rates than laparoscopic colposuspension (Dean, Ellis, Wilson et al., 2006).

- Open retropubic colposuspension: lifts the tissues around the junction between the bladder and the urethra. It is effective for stress urinary incontinence in women, resulting in long term cure for most women. Within the first year of treatment, the overall continence rate is approximately 85 to 90%. After five years, approximately 70% clients can expect to be dry. There appear to be better cure and improvement rates after open retropubic colposuspension compared to conservative management, anterior colporrhaphy (repair of a rupture of the vagina by suturing the edges of the tear), and needle suspension surgery. Procedures like tension free vaginal tape and laparoscopic colposuspension look promising in comparison with open colposuspension, but their long-term performance is not known (Lapitan, Cody & Grant, 2005).
• Injections of bulking agents such as silicone, collagen and porcine dermal implants: artificial cushioning, designed to support the pressure balance around the bladder, can be created by injecting bulking agents into the area around the urethra. The Cochrane review found only limited evidence that the injection of bulking agents can relieve stress incontinence in women. Indeed, the lack of data comparing injection therapy with pelvic floor muscle training, and the finding of a placebo response in a single study means comment concerning the usefulness of injection therapy as a first line option is not evidence-based. Injection therapy may represent a useful option for short-term symptomatic relief amongst selected women with co-morbidity that precludes anaesthesia. Two or three injections are likely to be required to achieve a satisfactory result. Interestingly, using the woman’s own fat cells can cause serious complications (Keegan, Atiemo, Cody et al., 2007).

• Traditional suburethral slings: aim to hold up the bladder with a strip of material which may be biological or synthetic. There is insufficient information on which to judge whether traditional sling operations are better or worse than any other treatments, or if one type of traditional sling is better than another (Bezerra, Bruschini & Cody, 2005).
6. Issues specific to men with lower urinary tract symptoms (LUTS)

Section 6 has been developed based on the NHMRC clinical practice guideline “The management of uncomplicated urinary tract symptoms in men” (Hirst, Butler, Lajoie et al., 2000).

The emphasis in this section is on benign prostatic hyperplasia (BPH) and infravesical obstruction. Although it is likely that outflow obstruction is the cause of uncomplicated LUTS in many men, the specific factors responsible for the symptoms are difficult to confirm using current diagnostic methods (Hirst, Butler, Lajoie et al., 2000).

6.1 Lower urinary tract symptoms

Symptoms of LUTS have been described as ‘obstructive’ and ‘irritative’ (Hirst, Butler, Lajoie et al., 2000). The obstructive symptoms include hesitancy, reduced stream, post-micturition dribble and incomplete emptying. Bladder outlet obstruction (BOO) is the generic term for obstruction during voiding, and is characterised by increased detrusor pressure and reduced urine flow rate (Abrams, Cardozo, Khoury et al., 2002). Due to uncoordinated detrusor muscle activity, thickening of the bladder wall occurs resulting in a trabeculated surface. There is a common misconception that lower urinary tract symptoms in benign prostatic hyperplasia result entirely from BOO (Elbadawi, 1998).

Point of Interest

There is limited association between BOO and PVR in men. Approximately 50% of older men without BOO have PVR and 30% of men with BOO do not have PVR (Chapple, 2005). There are, however, reports of considerable intra-individual variation in residual urine values suggesting that the reproduction of this test is poor. In one study of 30 men assessed by ultrasound for PVR on three separate occasions, only one-third showed no statistically significant difference in residual volumes across all three measurements (Birch, Hurst, & Doyle, 1988). Further, PVR was not associated with the severity of urinary symptoms in numerous studies and correlated only weakly with urodynamics parameters such as voiding pressures and peak urine flow rate (Cummins, 1996; Hirst, Butler, Lajoie et al., 2000).

6.2 Benign prostatic hyperplasia (BPH)

BPH is the leading cause of lower urinary tract symptoms in men over 50 years of age (Rosen, Giuliano, & Carson, 2005) and the term BPH has been used to describe a variety of symptoms including:

- A histological change of hyperplasia within the gland (microscopic)
- Clinical enlargement of the prostate gland
- The clinical symptom complex of LUTS (Hirst, Butler, Lajoie et al., 2000).

Autopsy studies show that BPH is the most common benign neoplasm in men, with a histological prevalence of 50% in 60 year-old men and 82% in men aged 71-80 years. It is estimated that half of the men with microscopic evidence of BPH will eventually have macroscopic enlargement of the gland (Hirst, Butler, Lajoie et al., 2000).

Over time, prostate size increases, symptoms and bothersome scores worsen, flow rates deteriorate and some men develop difficulties such as acute urinary retention, and may need surgery (Fitzpatrick, 2006).
6. Issues specific to men with lower urinary tract symptoms (LUTS)

LUTS in men are not diagnostic of a specific disease. For example, identical LUTS can also be present in men without BPH or BOO, in elderly women with detrusor overactivity and no obstruction, and in women with BOO (Elbadawi, 1998). Therefore, comprehensive medical evaluation is required.

It is clear from descriptive studies that there is a poor correlation between urinary symptoms and the degree of prostatic enlargement (Barry, Fowler, O’Leary et al., 1992; Girman, Jacobsen, Guess et al., 1995; Simpson, Fisher, Lee et al., 1996). Studies have also demonstrated that the incidence and nature of urinary symptoms for similarly aged samples of men and women is remarkably similar, although women do not have prostate glands to which such symptoms might be attributed (Chancellor & Rivas, 1993; Lepor & Machi, 1993). The symptoms of urgency, frequency and nocturia increase with age equally in men and women (Hirst, Butler, Lajoie et al., 2000).

The potential links of BPH and LUTS with physical activity, moderate alcohol intake and diet, suggests that simple lifestyle interventions may alter the natural history of these disorders. Since men with heart disease have a significantly increased risk for clinical BPH and LUTS, it is possible that the same practices recommended to prevent cardiovascular disease may also promote lower urinary tract health (Kellogg Parsons, 2007).

There is no consensus regarding normal and abnormal post void residual urine. It is generally considered that a post void residual less than 50mL is adequate bladder emptying, while over 200mL is thought to be inadequate. If post void residual is outside these limits, or if a client has other risk factors, further investigations and interventions should occur to identify the appropriate treatment and management (Staskin, Hilton, Emmanuel et al., 2005).

Good Practice Point

Any male client with LUTS presenting a continence clinician without prior investigation/diagnosis should be referred to a general medical practitioner for further assessment, including medical specialist referral if required.

6.3 Infravesical obstruction

Infravesical obstruction may result from increased prostatic volume, increased prostatic smooth muscle density or activity, increased urethral sphincter activity, and distal urethral obstruction (Hirst, Butler, Lajoie et al., 2000).

While LUTS in men may be caused by obstruction due to either the bulk of the prostatic tissue or to increased smooth muscle activity, obstruction is not the only underlying problem responsible for these symptoms (Hirst, Butler, Lajoie et al., 2000).

Some studies have shown that the prevalence of infravesical obstruction remains complex and requires further investigation. Up to 75% of men with sufficiently severe LUTS to warrant surgery are actually obstructed on urodynamics grounds, with 75% of these men having the chance of significant improvement in symptoms after surgery. However, over two thirds of the other 25% who have surgery and are subsequently found not to be obstructed also show improvement in their symptoms. The reasons for this are not known (Hirst, Butler, Lajoie et al., 2000).
6.4 Assessment of lower urinary tract symptoms (LUTS)

6.4.1 Assessment tools

The assessment of LUTS generally involves measuring quality of life and degree of bother. The International Prostate Symptom Score (IPSS) has been traditionally used by urologists for men with LUTS. A newer questionnaire is the ICSmaleSF, which includes both incontinence and voiding symptoms questions.

A number of studies have demonstrated that the symptoms that cause the most bother are frequency, urgency, nocturia and urinary incontinence (Sagnier, MacFarlane, Teillac et al., 1995; Wasson, Reda, Bruskewitz et al., 1995). Symptom scores which measure a man’s perception of the severity of his LUTS can be used effectively, however, such questionnaires tend to become less reliable in men over 65 years of age. Symptom scores are a valuable tool for measuring the change in the severity of symptoms over time (Hirst, Butler, Lajoie et al., 2000). The client’s subjective sense of bother due to his symptoms is important in defining that a problem exists, and physical signs or results of investigations should not be viewed independently of symptoms and the degree of bother they cause (Hirst, Butler, Lajoie et al., 2000).

Point of Interest

Prostate size is not important in the initial assessment of a man with uncomplicated LUTS. However, assessment of prostate size is clinically relevant if considering surgical intervention or treatment with the drug finasteride (Hirst, Butler, Lajoie et al., 2000).

6.4.2 Urinalysis

Good Practice Point

Urinary tract infections, bladder cancer and general medical conditions such as diabetes can mimic uncomplicated LUTS (Hirst, Butler, Lajoie et al., 2000). Every man who presents with urinary symptoms should have his urine tested by reagent strip or be referred to a general medical practitioner for microscopic examination and culture of the urine. The continence clinician should refer on all client reagent strip results indicating signs of infection, blood or other abnormalities; eg. specific gravity, sugar, protein.

Point of Interest

Urinary tract infections, bladder cancer and general medical conditions such as diabetes can mimic uncomplicated LUTS (Hirst, Butler, Lajoie et al., 2000).

6.4.3 Bladder diary

Recommendation

A bladder diary is a useful tool to assist in the management of a man who thinks that his symptoms cause sufficient bother for him to consider management options for his LUTS (Hirst, Butler, Lajoie et al., 2000).
6.4.4 Urodynamics

Urinary flow rate recording (uroflowmetry) is a non-invasive test where the urinary flow is electronically recorded. The most commonly reported value is the peak flow rate (PFR), which measures the highest rate of urine flow recorded during the test, generally greater than 15mL per second (Hirst, Butler, Lajoie et al., 2000). Urodynamic testing may also include filling cystometry (to measure changes in bladder pressure during filling), and other pressure flow studies.

Point of Interest

While it has been suggested that peak flow rate (PFR) may be helpful in differentiating between men in whom the symptoms are caused by an infravesical obstruction and those where this is not the case, studies do not confirm this. While peak flow rates of greater than 20mL per second are unlikely to be associated with urodynamically-defined outflow obstruction (Abrams & Griffiths, 1979), a value of less than 15mL per second does not differentiate between such obstruction and impaired detrusor contractility (Chancellor & Rivas, 1993). Thus, this parameter is not helpful in making a definitive distinction between those men with urodynamically demonstrated obstruction and those without. The NHMRC does not recommend the routine use of urodynamic testing for assessment of uncomplicated lower urinary tract symptoms in men (Hirst, Butler, Lajoie et al., 2000).

6.4.5 Further assessment

This may include assessment of renal function including blood tests for urea, electrolytes, creatinine and a renal tract ultrasound if signs of chronic retention. Digital rectal examination (DRE) could also be conducted. It is important that the continence clinician refers on to other health care professionals if not qualified/trained to complete further assessments.

6.5 Management

Management options generally fall into three categories: reassurance and advice, pharmacological support and surgical interventions.

6.5.1 Reassurance and advice

In some guidelines, reassurance is known as watchful waiting. Reassurance provides important information for a man experiencing LUTS and may include:

- the natural history of LUTS
- the potential impact of LUTS on the quality and length of life
- the nature of possible changes in symptoms which may suggest that further advice should be sought
- advice regarding various conservative measures that may reduce the degree of bother (Hirst, Butler, Lajoie et al., 2000).

Recommendation

Men can be reassured that the existence of LUTS does not suggest they have a condition which is likely to pose a significant health threat to them now or without warning in the future. Reassurance and advice regarding conservative measures to minimise the degree of bother is a viable option for all men with uncomplicated LUTS. Reassurance is most appropriate for those men with a mild degree of bother or who are anxious about their symptoms. Conservative management of LUTS should provide holistic focus on the client’s general health and functional ability as well as the urinary symptoms. This may involve a multi-disciplinary approach (Hirst, Butler, Lajoie et al., 2000).
6. Issues specific to men with lower urinary tract symptoms (LUTS)

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The Cochrane database of systematic reviews currently lists a protocol for the development of a systematic review, to compare the beneficial and harmful effects of radical prostatectomy versus watchful waiting for the treatment of prostate cancer, which is believed to be still confined to the prostate gland (clinically localized prostate cancer) (Hegarty, 2007).

6.5.2 Pharmacological support

Alpha-adrenergic receptor blockers are considered the standard first line therapy for men with bothersome moderate to severe LUTS (Rosen, Guiliano, & Carlson, 2005). Taking four to six weeks to show benefit, alpha blockers decrease the tone of the smooth muscle in the bladder neck, thereby reducing bladder outlet obstruction. The most concerning side effect is postural hypotension.

Table 10: Alpha blockers for treatment of lower urinary tract symptoms secondary to benign prostatic hypertrophy

<table>
<thead>
<tr>
<th>Drug</th>
<th>Features</th>
<th>Hypotensive effect</th>
<th>Starting dose</th>
<th>Max dose</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prazosin</td>
<td></td>
<td>+++</td>
<td>0.5mg 2 x day</td>
<td>1mg 2 x day</td>
</tr>
<tr>
<td>Terazosin</td>
<td>Titrate dose</td>
<td>++</td>
<td>1mg night</td>
<td>5mg daily</td>
</tr>
<tr>
<td>Tamsulosin</td>
<td>Alpha selectivity, CYP450 enzyme metabolism, Highly plasma protein bound</td>
<td>+</td>
<td>400mcg daily</td>
<td>400mcg daily</td>
</tr>
</tbody>
</table>

Finasteride (5-alpha-reductase inhibitor) is effective in reducing prostate size when there is significant enlargement (>40cm). It is costly in comparison to alpha-blockers, and may take 6 months to show benefit.

6.5.3 Surgical interventions

Post-prostatectomy incontinence may be due to intrinsic sphincter deficiency, and/or detrusor overactivity and/or decreased bladder compliance (Filocamo, Li Marzi, Del Popolo et al., 2005).

There are a number of standard surgical procedures used to treat urinary symptoms including:

- Transurethral resection of the prostate (TURP): a common endoscopic procedure to remove some of the enlarged tissue of the prostate gland from inside to relieve the obstruction and promote urine flow.
- Transurethral incision of the prostate (TUIP): an endoscopic procedure, generally limited to smaller prostates, whereby incisions are made into the prostate and capsule to relieve obstruction of the urethra. This is also known as bladder neck incision.
- Radical and retropubic prostatectomy: a surgical procedure involving an incision through the abdomen to remove the enlarged portion of the prostate gland.
• Urethral stents: a coil-like catheter is placed within the prostatic urethra. The main reported complications are migration of the stent, encrustation and infection of the urinary tract and prostate leading to autonomic dysreflexia, calculus formation, tissue growth, pain and irritative symptoms. It is therefore recommended that intraurethral stents are an option to decrease outlet resistance, but long term results are not particularly good (Wyndaele, Castro, & Madersbacher, 2005).

• Cryotherapy is a relatively new procedure for the treatment of localised prostate cancer. Under anaesthesia, probes are inserted into the prostate tumour that freeze the tissue, thereby killing tumour cells. This procedure is carried out on a day-patient basis and generally patients are allowed home the following day. The main complications associated with cryotherapy include impotence, incontinence, and tissue sloughing (making urination difficult). Only a few centres are currently able to perform cryotherapy for prostate cancer as the path to becoming an experienced ‘cryotherapist’ requires extensive training (Shelley, Wilt, Coles et al., 2007).

• Transurethral microwave thermotherapy (TUMT) is an effective alternative to TURP and alpha-blockers for treating symptomatic BPH for men with no history of urinary retention or previous prostate procedures, and prostate volumes between 30 to 100mL. Microwave energy (heat) is applied to the enlarged prostatic tissue, causing reduction of the enlarged tissue. TUMT can be performed as an outpatient procedure, and has fewer, as well as less severe, side effects than TURP. However, TURP provides greater symptom score and urinary flow improvements and reduces the need for subsequent BPH treatments compared to TUMT (Hoffman, Monga, Elliot et al., 2007).

• Laser techniques are a useful alternative to TURP for treating benign prostatic obstruction (BPO). Improvements in urinary symptoms and flow slightly favour TURP, though laser procedures have fewer adverse events and shorter hospitalizations. The risk of re-operation was higher following laser procedures (Hoffman, Monga, Elliot et al., 2007).

Surgical intervention may be indicated for men severely bothered by their symptoms, those who are moderately bothered by their symptoms but do not improve after pharmacological management, and those who do not wish drug therapy but request active intervention for their LUTS.

TUIP is an appropriate procedure for men with small prostate glands (<30g), while TURP may be appropriate for men with glands >30g estimated weight or with a middle lobe component.

(Hirst, Butler, Lajoie et al., 2000)

6.5.4 Pelvic floor muscle training

Should men undergoing radical prostatectomy participate in a pre-operative pelvic floor muscle exercise program?

A well-designed randomised control trial of 112 men aged from 53 to 68 years investigated the effectiveness of preoperative biofeedback assisted pelvic floor muscle training in decreasing post-prostatectomy incontinence. The treatment group received one preoperative session of biofeedback assisted pelvic floor muscle training plus daily home exercise, and a brief discussion at the time of catheter removal, while the control group received simple post-operative instructions to interrupt the urinary stream. This trial demonstrated that the men who received preoperative pelvic floor muscle training had a significantly shorter time to achieving continence, and the proportion of men with severe or continual leakage six months after surgery was also significantly less (5.9% vs 19.6%; p = 0.04).
Point of Interest cont.

There were also significant differences in favour of the intervention group for self-reported urine loss with coughing, sneezing, and getting up from lying down (Burgio, Goode & Urban, 2006). The authors note that use of biofeedback may not be necessary to achieve these results.

Good Practice Point

Pre-surgical pelvic floor muscle training, with or without post-surgical intervention, may be beneficial for men who do not have urinary incontinence prior to surgery. This is possibly because it is easier to learn about the pelvic floor muscles and exercises while still intact, and without the pain and reflex muscle inhibition that may be present post surgery.
7. Outcome measures

This section was developed using non-systematic, narrative methodology.

7.1 Outline

Outcome measures, both subjective and objective, are used to measure the effectiveness of a client’s continence management, and are utilised before, and on completion of, intervention. Outcome measures are important as they:

- Allow the clinician to assess the effectiveness of treatment
- Allow assessment of quality of life issues, which are known to be adversely affected in people with incontinence
- Provide the clinician with information about the likelihood of adherence to treatment
- Provide information for care cost analysis.

It is recommended that a combination of subjective and objective measures is used in clinical practice, to measure any outcome considered meaningful to the clinician and/or the client. The International Continence Society suggests that clinicians and researchers consider the following groups of outcomes:

- The clients’ observations
- Quantification of symptoms (eg. quantification of urine loss through pad tests, bladder diaries)
- Clinician observations (functional and anatomical)
- Quality of life
- Socioeconomics (Hu, Moore, Subak et al., 2002).

Several scientifically sound and practical outcome measurement tools are discussed in this guideline, however no particular measures are recommended. Clinicians are encouraged to utilise outcome measures in their practice, and to explore a range of measures to find the best to suit their clinical environment and client base.

The reader is referred to section 2 of this guideline for further information on assessing the quality of evidence, and to appendix 2 which describes the processes undertaken in this guideline for rating evidence using the GRADE rating system.

Good Practice Point

A continence clinician should be encouraged to use, at a minimum, measures that address the patient's observations, quantification of symptoms and quality of life.

7.2 Client observations and quantification of symptoms

There are a number of quality of life questionnaires which also assess the individual’s symptoms. These are discussed in Section 7.3 of this guideline.

7.2.1 Bladder diary

Bladder diaries can quantify the severity of urinary incontinence. They document the frequency of micturition, volumes voided, incontinence episodes and the use of incontinence aids. This information provides a baseline to measure improvement once interventions have commenced (Abrams, Cardozo, Khoury et al., 2005).
7.2.2 Pad weigh test

Common pad weigh tests include the one-hour, 24 hour and 48 hour pad tests. The one hour test is a clinic-based test requiring the client to complete a number of physical manoeuvres including coughing and stair climbing. The reproducibility of the test has been questioned, and it is less likely to provoke leakage in women with detrusor overactivity than urodynamically-proven stress incontinence (Matharu, Assassa, Williams et al., 2004). The requirement to run on the spot also renders the test impractical in the frail, older age group.

The 24 hour and 48 hour pad test are completed by the client at home, and thus are often referred to as home pad tests. The 24 hour pad test has been shown to be repeatable in women (Karantanis, Allen, Stevermuer et al., 2005). A single 24 hour pad test correlates well with the 48 hour test (Versi, Orrego, Hardy et al., 1996) and the seven day test (Karantanis, Allen, Stevermuer et al., 2005).

Various practical aspects of the home pad test have been investigated (Versi, Orrego, Hardy et al., 1996). Evaporation from sealed bags has been shown to be minimal, with no change over one week, and less than 5% loss of pad weight after eight weeks. Similarly, a study investigating evaporation from the pads when sent by mail in sealed bags and weighed seven days later found no significant evaporation (Flisser, Figueroa, Bleustein et al., 2004).

What weight gain values on the pad test would be considered continent, or mild, moderate or severe incontinence?

Pad weight gain in continent women
Testing on continent women has demonstrated an average normal increase in pad weight over 48 hours to be 7g, with over 15g in 48 hours being considered to reflect urinary incontinence (Versi, Orrego, Hardy et al., 1996). Other authors, using more precise scales and an older cohort of clients, found the upper limit of normal loss over 24 hours to be only a mean of 0.5g in women and 0.25g in men (Karantanis, O’Sullivan, & Moore, 2001). The pad test gain did not differ significantly between pre-menopausal and post-menopausal women (regardless of HRT status), suggesting that the contribution of vaginal secretions to the weight gain in the 24 hour pad test is not significant. Exercise also did not influence the weight gain of the pad. The most recent work investigating evaporation rates compared the evaporation from three sizes of continence pads and a non-continence panty liner, and found significantly greater evaporation from the panty liner and the smallest size continence pad (Karantanis, Miller, & Moore, 2004).

Pad weight gain in women with mild, moderate and severe incontinence
A study classified the severity of urinary incontinence on the 24 hour pad test by comparing pad weight gain over 24 hours with pad weight gain on the one hour pad test (O’Sullivan, Karantanis, Stevermuer et al., 2004). Although the reliability and clinical reproduction of the one hour test may not be ideal (as indicated earlier in this section), the following classifications may give the clinician a guideline to the severity of the urinary incontinence:
- Mild (1.3-20g)
- Moderate 21-74g
- Severe (>75g).

Clinicians should recommend their clients use at least medium size continence pads when completing a home pad weigh test.
To use a pad test as an outcome measure, the pads need to be weighed prior to use and the clinician should instruct the client to place all pads used in a 24 hour period immediately into self-sealing or ‘snap-lock’ bags. If practical for the client, pads should be collected in this way for three consecutive 24 hour periods no more than a week before the appointment with the clinician. The client may use as many pads over that time as desired; however, the same type of pad should be used throughout. The client completes the test and returns the exact same pads (used or unused) to the clinician to weigh (Wallis, 2006). The type of pad used should be recorded, and larger capacity pads should be used, where possible, in preference to panty liners and the smallest capacity continence pads. The same type of pad should also be used from one pad test to the next for that individual. Ideally, electronic scales accurate to 1g should be used to weigh the pads; however, in rural or remote areas, clients can weigh the pads on their home scales with a reasonable degree of accuracy and provide this information to the clinician. Alternatively, the pads in their sealed bag can be mailed to the clinic without fear of significant evaporation.

7.3 Quality of life

To assess the impact of incontinence comprehensively, clinicians should measure both the level of an individual’s symptoms and the extent to which they impair the client’s life (Avery, Bosch, Gotoh et al., 2007).

The Symptom and Quality of Life Committee of the International Consultation on Incontinence performed a systematic review of symptom and quality of life (QoL) questionnaires related to incontinence. This search found a number of questionnaires for urinary incontinence that show the highest levels of systematic rigor, and are therefore highly recommended (Avery, Bosch, Gotoh et al., 2007). These are shown in table 11.

Table 11: Recommended questionnaires for symptoms and quality of life (QoL) of urinary incontinence (UI)/lower urinary tract symptoms (LUTS)/overactive bladder (OAB)

<table>
<thead>
<tr>
<th>Combined symptoms and quality of life impact of urinary incontinence</th>
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<tbody>
<tr>
<td>Men and women</td>
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<tr>
<td>Women</td>
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<td></td>
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<tr>
<td>Men</td>
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</table>

<table>
<thead>
<tr>
<th>Combined symptoms and quality of life of overactive bladder</th>
</tr>
</thead>
<tbody>
<tr>
<td>Men and women</td>
</tr>
</tbody>
</table>
### Urinary incontinence

#### Women
- Urogenital Distress Inventory (UDI)
- Urogenital Distress Inventory short form (UDI-6)
- Incontinence Severity Index
- BFLUTS

#### Men
- ICSmale (LUTS primarily)
- Danish Prostatic Symptom Score (LUTS primarily)

### Quality of life impact of urinary incontinence

#### Men and women
- QoL in persons with UI questionnaire (I-QoL)
- Incontinence classification system (SEAPI-QMM)

#### Women
- Kings Health Questionnaire (KHQ)
- Incontinence Impact Questionnaire (IIQ)
- Incontinence Impact Questionnaire – short form (IIQ-7)
- Urinary Incontinence Severity Score (UISS)
- CONTLIFE

#### Men
- None

(Avery, Bosch, Gotoh et al. 2007).

Questionnaires representative of each section of table 11 are included in the appendices of this guideline as follows:

- Kings Health questionnaire : Appendix 7
- UDI-6 : Appendix 8
- ICIQSF : Appendix 9
- ICIQ – SF 2 : Appendix 10
- ICSmaleSF : Appendix 11
- OAB-q SF : Appendix 12

While other questionnaires are also recommended, they are not included in this guideline for a number of reasons. The SUIQ is not freely available. The CONTLIFE, which comprises 28 questions, is possibly too lengthy for use in clinical practice, while the Incontinence Severity Index (ISI) comprises just two questions which may not provide sufficient information for a
continence clinician’s assessment. The BFLUTS is being increasingly used in epidemiological and outcome studies. The SEAPI QMM questionnaire should be used more widely to assess its usefulness, and similarly, the UISS has been used more in clinical practice than research so data on its psychometric properties are not yet widely available (Donovan, Bosch, Gotoh et al., 2005).

### 7.3.1 Kings Health Questionnaire

The Kings Health Questionnaire (KHQ) is a 21 item questionnaire designed to measure quality of life and record symptoms of urinary incontinence. It takes about five minutes to administer. Responses to questions are divided into eight sub-sections or domains as follows:

- General health perception
- Incontinence impact
- Role limitations
- Physical limitations
- Social limitations
- Personal relationships
- Emotions
- Severity measures.

Several studies have confirmed the validity, reliability and responsiveness to change of the Kings Health Questionnaire in urban settings (Thomas, Nay, Moore et al., 2006). The Continence Outcomes Measurement Suite (COMS) report scored the KHQ highly both in terms of its scientific properties and its practicability of use by clinicians (Thomas, Nay, Moore et al., 2006). It was therefore rated as the most highly recommended outcome measure for use by continence clinicians. As the scientific robustness of the questionnaire has not been confirmed in rural settings or with different cultural groups, it may not be appropriate in certain clinical environments (eg. rural/remote areas) or with certain cultural groups (i.e. Indigenous Australians, or culturally and linguistically diverse groups for whom English is a second language).

### 7.3.2 Urogenital Distress Inventory – short form

The Urogenital Distress Inventory (UDI) was developed in conjunction with the Incontinence Impact Questionnaire (IIQ) to assess the impact of urinary incontinence on quality of life in women (Shumaker, Wyman, Uebersax et al., 1994). The UDI is not appropriate for assessing quality of life in men with urinary incontinence.

These questionnaires were adapted to develop the short form of the UDI (six items) and the short form of the IIQ (seven items). The UDI assesses the symptoms and the IIQ assesses the impact on quality of life. Unlike the KHQ, the UDI includes urogenital symptoms in addition to lower urinary tract symptoms, such as difficulty emptying the bladder and pain or discomfort in the lower abdominal or genital area.

The psychometric properties of the short form of the UDI and IIQ have been shown to be sound (Thomas, Nay, Moore et al., 2006). As with the KHQ, these questionnaires may not be appropriate in certain clinical settings or with certain cultural groups.

The short form of each of the UDI and IIQ take two to three minutes to administer.
3.3 Incontinence Impact Questionnaire – short form (IIQSF7)

The long form of the IIQ has 30 items, 24 which aim to determine the degree to which incontinence affects activities, and six on the feelings engendered. Both the long and short forms (IIQSF7) have good validity, reliability and responsiveness.

3.4 International Continence Impact Questionnaire – Urinary Incontinence – short form (ICIQ–SF 2)

The ICIQ is suitable for the assessment of frequency, severity and impact of quality of life (QoL) of urinary incontinence in clients of varying age, gender and diagnosis. Being short and simple, it is useful to obtain a brief yet comprehensive summary of the level, impact and perceived cause of symptoms of incontinence (Avery, Donovan, Peters et al., 2004).

The ICIQ simultaneously assesses the self-perceived impact of incontinence alongside symptom severity, which is of importance when making decisions regarding whether an individual is likely to require or benefit from treatment. As the ICIQ is sensitive enough to detect varying levels of change from different interventions, it is also useful for evaluating the effectiveness of treatments (Avery, Donovan, Peters et al., 2004).

3.5 International Continence Society Male Short Form Questionnaire (ICSmaleSF)

The ICSmaleSF comprises eleven items, identifying five voiding factors (ICSmale VS) and six incontinence symptoms (ICSmale IS). It also contains three questions pertaining to frequency, nocturia and impact on daily life (Donovan, Peters, Abrams et al., 2000). The ICSmaleSF is shown in Appendix 11 in preference to the American Urological Association (AUA) seven-point symptom score, as the ICSmaleSF is more comprehensive.

3.6 The Overactive Bladder Questionnaire short form (OAB-q SF)

The OAB-q SF, is a 19 item self-administered questionnaire, with six items addressing symptom bother and 13 items covering HRQoL. This questionnaire captures aspects of both the continent and incontinent overactive bladder, and is, therefore, appropriate for use by those without incontinence, who may still experience significant lifestyle difficulties due to an overactive bladder (Coyne, Revicki, Hunt et al., 2002).

The OAB-q SF has good internal consistency reliability, concurrent validity, discriminant validity, and responsiveness. Scoring of the questionnaire uses a formula to convert the summed scores into a transformed score. The OAB-q SF will be incorporated into the International Consultation on Incontinence Modular Questionnaire (ICIQ) as the “ICIQ-OAB” (http://www.oabq.com/).

The OAB-q demonstrates that both continent and incontinent overactive bladder (OAB) symptoms cause significant symptom bother, and have a negative impact on health related quality of life (HRQoL). Except for the sleep scale, people with incontinent OAB reported worse HRQoL and symptom bother than clients with continent OAB. This emphasises the impact of nocturia on HRQoL. Urinating more than once a night causes a significant decrease in functioning and well-being, which appears to be comparable for both continent and incontinent OAB clients (Coyne, Revicki, Hunt et al., 2002).
Point of Interest

Coping behaviours, such as preventive urinating, adjusting travel plans, and avoiding activities away from toilets, have been thought to reduce the impact of incontinence (or fear of incontinence) on HRQoL, but may in fact have a negative impact on HRQoL instead. Coping behaviours themselves can become burdensome, as they become entrenched as essential daily activities regardless of the additional time or energy needed for the behaviour. (Coyne, Revicki, Hunt et al., 2002).

Two recent publications by the Australian Government Department of Health and Ageing detail practical strategies that clients may use to help manage incontinence in daily life. The resource for clinicians is titled “What now? Helping clients live positively with urinary incontinence” (St John, Wallis, McKenzie et al., 2007) while the publication for clients is titled “Live better with urinary incontinence” (St John, Wallis, McKenzie et al., 2006).