

Guidelines for the Treatment of Urinary Incontinence and Overactive Bladder

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Keywords:

urinary incontinence, overactive
bladder, treatment, Muscarinic
antagonists

Abstract

Urinary incontinence (UI) is the involuntary leakage of urine, while overactive bladder (OAB) is characterised by frequency, nocturia and urgency, with or without incontinence. This paper provides guidelines for the management of UI and OAB, focusing on primary health care.

Although UI and OAB negatively impact on the patient's quality of life more severely than diabetes mellitus or rheumatoid arthritis, surveys have shown that more than 60% of persons with UI never mention their problem to a doctor or nurse. Therefore, the primary care setting is ideal for screening, basic evaluation, and initial management of UI and OAB.

A focused history and examination will usually enable the practitioner to distinguish between the different types of incontinence, such as stress, urge (overactive bladder), mixed, overflow and continuous incontinence. It should include a vaginal examination and cough test in women, rectal examination in men, dipsticks urinalysis, and assessment of the post-void residual urine. A bladder diary filled in by the patient can be very useful.

There may be reversible conditions causing or contributing to the patient's incontinence, such as urinary tract infection. In certain cases referral to a specialist is required, e.g. patients with incontinence after previous surgery, or associated with pain or hematuria.

However, many patients with symptoms of OAB or UI can be effectively treated at the primary care level. Management options include lifestyle modification (e.g. smoking cessation and weight loss), pelvic floor exercises, and pharmacotherapy. Overactive bladder can be treated with muscarinic antagonists such as tolterodine and oxybutin.

S A Fam Pract 2002, 25(2): 4-10

Background

Urinary incontinence (UI) is the unwanted and involuntary leakage of urine, while overactive bladder (OAB) is associated with urinary frequency, nocturia and urgency, with or without urge incontinence (Table I). Both are significant health problems, particularly for elderly women.

Table I: Symptoms of Overactive Bladder

Includes one or more of:

- Frequency
- Nocturia
- Urgency
- Urge incontinence

While the exact incidence is not known in South Africa, studies elsewhere suggest the magnitude of the problem is much greater than is apparent. In the USA the prevalence of UI is about 31% in women between 42 and 50 years old, and 38% in community dwelling women and men who are older than 60.¹ The prevalence of OAB is 30% to 40% in persons over 75 years of age.² Thus, it is more common in the elderly than

diabetes, and similar in prevalence to asthma. However, UI and OAB are not inevitable consequences of aging, and many cases can be cured or managed using a combination of currently available treatments.³

In July 2001 a committee consisting of urologists, gynaecologists, primary care physicians and pharmacologists convened to recommend guidelines for the treatment of UI and OAB. The committee followed the principles of evidence-based medicine used in the process of making clinical decisions.⁴ The strongest weight was given to data from systematic reviews, meta-analyses and published findings of randomised controlled trials. Where such data were not available, the committee followed the approach taken by the Agency for Health Care Policy and Research, which combines a detailed, evidence-based approach with a process that accommodates expert opinion.⁵

Our guidelines focus on current treatments for UI and OAB that can be used in general practice. We want to emphasize that these recommendations are not rigid mandates, and that the final decision concerning the therapeutic regimen for an individual patient rests with the treating physician.

The Impact of Incontinence

Surveys have shown that more than 60% of persons with UI never mention their problem to a doctor or nurse.⁶ In both men and women OAB negatively impacts on quality of life more severely than diabetes mellitus or rheumatoid arthritis.⁷ In 1995 the direct cost of caring for incontinent persons over the age of 65 was estimated to be \$28 billion annually in the USA, which is greater than the combined Medicare costs for open-heart surgery and end-stage renal disease.⁸

Identification of Patients at Risk

The primary care setting is ideal for screening, basic evaluation, and initial management of UI and OAB. Prior to implementation of any intervention, it is important to understand the underlying causes of the various types of UI and OAB (Table II).

Documented risk factors that are associated with UI and OAB are listed below.

1. Age. Pelvic muscle relaxation in women accelerates rapidly after menopause.
2. Pregnancy and childbirth. UI is related to risk factors such as for-

Table II: Types of Urinary Incontinence

Type of Incontinence	Underlying Cause	Associated Symptoms
Stress	Sphincter dysfunction due to weakness of the pelvic floor muscles.	Urine leakage occurs with increased intra-abdominal pressure (e.g., coughing, laughing, sneezing, walking).
Urge (overactive bladder)	Involuntary and uninhibited detrusor contractions, due to detrusor instability.	Sudden urge to pass urine, inability to delay voiding, often associated with frequency and nocturia
Mixed	A combination of bladder and urethral dysfunction causing stress and urge incontinence.	Combination of above symptoms.
Overflow	An acontractile detrusor (e.g. diabetic neuropathy) or bladder outflow obstruction (e.g. prostatic enlargement).	Palpable or percussable bladder, large postvoid residual (PVR)
Continuous ("true") Incontinence	Vesico-vaginal fistula or sphincter damage (e.g. after prostatectomy)	Constant leakage of urine, no urge to void, because bladder never fills

ceps delivery, episiotomy, third degree tears and pudendal anesthesia.⁹

3. Depletion of estrogens. Oestrogen depletion is associated with diminished urethral mucosal vascularity and thickness, reducing its ability to maintain a tight seal.
4. Pelvic and prostate surgery. There is an increased risk of UI after hysterectomy and prostatectomy.¹⁰
5. Smoking. Nicotine may have a contractile effect on the detrusor. Chronic coughing may lead to damage of urethral and vaginal supports.¹¹
6. Obesity. Weight gain and morbid obesity may increase the susceptibility for UI.¹²
7. High-impact physical activities. Approximately one third of women experience urine loss during strenuous physical activity.¹³
8. Medication. Diuretics may exacerbate symptoms of OAB; anticholinergics (e.g. antidepressants) may cause urinary retention with overflow UI; sedatives, hypnotics and narcotic analgesics may cause urinary retention, sedation, and delirium, which can all lead to UI episodes.
9. Chronic diseases. Multiple sclerosis, spinal cord injury, diabetes mellitus, Parkinson's disease and stroke may cause bladder neuropathy, increasing the risk for UI or OAB.

■ Patient Evaluation ■

History

Very often the patient can be easily classified as having (1) reversible conditions leading to UI, (2) complicated or (3) uncomplicated UI.

(1) Reversible conditions

The mnemonic DIAPPERS is a useful aid in excluding reversible conditions.¹⁴ Delirium needs to be treated before too much attention is paid to the investigation of UI. Infection of the urinary tract should be

treated according to urine culture and sensitivity. Atrophic vaginitis is not necessarily a cause of incontinence, but may require treatment in its own right. Pharmaceuticals such as α -blockers, diuretics, tricyclic antidepressants or anticholinergics influence bladder function. Psychological problems such as anxiety may cause symptoms of OAB. Excessive fluid or caffeine intake may cause diuresis and contribute to UI. A urinary diary (bladder diary) is very useful to assess fluid intake and urine volume. Restricted mobility may lead to incontinence if the patient cannot get to the toilet in time. Stool difficulty (constipation) may be associated with retention and overflow incontinence.

(2) Complicated incontinence

Recurrent or persistent incontinence after previous treatment, pain associated with incontinence, retention or difficult voiding, macroscopic hematuria, recurrent urinary tract infection (UTI) or previous radical pelvic surgery or radiation are conditions that require referral. In patients with total incontinence after complicated childbirth a fistula is suspected. The patient with underlying neurological conditions such as Parkinson's disease or multiple sclerosis is also best referred.

(3) Uncomplicated incontinence

The patient with UI alone must be questioned for stress incontinence at the moment of cough, sneeze or physical activity, or urge incontinence, or a combination of the two.

Examination

A general clinical examination should always be done. Further examination is focused on the cause and severity of the incontinence. The patient is best evaluated with a comfortable full bladder. The abdomen is palpated for a bladder and, if distended, it must be checked after voiding.

Neurologic examination should assess the lower extremities for normal

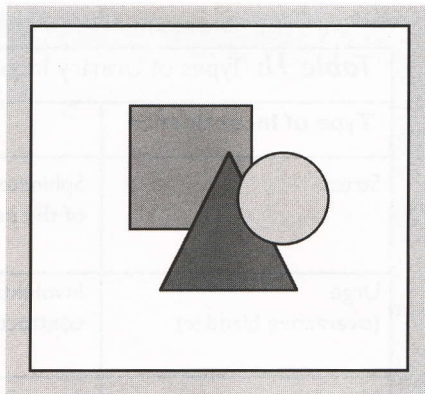
sensation, strength and deep tendon reflexes. Stimulation of the perianal skin (S2-4) normally elicits the anal wink (visible contraction of the anal sphincter).

Pelvic examination entails inspection of the vulva and vagina for signs of oestrogen deficiency, skin irritation or infection. Prolapse is best evaluated by vaginal examination using a Simm's speculum. The three compartments are individually assessed, namely anterior (cystocele), vaginal vault or uterus (enterocele, uterovaginal prolapse) and posterior (rectocele). A vesico-vaginal fistula may be diagnosed with a speculum or with bimanual vaginal examination.

The cough test can be done with the patient in the supine position, giving a few vigorous coughs. If it is negative, it should be repeated standing (Table III).

Table III: Cough Test

- Patient standing
- Full bladder
- Vigorous coughing



In men, a genital examination is performed to detect abnormalities of the foreskin, glans, urethral meatus and perineal skin. In men and women, a digital rectal examination (DRE) is performed to assess for stool impaction, rectal sphincter tone, and sensation. Assessment of the prostate in men is essential.

Urinalysis and Post-void Residual. The patient voids and the urine volume is measured. Urine dipstick is done and, if abnormal, urine is sent for MC&S (Table IV). Thereafter, the post-void residual (PVR) is determined (Table V). Examiners with adequate experience can pass an F18 catheter in men to exclude a urethral stricture. A PVR of 100 mL or less may be considered normal.

Table IV: Urinalysis

- Fresh, clean-catch, mid-stream
- Dipstick test for:
 - Blood
 - Leucocytes
 - Nitrites
 - Glucose
 - Protein

Table V: Post-void Residual Urine (PVR)

- Abdominal palpation (may be inaccurate)
- Accurate measurement by:
 - Ultrasound
 - Catheterization (caution in men)

Bladder Diary

This is an extremely valuable tool in the management of UI and OAB. The patient is asked to fill in a 3-day bladder diary and return for a consultation where treatment is discussed. The urinary diary can assess fluid intake, urine volume, the number and time interval between voids per day, incontinence episodes, number of pads used, and activities associated with incontinence.

Treatment of Urinary Incontinence

Lifestyle Modification

The GP can direct the behavioral

treatment options specific to the patient's diagnosis of stress, urge, or mixed UI and OAB (Table VI). If motivated, most people treated with behavioral techniques show improvement ranging from complete dryness to decreased incontinence episodes.¹

Counseling on Fluid Intake

Dehydration can potentiate constipation, concentrate the urine, and increase the irritative effects of dietary substances. The recommended daily intake is 1500 ml. Some patients may use excessive fluid intake to prevent acidic urine from causing urinary urgency and frequency, but this may contribute to UI. Some patients only complain of nocturnal enuresis and/or nocturia, without daytime incontinence or frequency. With aging, urine output increases during rest in the supine position. A bladder diary can help determine if

the patient is experiencing reverse diuresis.

Pelvic floor muscle rehabilitation

For pelvic floor physiotherapy and bladder retraining the GP should refer patients to a physiotherapist or other health professional with specialist training in these techniques. Pelvic floor muscle rehabilitation involves pelvic muscle exercises (PME), known commonly as "Kegel" exercises.¹⁵ PME are most effective in stress incontinence. An average of 76% improvement in UI after 4 to 6 weeks of intensive daily PME has been reported.¹⁶ Weighted vaginal cones provide proprioceptive biofeedback, providing the woman with the sensation to contract her pelvic floor muscles, and can be used alone or in conjunction with PME.¹ Biofeedback therapy assists the patient in identifying the pelvic floor muscles.

Table VI: Lifestyle Modification

Adequate Fluid Intake	Patients with a high fluid intake (> 2400 ml/day) should lower their intake, while those with a low fluid intake (< 1500 ml/day) may benefit from an increased intake, but it should be stopped after 6 p.m.
Smoking Cessation	Nicotine is irritating to the detrusor, and chronic coughing may cause UI.
Dietary Modification	Elimination of one or all of the items below may improve bladder control: <ul style="list-style-type: none"> • Caffeine: coffee (even decaffeinated), tea, cola beverages • Alcoholic drinks • Citrus juice and fruit • Highly spiced foods • Carbonated beverages • Sugar, honey • Milk/milk products • Corn syrup • Artificial sweetener
Weight reduction	Weight reduction is associated with improvements in urinary symptoms
Bowel Regularity	Increased fiber, exercise, and fluid can prevent constipation and straining at bowel movements leading to UI.

Adapted from Newman DK. *The Urinary Incontinence Sourcebook, 2nd ed, California, Lowell House, 1999.*

Electromyogram (EMG) probes (vaginal or rectal) are used to display pelvic floor muscle activity on a patient-viewing monitor. PME with biofeedback therapy have shown improvement in incontinence that ranges from 80% to 85%.^{1,17}

Bladder retraining and urge strategy

Bladder retraining involves a strict schedule of voluntary voiding "on the clock". These intervals are increased progressively to increase functional bladder capacity. Urge strategy focuses on the cortical ability to delay voiding by using strategies such as concentration on a task, slow deep breathing, or rapid intense pelvic muscle contractions.¹⁸

Pharmacotherapy

a) Overactive bladder (OAB) [detrusor instability (DI)] responds to drugs reducing bladder contractility: Anticholinergic agents, e.g. oxybutynin and tolterodine, act at postganglionic parasympathetic cholinergic receptor sites on the detrusor, reducing the strength of contractions. Tricyclic antidepressants, e.g. imipramine, have anticholinergic effects, block presynaptic uptake of amine neurotransmitters and directly inhibit detrusor muscle. Alpha-

adrenergic antagonists may have a role to play by dual actions on bladder overactivity (due to altered receptor function) and by reducing outlet resistance.

- b) Genuine stress incontinence (GSI) may be treated using alpha-adrenergic agonists, e.g. phenylpropranolamine, to increase outlet resistance by stimulating smooth muscle of the urethra and bladder neck.
- c) Overflow incontinence due to bladder outlet obstruction usually requires surgery or clean intermittent catheterisation (CIC), but may be treated with alpha-adrenergic antagonists, which reduce outlet resistance.
- d) In postmenopausal women, systemic oestrogen replacement reduces filling symptoms including urge incontinence. Combination with alpha-agonists may be beneficial in milder GSI.

The aim of drug therapy in OAB is to decrease DI and increase functional

capacity. A significant body of clinical evidence indicates that muscarinic receptor antagonists are effective in the treatment of OAB. However, treatment-limiting adverse effects such as dry mouth, constipation, and blurred vision have restricted the use of these agents, such as oxybutynin. Drugs such as tolterodine are significantly more potent in inhibiting urinary contraction than salivation. In contrast, oxybutynin has the opposite profile and for this reason tolterodine may have a better tolerability profile.^{19,20}

Tolterodine and oxybutynin, including the extended release formulations, are therapeutically equivalent at their recommended doses.^{21,22,23} The most common adverse event reported with both drugs is dryness of mouth. Tolterodine, with more selectivity for the bladder over the parotid, appears to be the better tolerated drug.²⁴ Table VII shows the currently available muscarinic antagonists which are used as first line treatment for OAB.

Table VII: Muscarinic antagonists used as treatment for overactive bladder

Drug	Dose
Tolterodine	1-2 mg twice daily
Oxybutynin	2.5 to 5mg three to four times daily

References

1. Fantl JA, Newman DK, Colling J et al. Urinary Incontinence in Adults: Acute and Chronic Management Clinical Practice Guideline, No 2, 1996 Update. Rockville, Md: US Department of Health and Human Services. Public Health Service, Agency for Health Care Policy and Research; March 1996: AHCPR Publication No. 96-0682.
2. Wein AJ, Rovner ES. The overactive bladder: an overview for primary care health providers. *Int J Fertil* 1999; 44:56-66.
3. Weiss BD. Diagnostic evaluation of urinary incontinence in geriatric patients. *Am Fam Phys* 1998; 2675-2683.
4. Guyatt GH. Evidence-based management of patients with osteoporosis. *J Clin Densitometry* 1998; 1: 395-402.
5. Agency for Health Care Policy and Research. Urinary Incontinence in Adults: Acute and Chronic Management Clinical Practice Guideline Number 2 (1996 Update). AHCPR Publication No. 96-0682, 1996.
6. Resnick NM. Geriatric Urinary Incontinence. *AUA Update Series* 1999; 18: 218-223.
7. Brown JS, Vittinghoff E, Wyman JF et al. Urinary incontinence: does it

- increase risk for falls and fracture?
Study of Osteoporotic Fractures
Research Group. *J Am Geriatr Soc*
2000; 48:721-725.
8. Wagner TH, Hu T. Economic costs of urinary incontinence. *Urology* 1998; 51:355-361.
 9. Meyer S, Schreyer A, DeGrandi P, Hohlfeld P. The effects of birth on urinary continence mechanisms and other pelvic floor characteristics. *Obstet Gynecol* 1998; 92:613-618.
 10. Brown JS, Saways G, Thom DH. Hysterectomy and urinary incontinence: a systematic review. *Lancet* 2000; 356:535-539.
 11. Bump RC, McClish DM. Cigarette smoking and pure genuine stress incontinence of urine. A comparison of risk factors and determinants between smokers and nonsmokers. *Am J Obstet Gynecol* 1994; 170:579-582.
 12. Dwyer PL, Lee ETC, Hay DM. Obesity and urinary incontinence in women. *Br J Obstet Gynecol* 1998; 95:91-96.
 13. Nygaard I, Thompson FL, Svengalis SL, Albright JP. Urinary incontinence in elite nulliparous athletes. *Obstet Gynecol* 1994; 84:183-187.
 14. Gorton E, Stanton S. Urinary incontinence in elderly women. *Eur Urol* 1998; 33:241-247.
 15. Sampsel CM, Wyman JF, Thomas KK, Newman DK et al. Continence for women: a test of AWHONN's evidence-based protocol in clinical practice. *JOGNN*. 2000; 29:18-26.
 16. Dougherty M, Bishop K, Mooney R, Gimotty P, Williams B. Graded pelvic muscle exercise. Effect on stress urinary incontinence. *J Reprod Med* 1993; 39:684-691.
 17. Wyman JF, Fantl JA, McClish DK, Bump RC. Comparative efficacy of behavioral interventions in the management of female urinary incontinence. *Am J Obstet Gynecol* 1998; 179:999-1007.
 18. Sand PK, Richardson DA, Staskin DR et al. Pelvic floor electrical stimulation in the treatment of genuine stress incontinence: a multicenter, placebo-controlled trial. *Am J Obstet Gynecol* 1995; 173:72-79.
 19. Stahl MMS, Eckstrom B, Sparf A et al. Urodynamic and other effects of tolterodine: a novel antimuscarinic drug for the treatment of detrusor overactivity. *Neurourol Urodyn* 1995; 14: 647-655.
 20. Nilvebrant L, Anderson K-E, Gillberg P-G, Stahl M, Sparf B. Tolterodine – a new bladder selective antimuscarinic agent. *Eur J Pharmacol* 1997; 327: 195-207.
 21. Drutz HP, Appell RA, Gleason D et al. Clinical efficacy and safety of tolterodine compared to oxybutynin and placebo in patients with overactive bladder. *Int Urogyn J* 1999; 10:283-289.
 22. Appell RA, Sand P, Dmochowski R et al. Prospective randomized controlled trial of extended-release oxybutynin chloride and tolterodine tartrate at 12 weeks in participants with overactive bladder. *Mayo Clin Proc* 2000; 76(40): 353-355.
 23. Van Kerrebroeck P, Kreder K, Jonas U et al. Tolterodine once daily: superior efficacy and tolerability in the treatment of overactive bladder. *Urology* 2001, 57: 414-421.
 24. Malone J, Shaffu B, Anand C, Powell C. Tolterodine: superior tolerability than and comparable efficacy to oxybutynin in individuals 50 years old or older with overactive bladder: a randomized controlled trial. *J Urol* 2001; 165(5): 452-456.

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