

# URINARY INCONTINENCE WITH SPECIAL REFERENCE TO THE GERIATRIC PATIENT

**ABSTRACT:** *Problems involving the urinary tract, particularly urinary incontinence, tend to become more common with age. Urinary incontinence is a prevalent problem in the elderly and its medical, social and economic costs are significant. Patients are often too embarrassed or unwilling to seek treatment, as it is often seen as an inevitable corollary of old age, as it is not considered a life threatening ailment and also because they assume that it is untreatable. The physiotherapist can play a very important role in both the prevention and management of incontinence, but sadly, very few physiotherapists are prepared to take this challenge. The aim of this review is to provide information, with specific reference to the elderly, regarding the prevalence, risk factors and causes of incontinence. The history and examining of the incontinent patient are discussed and management of the different types of incontinence are mentioned.*

**PAPADOPOULOS M, MSc Physio (WITS)<sup>1</sup>  
JORDAAN R, M Physt (UP)<sup>2</sup>**

<sup>1</sup>Department of Physiotherapy, University of Pretoria  
<sup>2</sup>Department of Physiotherapy, University of Pretoria

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## INTRODUCTION AND BACKGROUND

Problems involving the urinary tract, particularly urinary incontinence, tend to become more common with age (Koyama *et al*, 1998). Older women experience this problem, as chronic medical conditions accumulate and functional impairments interact with age related changes in organ systems, in muscle resilience, and in the central nervous system (Turner & Plymat, 1988). Lower urinary tract dysfunction such as urinary incontinence result in irritative or obstructive symptoms that can interfere with everyday functioning, leading to negative consequences on health related quality of life (Naughton and Wyman, 1997).

Patients are often too embarrassed or unwilling to seek treatment, as it is often seen as an inevitable corollary of old age, as it is not considered a life threatening ailment and also because they assume that it is untreatable (Koyama *et al*, 1998; Chambers, 1998). Despite the considerable prevalence, morbidity and expense, incontinence is neglected by patients and caregivers alike (Branch *et al*, 1994). This is unfortunate because regardless of an individual's age, mobility or mental status, incontinence is never normal (Herzog & Fultz, 1990) and it can be cured or improved in most patients (Resnick, 1996).

With the number of elderly increasing in the population, there is a great need for preventative action as well as the management of urinary incontinence.

With the increased emphasis on women's health in South Africa, there is a greater awareness for the need of understanding and advice in dealing with incontinence at training institutions.

The aim of this review is therefore to provide information, with specific reference to the elderly, regarding the prevalence, risk factors and causes of incontinence. The history and examining of the incontinent patient will be discussed and management of the different types of incontinence will be mentioned.

## DEFINITION OF TERMS

In order to understand urinary incontinence and factors that can influence it, it is important to define the different types of urinary incontinence. These types may be found in isolation or in combination with each other. The International Continence Society (ICS) established a committee for the standardisation of terminology of lower urinary tract function in order to compare results of investigators. The ICS defines urinary incontinence as urine loss that is a social or hygienic problem and which is objectively demonstrable (Abrams *et al*, 1990). Urinary incontinence has been

classified by Turner and Plymat (1988), as either acute or transient, and established. Acute or transient refers to sudden onset, usually related to an episode of acute illness such as urinary tract infection, or secondary to environmental factors that impair the individual's ability to get to a toilet. Established incontinence is often categorised into 5 types: stress, urge, combined stress/urge, overflow and functional incontinence.

## Stress urinary incontinence (SUI)

Stress incontinence indicates the patient's statement of involuntary loss of urine during physical exertion. An increase in intra-abdominal pressure is normally transmitted across the bladder wall, leading to an increase in intravesical pressure. Women with SUI have a damaged urethral sphincteric mechanism that is unable to cope with the rise of pressure inside the bladder. Any transient rise in intra-abdominal

## CORRESPONDENCE:

Mrs M Papadopoulos  
Department of Physiotherapy  
University of Pretoria  
PO Box 667  
Pretoria  
0001  
Tel: (012) 354-2023

pressure seen with coughing, laughing or physical exercise, therefore leads to an involuntary loss of a small volume of urine (Gupta *et al*, 1998; Turner & Plymat, 1988; Iqbal & Castleden, 1997).

**Genuine stress incontinence (GSI)** is defined as the involuntary loss of urine occurring when, in the absence of detrusor contraction, the intravesical pressure exceeds the maximum urethral pressure (Abrams *et al*, 1990).

**Urge incontinence or detrusor instability (UI)** Urge incontinence (UI) or detrusor instability is defined as the involuntary loss of urine, which is preceded by a sudden strong desire to void and may occur during day or night (Iqbal & Castleden, 1997). The unwanted and untimely contraction of smooth muscles of the bladder cause rise in intravesical pressure that overcome even a normal urethral sphincteric mechanism. The detrusor contraction causes a sense of urgency and the urine loss is uncontrollable (Gupta *et al*, 1988).

**Combined stress / urge incontinence** This is the presence of both stress and urge incontinence together (Turner & Plymat, 1988).

**Overflow incontinence** Overflow incontinence is any involuntary loss of urine associated with over distension of the bladder. It is commonly seen in men with outflow obstruction due to prostate hypertrophy. Other causes are anticholinergic drugs and neurological conditions leading to poor bladder contraction such as diabetic autonomic neuropathy (Turner & Plymat, 1988; Gupta *et al*, 1988).

**Functional incontinence** In functional incontinence the urethra and bladder are normal, but the patient is unable to get to the toilet due to mental or physical disabilities (Iqbal & Castleden, 1997; Turner & Plymat, 1988).

**PREVALENCE OF URINARY INCONTINENCE** Urinary symptoms are very common in the healthy population and estimates of the prevalence vary, depending on the sample investigated (Johnson & Busby-Whitehead, 1997). Urinary incontinence

affects 15% to 30% of the population and for unique physiologic reasons, incontinence is twice as prevalent in women as in men. The most prevalent form of urinary incontinence among women is stress incontinence (Berghmans *et al*, 1996). Urinary incontinence is common in patients with dementia and is more prevalent in demented than in non-demented older individuals (Skelly & Flint, 1995).

Thomas & Plymat (1980) demonstrated a gradual increase in the prevalence of incontinence with age, with approximately 40% of women in their eighties suffering from the condition. Robinson (1997) agrees with the fact that the prevalence of incontinence increases with age and with declining health. According to Thom (1998) the estimated prevalence of urinary incontinence for elder women range from 17 to 55% (median =35%).

Burgio *et al* (1991) further mentioned that there is a higher prevalence of urinary incontinence amongst white women than other races. Walters *et al* (1993) also found that urinary incontinence is not frequent amongst Chinese, Eskimo and black women. More research regarding the influence of race on urinary incontinence needs to be undertaken. Thom (1998) concluded that an accurate estimate of the prevalence of urinary incontinence depends on specifying the definition of incontinence, the age and gender of groups studied.

**RISK FACTORS AND CAUSES ASSOCIATED WITH GERIATRIC INCONTINENCE**

Understanding the specific remediable risk factors for incontinence is paramount to prevention (Rosenthal & McMurtry, 1995). Established risk factors are

advanced age, gender and parity (Barret & Wein, 1991).

Because age and disease affect both urinary tract function and compensatory mechanisms, any additional drug or disease, even outside the urinary tract, can precipitate leakage. There are conditions, which may worsen or precipitate incontinence in someone who was just managing. These include urinary infection, oestrogen deficiency, increased solute load as in diabetes mellitus and uraemia and drugs like diuretics, sedatives and antidepressants (Iqbal & Castleden, 1997). Thus, the cause of incontinence must be viewed differently in older and younger individuals.

The causes of geriatric incontinence are divided into those lying outside the urinary tract and those within it. Causes outside the urinary tract generally produce transient incontinence and respond to treatment of the external factors, while those within the urinary tract produce established incontinence (Resnick, 1996). Rosenthal & McMurtry (1995) mentioned that transient causes of incontinence that should be explored in all patients include delirium, restricted mobility and retention, infection, inflammation, faecal impaction, polyuria and pharmaceuticals (see table I).

**Age related anatomic and physiologic changes associated with incontinence**

With age, bladder capacity declines, residual urine volumes increase, involuntary bladder contractions are common, mobility is more likely to be impaired and sex-specific changes occur. In women, there is a decline in bladder outlet and urethral resistance secondary to the influence on pelvic musculature of diminished levels of circulating oestrogen

**TABLE 1: DRUGS THAT MAY AFFECT CONTINENCE**

Antipsychotic agents	- (anticholinergic and sedating)
Antihistamines	- (very anticholinergic and sedating)
Antidepressants	- (most anticholinergic and sedating)
Decongestants	- (may cause urinary retention by acting on alpha and beta receptors)
Diuretics	- (may overwhelm older person's ability to toilet)
Antihypertensive	
Alcohol	

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(Rosenthal & McMurtry, 1995). When oestrogen levels decline, women are also at risk for developing atrophic vaginitis, which in itself may cause dysuria, urgency and urinary tract infections (Williams & Pannill, 1982). In men, the well-known and nearly inescapable phenomenon of prostatic enlargement can lead to decreased flow rates, detrusor instability and overflow incontinence (Rosenthal & McMurtry, 1995).

The elderly are prone to functional incontinence, since impairment of daily activities such as the ability to transfer, walk dress and toilet, increases with age. McGrother *et al* (1990) mention that this is a common cause of urinary incontinence, occurring in up to one fifth of patients (Rosenthal & McMurtry, 1995). It should however be remembered that even in functionally impaired individuals, incontinence may be due to urethral obstruction or stress incontinence (Resnick *et al* 1989). Resnick *et al* (1995) and Resnick *et al* (1989), mentioned further that normal lower urinary tract function is the exception in even healthy and continent elderly individuals and is rarely found in functionally impaired individuals, thus viewing functional impairment as a contributor to incontinence rather than a cause. A comprehensive rehabilitation programme aimed at addressing functional impairment and the use of continence aids should be tried in all such patients.

### HISTORY AND PHYSICAL EXAMINATION

The path towards diagnosis begins with the taking of a comprehensive history. This should document all urinary symptoms, past medical and surgical problems, past gynaecological and obstetric history, any intercurrent medical disorder and social and sexual history. Patients should be asked about the length of the time they have had incontinence and the mode of onset, as there may be a clear association with an event such as an operation, stroke, and onset of diabetes mellitus or prescription of a drug. The severity is important because it allows the investigator to judge the seriousness of the condition and its impact on the patient's social life and sexual relationship. The amounts of tea, coffee, chocolate, fizzy drinks, citrus juices, alcohol

**TABLE 2: AN EXAMPLE OF A VOIDING DIARY**

TIME	WET	DRY	VOLUME VOIDED	COMMENTS
6H00	W		300ml	Leaked on way to bathroom
7H00		D	-	-
8H00		D	80ml	-
9H00	W		-	-
10H00	W		50ml	Soaked on way to bathroom
11H00		D	-	
12H00		D	-	
13H00	W		350ml	Wet with coughing

and other fluids consumed in a 24-hour period should be noted. Also important is the obstetric/gynaecological, medical and drug history (Iqbal & Castleden, 1997).

The voiding diary (see table 2) complements the history and often proves useful when devising therapy. These diaries give information on drinking and voiding behaviour, number of pads used, frequency of voiding and amount of involuntary urine loss (Resnick, 1996).

A careful physical examination should then be carried out, after which the need for further investigation may be assessed. Intensive investigation is not required in all cases, but treatment without knowing the underlying pathology can result in a despondent patient. In all conditions, certain basic investigations, such as sending a mid-stream specimen of urine for culture, should be performed prior to treatment (Cardozo *et al*, 1993).

#### Physical examination

The skin in the groin and around the external genitalia should be assessed for redness, soreness, excoriation and monilia infection. Palpation may reveal bladder, uterine or ovarian masses. Rectal examination assesses the size of the prostate, presence or absence of faecal impaction, the anal sensation and tone. Vaginal examination may reveal atrophic vaginitis, prolapse or fistulae (Iqbal and Castleden, 1997).

Pelvic floor strength, graded from 0 to 3, should be assessed by the squeeze

felt on vaginal examination with the patient trying to contract the paravaginal muscles (Worth *et al*, 1986). A perineometer can be used to get an objective recording of pelvic muscle strength (Cardazo *et al* 1993). It should be noted that the severity of GSI depends not only on the condition of the pelvic floor, but also on the posture, respiration, movement as well as the general physical and psychological condition (Wells *et al*, 1991; Tapp *et al*, 1989). Tests for hearing, eyesight and mental state also give an indication of compliance with instruction (Iqbal & Castleden, 1997).

#### MANAGEMENT OF URINARY INCONTINENCE

As the causes of geriatric incontinence are usually multiple, concurrent, and extend beyond the urinary tract, the therapeutic approach must as well. Treatment programs should also be individualised.

#### Stress incontinence

Conservative treatment is the method of first choice and includes one or more of the following options: pelvic floor exercises, vaginal cones, electrical stimulation with or without biofeedback and hormone replacement therapy (Iqbal & Castleden, 1997). Therapy further includes weight loss if the patient is obese, treatment of precipitating conditions such as cough, instruction in physical manoeuvres (Norton & Baker, 1995)

and rarely insertion of a pessary (Suarez *et al*, 1991; Zeitlin & Leberz, 1992).

### **Pelvic floor exercises and vaginal cones**

Pelvic floor exercises described first by Kegel in 1948, are designed to improve the strength of the pelvic floor musculature and thereby the urethral sphincter functions (Iqbal & Castleden, 1997). Pelvic floor exercises are low-risk interventions and effective in the reduction of involuntary loss of urine in patients with SUI. Plevnik (1985) mentioned that vaginal cones can be used to educate women on the contraction of their pelvic floor muscles. By gradually increasing the weight, the strength of the pelvic floor contractions will increase. Wilson & Herbison (1995) concluded that pelvic floor exercises, properly taught, are still the mainstay of physiotherapy in the treatment of SUI.

### **Electrical stimulation and biofeedback**

Interferential therapy entails electrical stimulation of the pelvic floor muscles through an electrode placed in the vagina or rectum. It can be used alone or in combination with traditional pelvic floor exercises (Wilson & Herbison, 1995). An incontinent patient can be taught, with the aid of biofeedback, to be selective in the use of the pelvic floor muscles. Bump *et al* (1991) have found that approximately 30% of women are unable to perform an isolated pelvic contraction following written or verbal instruction. It is hypothesised that in pelvic floor re-education, biofeedback will enhance the effect of the exercise programme and improve motor unit recruitment and functional activity (Knight & Laycock, 1994). Berghams *et al* (1996) concluded in his study that adding biofeedback to pelvic muscle floor exercises might be more effective than pelvic floor muscle exercises after 6 months.

### **Hormone replacement therapy**

Oestrogen have been used for some time for the treatment of patients with stress incontinence. A recent meta-analysis has shown that although oestrogen may produce a subjective improvement in urinary incontinence, objective evidence for improvement is not convincing (Fantl *et al* 1994).

### **Urge incontinence (detrusor instability)**

Bladder drill and adherence to a voiding schedule is the mainstay of treatment in patients with UI, providing that they understand and comply with the regimen (Jarvis & Millar, 1980). Pelvic floor muscle exercises may also be beneficial in this group of patients (Rosenthal & McMurtry, 1995). There are many drugs (eg atropine sulphate, diphenhydramine etc) which have been shown to be effective in some patients with detrusor instability, although none of these drugs have been shown to be convincingly better than the others (Baigrie *et al*, 1988; Robinson and Castleden, 1994). These medications may have other adverse anti-cholinergic effects, such as dry mouth, constipation, blurred vision and confusion, which may have other detrimental effects on the geriatric patient.

### **Overflow incontinence**

The cause determines the treatment of this problem. If obstruction is present, surgery (eg prostatectomy) is usually indicated (Rosenthal & McMurtry, 1995).

Patients should however not be rushed into operations since many studies have shown that patients can happily wait many years before there symptoms require operation (Wasson *et al*, 1995; Ball *et al*, 1981). Alpha-blockers and s-alpha reductase inhibitors may be successful for patients with overflow incontinence due to prosthetic hyperplasia (Iqbal & Castleden, 1997).

### **Other**

Surgical treatments have a limited role in the treatment of geriatric urinary incontinence. Patterns of problems exist with incontinence, including pelvic support defects and bowel and bladder dysfunction. Each of the major elements must be treated to achieve the best outcomes. Urodynamic testing should be used to confirm the cause of incontinence before selecting a surgical procedure. Minimally invasive procedures include periurethral collagen injections (Gallaway, 1997).

Resnick (1996) mentioned that in the case of medication causing the incontinence (see table I), it should be questioned why the patient was still on

the drug and decided whether the medication could be substituted or discontinued. Medications that are very anti-cholinergic such as diphenhydromine or amitriptyline hydrochloride, are frequent offenders and may be replaced by a drug that is better tolerated (Rosenthal & McMurtry, 1995).

No known research exists on the influence of liquid intake versus the results of treatment (decrease of involuntary urine loss). According to Brink (1990), influencing the liquid intake pattern is an important strategy in the decrease and elimination of incontinence, because of the relationship between liquid intake and urination. However, the biological plausibility and the causal link between liquid intake and the measure and frequency of involuntary urine loss need to be further researched and proven (Berghmans *et al*, 1996).

### **CONCLUSION**

Urinary incontinence is a prevalent problem in the elderly and its medical, social and economic costs are significant. Incontinence may be transient or longstanding; reversible causes must be ruled out. When the type of incontinence is known, appropriate treatment may bring improvement in symptoms or a return to continence.

The treatment of patients with urinary incontinence requires a planned approach after a history, physical examination and appropriate investigations.

With a persistent, creative and optimistic approach, most patients experience substantial improvement if not complete restoration of continence.

There are significant short and long-term benefits to the quality of life of older patients with incontinence when treated by conservative measures.

To achieve satisfactory results from intervention (in the long term), information and supervision by the physiotherapist throughout the process of therapy are essential, especially concerning the adequate use of the pelvic floor muscles and behaviour micturition. In order to achieve a permanent positive result from physiotherapy, patients have to incorporate the newly acquired abilities into daily life.

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