

Urinary Incontinence

A primary care guide to managing acute and chronic symptoms in older adults

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Loss of urinary control is closely linked with loss of independence. Most cases of urinary incontinence can be improved using behavioral and pharmacologic interventions. Several factors—including reluctance by physicians and patients to discuss and investigate symptoms—prevent patients from obtaining effective clinical management. In 1996, the Agency for Healthcare Research and Quality published a guideline for the management of acute and chronic urinary incontinence in adults. In addition to educating healthcare providers and patients about urinary incontinence, the guideline's mission includes improving the reporting, diagnosis, and treatment of the condition. The guideline offers a thorough discussion of urinary incontinence symptoms and subtypes, techniques for identifying and evaluating the condition, and treatment approaches.

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For older persons, control over urinary function is closely linked with preservation of independence. Loss of that function represents a significant turning point, particularly if the condition goes unreported or untreated. For most older persons, such scenarios are common. Although in 8 out of 10 cases incontinence symptoms can be improved through

behavioral and pharmacologic interventions, fewer than one-half of those who have symptoms discuss the issue with a clinician. Even when symptoms are reported by patients, many physicians and nurses fail to investigate these reports. Hence urinary incontinence (UI) is a significantly underdiagnosed and underreported condition.

Given the prevalence of UI, its toll

on physical and psychological health, the large variations in care and costs, and the urgent need to educate healthcare providers and the public about the implications of the condition,^{1,2} the Agency for Healthcare Research and Quality (AHRQ, formerly the Agency for Health Care Policy and Research) selected UI as a clinical guideline topic. This article examines the AHRQ guideline—"Urinary incontinence in adults: Acute and chronic management"³—from an evidence-based perspective. We include a table that summarizes the UI types and another that outlines the recommended agents for pharmacologic management of UI. We also present an algorithm that summarizes the steps involved in management of UI. A case scenario is used to demonstrate how the guideline can aid clinical management.

Background

In the United States, UI occurs in 10 to 35% of adults and in 50% of nursing home residents. Indeed, UI is recognized as one of the major causes of institutionalization of older persons. Of the estimated 13 million cases, 11 million occur in women. Americans spend \$1.1 billion annually on disposable products designed for management of incontinence symptoms.

Urinary incontinence is a significant psychosocial event that has serious implications for the affected individual, family members, and caregivers. It

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Table 1 Types of urinary incontinence

Type/Definition	Pathophysiology	Signs
Urge Involuntary loss of urine associated with a strong sensation to void	Detrusor instability or hyperactivity, involuntary sphincter relaxation, DHIC	Loss of urine with a strong desire to void Loss of urine on way to the bathroom
Stress Urethral sphincter failure, usually associated with increased abdominal pressure	Urethral hypermobility due to anatomic changes or defects Intrinsic urethral sphincter deficiency (failure of sphincter at rest)	Small amount of urine loss during coughing, sneezing, or physical activity Continuous leaking at rest or with minimal exertion
Mixed Combination of urge and stress UI	See above (common in women and older persons)	See above
Overflow Bladder overdistension	Acontractile or hypotonic detrusor, BPH, urethral strictures, genital prolapse, surgical overcorrection of urethral stricture	Frequent dribbling, urge and stress symptoms, urgency, frequency
Functional Chronic impairments of physical and/or cognitive functioning	Inability to get to the bathroom on time due to physical or cognitive impairment	Urge incontinence or functional limitations
Unconscious or reflex Neurologic dysfunction	Decreased bladder compliance with risk of vesicoureteral reflux Secondary to radiation, inflammatory cystitis, radical pelvic surgery, myelomeningocele	Postvoid or continual incontinence with bladder hypersensitivity

UI, Urinary incontinence.

DHIC, Detrusor hyperactivity with impaired contractility.

Source: Fanit 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; AHCPR publication no. 96-0682, March 1996.

marks a loss of independence that is invariably accompanied by onset of low self-esteem. It impairs social interactions and complicates and even prevents sexual activities. As the condition worsens, dependence increases while execution of activities of daily living decreases.

As is the case with other genitourinary issues, many older patients may be reluctant to volunteer information about symptoms. Others may choose to manage the problem themselves using an array of over-the-counter products. Many physicians and nurses, in turn, are less than assertive about broaching the topic. When clues are offered, too few clinicians pursue fur-

ther investigation, or they may lack the clinical experience to make the diagnosis. A growing body of evidence, however, shows that effective management of UI is not only an achievable goal, but it can reduce the morbidity and cost of UI, particularly in institutionalized populations.

Clinical scenario

You are a busy geriatrician in a group practice. A 75-year-old woman who has a past medical history notable for hypertension, osteoporosis, hypothyroidism and breast cancer reports increasing episodes of "losing urine." She denies dysuria or frequency but states she "can't make it to the bathroom on

time." You wonder how to effectively and accurately diagnose and treat this woman.

Guideline overview

The guideline on UI was released in 1992 and updated in March 1996. A multidisciplinary, private-sector panel of physicians, nurses, allied health professionals, and healthcare consumers participated in development of the update. Their duties included extensive reviews of literature focusing on UI in adults, hearing public testimony, and examining information gathered by consultants. The panel also "studied the effectiveness and appropriateness of diagnostic and treatment proce-

dures for UI, how they affect outcomes important to patients, their benefits and adverse consequences, and costs incurred from their use.”

The following criteria were used to characterize the strength of evidence supporting each recommendation:

A. The recommendation is supported by scientific evidence from properly designed and implemented controlled trials providing statistical results that consistently support the guideline statement.

B. The recommendation is supported by scientific evidence from properly designed and implemented clinical series that support the guideline statement.

C. The recommendation is supported by expert opinion.

Notable is the fact that the panel “found evidence in the literature that the treatment of urinary incontinence can improve or ‘cure’ most patients.” The primary purpose of the guideline is to improve reporting, diagnosis, and treatment of UI. The guideline does not address extraurethral UI (involuntary loss of urine through channels other than the urethra) or UI due to neuropathic conditions.

Analysis. Our analysis of the AHRQ guideline was guided by the “Users’ Guides to the Medical Literature,”^{4,5} which provide a framework for critiquing clinical practice guidelines from an evidence-based perspective. We address the following Users’ Guide questions:

- What are the recommendations? (Are practical clinically important recommendations made? How strong are the recommendations?)

- Are the recommendations valid?

- Will the recommendations help you in caring for your patients?

What are the recommendations?

Are practical, clinically important recommendations made?

According to the guideline authors, the update “reflects new research findings and experience with emerging tech-

nologies and innovative approaches for UI assessment and relief.” The guideline is framed around three major clinical areas:

- Prevention, identification, and evaluation (examines risk factors, more thorough history taking, routine testing of lower urinary tract function, specialized tests for further diagnosis)

- Selection of appropriate therapy (provides framework for selection of appropriate behavioral, pharmacologic, and surgical treatments and supportive devices)

- Education of health professionals and the public (recommends increased efforts to broaden the knowledge and understanding of UI and increase the level of comfort with the topic).

Work up. In older patients, diagnostic evaluation must be comprehensive, involving not only consideration of the lower urinary tract but also the patient’s general medical functional status. Several conditions or agents that cause or contribute to UI (eg, dysuria and urgency, stool impaction, diuretics, anticholinergics and psychotropics, and caffeine) are potentially reversible. Depending on the patient, management of such cases of transient incontinence can resolve the UI or reduce the severity of symptoms. These conditions should be identified and corrected before implementing further therapeutic interventions. Tests such as cystometry, uroflowmetry, and cystoscopy are recommended only for those patients failing trials of behavioral or pharmacologic options.

All patients exhibiting UI symptoms should undergo a basic evaluation that includes a history, physical examination, measurement of postvoid residual volume, and urinalysis. Risk factors associated with UI should be identified and attempts made to modify them.

The history should include a focused medical, neurologic, and urologic history and medication review. Physicians should use open-ended questions to initiate dialogue that can produce clues. Asking patients or caregivers to maintain a voiding or bladder record for sev-

eral days prior to the office visit can aid the assessment process. Records should document the frequency, timing, and amount of voiding. All patients, especially older persons, should undergo testing that gauges neurologic and mental status and functional capacity. Blood testing should be ordered only for patients with suspected renal insufficiency or who have polyuria in the absence of diuretic use.

Once a basic evaluation has been performed, and unless there is an indication for further evaluation, the patient should be treated for the presumed type of incontinence. Table 1 summarizes the common incontinence types; the algorithm outlines the approach for management of UI (figure). The three major categories of treatment are behavioral, pharmacologic, and surgical.

Behavioral intervention

Behavioral treatment involves activities such as bladder training and exercises and is recommended for management of stress, urge, and mixed incontinence. Toileting assistance, which consists of scheduled toileting, habit training, or prompted voiding, should be offered to patients who have UI but no cognitive impairments.⁶

Exercises that build pelvic muscle strength can help reduce UI symptoms. Pelvic exercises can complement bladder training for patients with urge incontinence and are strongly recommended for those with stress incontinence. Such exercises have also been shown to be beneficial for incontinent men who have undergone prostatectomy.⁷ Premenopausal women who

Anticholinergic agents should be used as first-line therapy for detrusor instability

Table 2 Pharmacologic intervention for urinary incontinence in geriatric patients

Indication/agent	Recommended dosage	Action
Urge incontinence		
Anticholinergics*		
Oxybutynin chloride (Ditropan, Ditropan XL)	2.5 to 5 mg bid to tid (extended-release form: 5 to 15 mg once daily)	Inhibition of involuntary detrusor contraction increase in bladder capacity
Tolterodine tartrate (Detrol)	2 mg bid	
Propantheline bromide (Pro-Banthine)	7.5 to 30 mg tid to 5x/d	
Dicyclomine HCl (Bentyl)	10 to 20 mg tid	
Tricyclics*		
Imipramine HCl (Tofranil)	30 to 40 mg/d	Same as above
Doxepin HCl (Sinequan)	75 mg/d	
Desipramine HCl (Norpramin)	25 to 100 mg/d	
Nortriptyline HCl (Pamelor)	30 to 50 mg/d in divided doses	
Stress incontinence		
Alpha-adrenergics[†]		
Phenylpropanolamine HCl (eg, Phenoxine)	25 to 100 mg bid (SR)	Increase of striated and smooth muscle tone; increase in urethral resistance
Pseudoephedrine (eg, Sudafed)	30 to 60 mg qid	
Ephedrine (eg, Pretz-D)	Dosage is product specific	
Stress or mixed incontinence		
Estrogen replacement therapy[‡]		
Conjugated estrogen (Premarin)	0.3 to 1.25 mg/d	Stimulation of squamous epithelium and vascular tone

* Side effects include dry mouth, visual changes, constipation, and dry skin.

[†] Side effects include anxiety, insomnia, sweating, and arrhythmias.

[‡] Avoid use in cases of breast or uterine cancer. Individual assessment is important.

Source: Prepared for Geriatrics by Susan Y. Lee, MD, Donna Phanumus, MD, and Suzanne D. Fields, MD.

have stress UI can combine use of vaginal weights and pelvic muscle exercises (eg, Kegel's) to help manage UI symptoms.

Data. In 1998, Burgio and colleagues published results from a randomized controlled trial that compared the effectiveness of behavioral treatment with drug therapy for management of urge incontinence in older women.⁸ They studied 197 ambulatory and cognitively intact women (age 55 to 92) diagnosed with urge or mixed incontinence. Patients enrolled in behavioral treatment experienced an 87% reduction in incontinence episodes (drug therapy resulted in a 68.5% reduction in episodes).

Although anecdotal evidence suggests that scheduled toileting can decrease incontinence episodes by 30 to 80%, thus far no randomized controlled trials have tested this management approach. One study, however,

showed that scheduled toileting allowed patients to postpone or avoid surgery.⁷

Randomized clinical trials have demonstrated that pelvic muscle exercises and biofeedback can contribute to a 50 to 87% improvement in UI symptoms.^{14,15} Randomized clinical trial data also have shown the effectiveness of bladder training and prompted voiding for management of stress and urge incontinence.

Pharmacologic treatment

The goal of drug therapy is to promote increased volumes of urine at low intravesical pressure, prevent involuntary bladder contractions, and maintain consistency of bladder outlet function (ie, closed at rest and remaining so during increases in intra-abdominal pressure). Table 2 provides an overview of the pharmacologic in-

terventions recommended for management of UI.

Drug therapy may be directed at decreasing outflow obstruction, inhibiting bladder contractility, decreasing sensory input, or increasing bladder capacity. Medications should be used only in conjunction with a voiding schedule or behavioral intervention and only after other factors contributing to incontinence have been addressed. Selection must be individualized and based on a side effect profile as well as the impact of the drug on the patient's other medical conditions. Regardless of the drug chosen, the initial dose should be relatively low and increased gradually.

Urge incontinence. Several classes of agents have been used for the management of urge incontinence, including anticholinergics, tricyclic antidepressants, calcium channel blockers, and

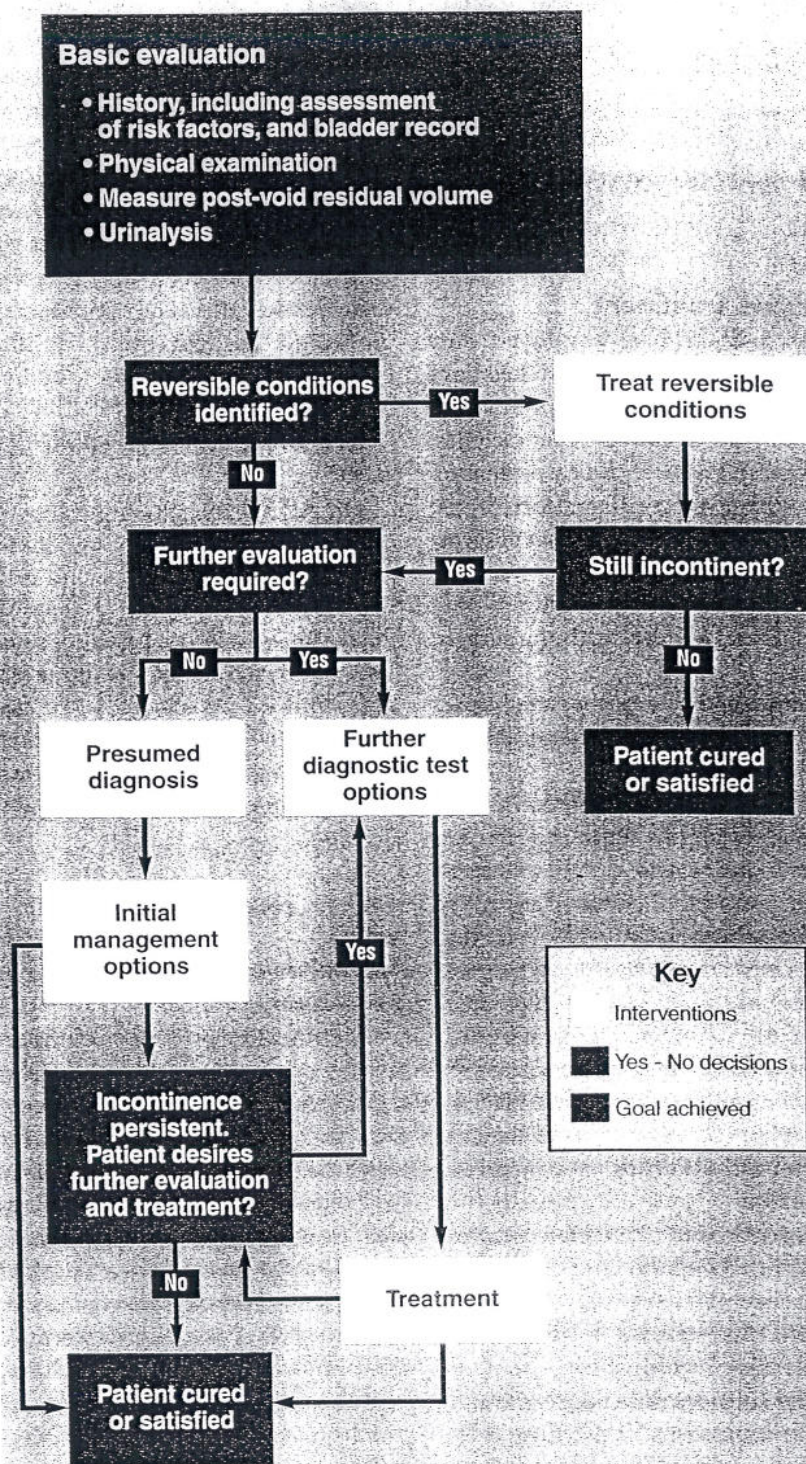
nonsteroidal anti-inflammatory drugs. According to the guideline, anticholinergic agents should be used as first-line therapy for detrusor instability. Oxybutynin chloride (Ditropan) and propantheline bromide (Pro-Banthine) are the first and second agents of choice, respectively. Patients must be monitored for urinary retention while on these medications.⁹ Propantheline is appropriate for use in patients with limited cognitive impairment and who can tolerate full dosages.

Tricyclic agents—including dicyclomine HCl (Bentyl), an anticholinergic agent with smooth muscle relaxant properties—are alternate treatments.^{10,11} Despite prevalent use at the time of publication, the guideline authors recommended against administration of flavoxate for detrusor instability.¹² They also recommend against the use of hyoscyamine, calcium channel blockers, and NSAIDs for management of urge incontinence.

Stress incontinence. Pharmacologic treatment of stress incontinence must be considered selectively because of the respective disparity in the amount of data regarding potentially useful agents. For instance, there are limited data supporting treatment with tricyclics such as imipramine. There is substantial data, however, supporting the use by women of alpha-adrenergic agonists and the combination regimen of alpha-adrenergic agonists and estrogen. Some studies have indicated that estrogen use can reduce incontinence symptoms, but no randomized clinical trials have been done to support this.

For nonhypertensive women with stress incontinence, phenylpropanolamine HCl (eg, Phenoxine) is the drug of choice for unlabeled use.⁸ Estrogen may be used for postmenopausal women with stress incontinence or mixed incontinence. When single therapy fails, combination therapy of oral or vaginal estrogens and phenylpropanolamine is recommended for treatment of stress incontinence in postmenopausal women.

Figure Management of urinary incontinence in primary care



Source: 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. AHCPR publication no. 96-0682. March 1996.

Pelvic muscle exercises and biofeedback may markedly improve UI symptoms

Surgical treatment

Surgery should be employed only when nonsurgical approaches have failed and after completion of a precise, focused assessment that includes:

- comprehensive clinical evaluation
- objective confirmation of the pathophysiologic diagnosis and severity of urinary loss
- a correlation of the anatomic and physiologic findings with the surgery plan
- and an estimation of the impact of the proposed surgery on the patient's quality of life.

The high degree of variation among studies examining surgical approaches make a comparison of different techniques impossible, according to the guideline authors. They also note that "the inherent variability in surgical technique and the way in which operations are performed make it impossible to direct surgical practice in a guideline of this scope." Nevertheless, the authors offer guidance for decision making by addressing surgical procedures that:

- increase outlet resistance and relieve stress UI and intrinsic sphincter deficiency
- decrease detrusor instability and correct urge incontinence
- and remove outlet obstruction.

Other treatments. Indwelling catheters are recommended for patients with incontinence caused by obstruction that cannot be treated, terminally ill patients, those with pressure ulcers (as a temporary measure), and severely impaired individuals who do not have other treatment options.

Are practical clinically important recommendations made?

Many useful clinical recommendations are offered for the treatment of patients with UI. The clinician is advised to choose the least invasive form of treatment before pursuing more invasive treatment options.

Behavioral therapy is recommended as first-line treatment for urge and stress incontinence. Many older patients, for instance, are unable to tolerate the side effects of anticholinergic agents used to treat UI; thus behavioral therapy offers a benign treatment option.¹³⁻¹⁵

How strong are the recommendations?

The AHRQ recommendations on UI in adults are evidence-based and graded according to the ratings outlined by the American College of Physicians for evidence based-reviews.³ The 1996 revised version of the guidelines outlined the efficacy of certain treatments available for management of urge and stress incontinence. Most of the recommendations received B or C ratings.

Are the recommendations valid?

Were all important options and outcomes clearly specified?

The guideline provides a comprehensive approach to the basic evaluation of a patient with UI. Risks, benefits, and costs of treatment were reviewed. The reversible causes of UI and the full evaluation of a patient with UI were clearly outlined. Behavioral, pharmacologic, and surgical treatment options were also discussed. Issues regarding the use of intermittent, indwelling, and suprapubic catheters were addressed.

Was an explicit process used to identify, select, and combine evidence?

An extensive literature search was conducted using National Library of Medicine databases. Abstracts of some 1,500 articles that met the search criteria were independently evaluated by panel members; approximately 1,200

articles underwent further evaluation. Although panel subcommittees determined exclusion and inclusion criteria, this information was not explicitly stated in the guidelines. The weight of each selected article was determined by panel members.

Is the guideline likely to account for important recent developments?

The guidelines did not include findings published after March 1996. Newer pharmacologic approaches for management of UI include the use of tolterodine tartrate (Detrol) as an alternative to oxybutynin. Many studies comparing oxybutynin and tolterodine show equal efficacy.

The use of periurethral injections for patients with intrinsic sphincter deficiency was briefly mentioned in the guidelines. At publication time, there was limited data on the use of collagen injections. A recent meta-analysis of office-based approaches to management of female UI, however, showed an improvement in 58 to 100% of the cases after 1 year for patients receiving collagen injections.¹⁵ So this approach is a valuable alternative to surgery. Thus far, use of collagen agents to manage UI has produced markedly better results in women than in men. Nevertheless, newer studies are examining the efficacy of other injectable materials (eg, Teflon). It should also be noted that long-term efficacy of using collagen injection has yet to be determined.

The use of urethral occlusion devices is another UI management approach that is gaining in acceptance. Some data show that newer urethral insert devices (eg, Reliance) can achieve an efficacy rate of 80%.¹⁶ Other devices include a rubber cup (FemAssist) and a minipad (Impress), which achieved efficacy rates of 74% and 90% respectively.^{17,18} As is the case with periurethral collagen injections, long-term efficacy for these devices is unknown.

Will the recommendations help you in caring for patients?

Are the recommendations applicable?

In the United States, UI affects 13 million persons, a significant portion of whom are in the geriatric population. For noninstitutionalized persons older than age 60, the prevalence of UI ranges from 15 to 35% and for home-bound older persons up to 53%.¹⁹ Urinary incontinence affects 50% of all nursing home residents.²⁰ Therefore this guideline is highly relevant to physicians who care for older patients.

Resolution of the scenario

You review the 1996 AHRQ guideline, "Urinary incontinence in adults: Acute and chronic management." After a detailed review of your patient's symptoms and bladder diary, you make a diagnosis of urge incontinence. A physical and pelvic exam and review of her medications do not reveal a specific reversible cause for her symptoms. You discuss and educate her about behavioral interventions, which she is willing to employ in part because she is reluctant to use drug therapy. She starts a bladder training program and also begins pelvic muscle exercises. She comes back to see you in 4 months and reports significant improvement in urinary control.

Conclusion

Given the generally low comfort level patients have with genitourinary topics, diagnosis of UI in older persons requires a proactive, diplomatic approach. Once clues surface, physicians should proceed with a basic evaluation that includes a history, physical examination, measurement of postvoid

residual volume, and urinalysis. Physicians seeking evidence-based guidance for patient management can consult the AHRQ guideline on management of urinary incontinence. It offers information that can be used to educate patients about the condition and key guidance regarding the most appropriate forms of behavioral, pharmacologic, and surgical therapy. **E**

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Drug therapy should be coordinated with a voiding schedule or behavioral intervention

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