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UPDATE IN OFFICE MANAGEMENT

Office Management of Geriatric Urinary Incontinence

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ABSTRACT

Urinary incontinence is a common and potentially disabling condition affecting 15% to 30% of those aged 65 years and older. It adversely affects physical health, psychological well-being, and health care costs. Even when it is not curable, proper management of urinary incontinence can lead to improved quality of life for patients and caregivers. Despite its prevalence, many geriatric patients suffering from urinary incontinence are undiagnosed and untreated. Patients often do not report the problem, and health care professionals often do not ask about it. Health care professionals should therefore learn to identify, evaluate, and manage urinary incontinence based upon the available evidence and practice guidelines. Although the evidence base for specific recommendations for the office evaluation and management of geriatric urinary incontinence is limited, a basic evaluation to identify treatable causes of incontinence, referral of appropriate patients for further evaluation, and several noninvasive management strategies can greatly improve these symptoms in many older patients. © 2007 Elsevier Inc. All rights reserved.

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Urinary incontinence is a multi-factorial syndrome whose prevalence increases with age. It is 2 to 3 times more common in women until age 80, after which the sexes are equally affected.¹ Urinary incontinence can cause many adverse effects (Table 1). Total US urinary incontinence-related costs in 2000 were nearly \$20 billion.² The distribution of these costs is as follows: indirect costs (nursing home admissions, loss of productivity) 56%, treatment costs 32%, routine care costs 9%, and diagnostic studies costs 3%.^{3,4} Despite these staggering statistics, many older people with urinary incontinence do not get optimal evaluation and treatment.

PATHOGENESIS OF URINARY INCONTINENCE

Normal urination requires the coordination of several physiological processes. Somatic and autonomic nerves carry

information on bladder volume to the spinal cord and motor output is adjusted accordingly. The cerebral cortex exerts a predominantly inhibitory influence while the brain stem facilitates urination by coordinating urethral sphincter relaxation and detrusor contraction.^{5,6} As the bladder fills, sympathetic tone contributes to closure of the bladder neck and relaxation of the dome of the bladder, and inhibits parasympathetic tone. At the same time, somatic innervation maintains tone in the pelvic floor musculature, including the striated muscle around the urethra. When urination occurs, sympathetic and somatic tones diminish, resulting in decreased urethral resistance. Cholinergically mediated parasympathetic tone increases and causes the bladder to contract. Urine flow occurs when bladder pressure exceeds urethral resistance.^{5,6} Normal bladder capacity is 300 to 500 mL, and the first urge to void generally occurs between bladder volumes of 150 and 300 mL.⁶

Continence depends upon intact micturition physiology and functional toileting ability. Age-related changes in the lower urinary tract occur in both continent and incontinent older persons.⁷ Compensatory mechanisms outside the lower urinary tract, such as mobility and cognition, play an

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Table 1 Adverse Effects of Urinary Incontinence

Physical health
● Skin irritation/breakdown
● Recurrent urinary tract infections
● Falls/fractures
● Sleep disruption
Psychological health
● Isolation/social withdrawal
● Depression
● Anxiety
● Dependency
Social consequences
● Increased caregiver burden
Predisposition to institutionalization Economic costs
● Treatment costs
○ Pads, diapers
○ Drugs
○ Surgery
○ Devices
● Complications of treatment
● Lost productivity

Adapted from Kane RL, Ouslander JG, Abrass IB, eds. *Essentials of Clinical Geriatrics*, 5th ed. New York, NY: McGraw Hill; 2004.

important role in determining who actually develops urinary incontinence. Factors affecting lower urinary tract structure or function, volume status and urine excretion, or the ability to toilet independently can predispose an older person to urinary incontinence.^{5,6}

CLINICAL PRESENTATION

There are 2 basic categories of urinary incontinence: acute or “transient” and chronic. Chronic urinary incontinence is further classified as stress, urge, mixed, overflow, and functional types. This classification does not include all of the possible etiologies but is helpful in evaluating and treating this condition in office practice.

Acute Incontinence

Acute urinary incontinence refers to incontinence of sudden onset precipitated by potentially reversible, treatable conditions. [Table 2](#) lists reversible conditions that can cause or contribute to geriatric urinary incontinence. Note that these factors can both precipitate acute incontinence, and contribute to chronic incontinence. While treating these conditions may not resolve the urinary incontinence, they may make other treatments more effective.^{5,6}

Chronic Urinary Incontinence

[Table 3](#) reviews the basic types, causes, and treatments of chronic urinary incontinence.⁶

Urge Incontinence. Urge incontinence is the most common and bothersome type of urinary incontinence in older ambulatory care patients. It is characterized by abrupt urgency

with leakage of urine that can be large or small. Urge incontinence can be associated with frequency and nocturia (a syndrome known as overactive bladder). Among older women, urge incontinence may be accompanied by symptoms of stress incontinence. In older men, it commonly presents with the irritative symptoms of prostatic enlargement, including frequency and nocturia. Urge urinary incontinence is most often associated with detrusor overactivity, which may be age-related, idiopathic, secondary to central inhibitory pathway lesions, related to previous pelvic irradiation, or due to local bladder irritation of bladder sensory or motor innervation. Detrusor overactivity may coexist with impaired detrusor contractility, causing urge incontinence with an elevated postvoid residual in the absence of bladder outlet obstruction.⁸ The incomplete bladder emptying in these patients may result in urinary frequency and predispose them to urinary retention when they are treated with anticholinergic drugs.

Stress Incontinence. Stress incontinence is most often associated with weakened pelvic floor supporting tissues and consequent hypermobility of the bladder outlet and urethra. Leakage of urine occurs with increases in intra-abdominal pressure such as with cough, position changes, exercise, laughing, or sneezing. Stress incontinence is the second most common type of urinary incontinence in older women, where it is usually associated with lack of estrogen or previous vaginal deliveries or surgery. It is uncommon in men unless they have had urethral surgery or irradiation. Obesity can exacerbate urinary incontinence. Stress urinary incontinence is less commonly due to intrinsic sphincter deficiency. In women, intrinsic sphincter deficiency can occur with trauma from anti-incontinence surgery or with severe urethral atrophy and causes urine leakage with minimal increases in intra-abdominal pressure or continual leakage during physical activity.⁶

Overflow Incontinence. Overflow incontinence results from detrusor muscle weakness, bladder outlet obstruction, or both. Patients may experience symptoms of dribbling, weak urinary stream, intermittency, hesitancy, frequency, and nocturia. A diagnosis of overflow incontinence may be challenging because of the overlap in symptoms with other types of urinary incontinence.⁵ Anticholinergics, narcotics, and alpha-adrenergic agonists can contribute to overflow urinary incontinence ([Table 2](#)).

Functional Incontinence. Functional urinary incontinence is associated with the inability or lack of motivation to reach a toilet on time. Contributing factors include inaccessible toilets, mobility disorders, cognitive impairment, and psychological disorders. Patients with functional incontinence due to cognitive or mobility impairment require systematic toileting assistance as a component of their management.⁶

Table 2 Reversible Conditions That Can Cause or Contribute to Geriatric Urinary Incontinence

Condition	Management
Lower urinary tract conditions <ul style="list-style-type: none"> ● Urinary tract infection (symptomatic) ● Atrophic vaginitis ● Post-prostatectomy 	Antimicrobial therapy Topical estrogen Behavioral or pharmacologic intervention (avoid surgical intervention until it is clear condition will not resolve)
<ul style="list-style-type: none"> ● Stool impaction 	Disimpaction; appropriate use of stool softeners, bulk-forming agents, and laxatives if necessary; implement high fiber intake, adequate mobility, and fluid intake
<ul style="list-style-type: none"> ● Drug side effect (potential effect on continence mechanisms) ● Diuretics (polyuria, frequency, urgency) ● ACE Inhibitors (cough precipitating stress incontinence) ● Anticholinergics (urinary retention, overflow incontinence, stool impaction) ● Psychotropics (anticholinergic actions, sedation, immobility, delirium) ● Narcotic analgesics (urinary retention, fecal impaction, sedation, delirium) ● α-Adrenergic agonists (contraction of smooth muscle of urethra and prostatic capsule) ● α-Adrenergic blockers (urethral relaxation) ● Alcohol (polyuria, frequency, urgency, sedation, delirium, immobility) ● Caffeine (polyuria, bladder irritation) 	Discontinue or change therapy if clinically appropriate
Increased urine production <ul style="list-style-type: none"> ● Metabolic (hyperglycemia, hypercalcemia) 	Improved diabetic control; treat hypercalcemia depending upon underlying cause
<ul style="list-style-type: none"> ● Excess fluid intake ● Volume overload (venous insufficiency with edema, congestive heart failure) 	Reduction in intake of diuretic fluids (caffeine) Support stockings, leg elevation, sodium restriction, diuretic therapy, and optimized medical therapy for congestive heart failure
Impaired ability or willingness to reach a toilet <ul style="list-style-type: none"> ● Delirium ● Chronic illness, injury, or restraint that interferes with mobility ● Psychological (depression) 	Diagnose and treat underlying cause Regular toileting, use of toilet substitutes, environmental alterations, removal of restraints Appropriate pharmacologic or non-pharmacologic treatment

Adapted from Kane RL, Ouslander JG, Abrass IB, eds. *Essentials of Clinical Geriatrics*, 5th ed. New York, NY: McGraw Hill; 2004.

OFFICE EVALUATION OF INCONTINENCE IN OLDER PATIENTS

Many older patients who are bothered by urinary incontinence do not spontaneously complain about it. Thus, screening questions should be used to identify this condition. Simple questions included in a review of systems can be helpful, such as: "Do you have trouble with your bladder?" "Do you lose urine when you do not want to?" "Do you wear pads or adult diapers for protection?"^{1,6}

Once urinary incontinence has been identified, the main goals of office management are to diagnose and treat reversible causes, determine the predominant type of urinary incontinence to guide treatment, identify who needs further evaluation, prevent complications, and improve quality of life for patients and caregivers.

The basic urinary incontinence evaluation should include a focused history, targeted physical examination, urinalysis, and postvoid residual determination in most

patients¹ (Table 4). In performing the history and physical examination, special attention should be given to mobility, mental status, medications, volume status, and accessibility of toilets that may be causing or worsening the incontinence. The history also should focus on the characteristics of the incontinence, the most bothersome symptoms, and the treatment goals and preferences of the patient and caregivers. Bladder records, voiding diaries, and standard symptom scales like the American Urological Association Symptom Inventory for men (Figure 1) can be helpful in characterizing symptoms and following treatment response. Physical examination should include abdominal, rectal, neurological, and genital/pelvic examinations. Selected patients should be considered for further urologic, gynecologic, or urodynamic evaluation (Table 5, Figure 2).

Several simple diagnostic tests can be performed in the office (Table 4). The International Continence Soci-

Table 3 Basic Types, Causes, and Treatments of Persistent Urinary Incontinence

Types	Presentation	Common Causes	Primary Treatment
Stress	Involuntary loss of urine (usually small amounts) with increases in intra-abdominal pressure (eg, cough laugh, exercise)	Weakness of pelvic floor musculature and urethral hypermobility. Bladder outlet or urethral sphincter weakness	Regular voiding to avoid a full bladder Pelvic muscle exercises α -adrenergic agonist (controversial) Estrogen (topical) (controversial) Peri-urethral injection Surgical bladder neck suspension or sling
Urge	Leakage of urine (variable but often larger volumes) because of inability to delay voiding after sensation of bladder fullness is perceived	Detrusor overactivity, isolated or associated with one or more of the following: <ul style="list-style-type: none"> ● Local genitourinary condition such as tumors, stones, diverticuli, or outflow obstruction ● Central nervous system disorders such as stroke, dementia, parkinsonism, spinal cord injury 	Antimuscarinic drugs Topical estrogen (for severe vaginal atrophy or atrophic vaginitis) Bladder training (including pelvic muscle exercises)
Mixed	Combination of urge and stress symptoms	Combination of above causes	One or a combination of above, targeting most bothersome symptom(s) first
Overflow	Leakage of urine (usually small amounts) resulting from mechanical forces on an over-distended bladder, or from other effects of urinary retention on bladder and sphincter function	Anatomic obstruction by prostate, stricture, large cystocele Acontractile bladder associated with diabetes mellitus or spinal cord injury Neurogenic (detrusor-sphincter dyssynergy), associated with multiple sclerosis and other suprasacral spinal cord lesions	Surgical removal of obstruction Bladder retraining Intermittent catheterization Indwelling catheterization
Functional	Urinary accidents associated with inability to toilet because of impairment of cognitive or physical functioning, psychological unwillingness, or environmental barriers.	Severe dementia and other neurological disorders. Psychological factors such as depression and hostility.	Behavioral interventions with toileting assistance Environmental manipulations Incontinence undergarments and pads

Adapted from Kane RL, Ouslander JG, Abrass IB, eds. *Essentials of Clinical Geriatrics*, 5th ed. New York, NY: McGraw Hill; 2004.

ety recommends a postvoid residual (PVR) urine measurement by a noninvasive method before institution of pharmacological or surgical treatment of incontinence.⁹ Patients with storage-specific symptoms (ie, frequency, urgency, incontinence) without complaints of decreased bladder emptying, with normal bladder sensation, and without anatomical, neurological, organ-specific, or comorbid risk factors for retention may be assessed for bladder emptying by history and physical examination alone.⁹ In general, a PVR >50 mL is considered adequate bladder emptying, while a PVR >200 mL is considered inadequate emptying and warrants referral to a specialist.¹ Although these guidelines can be useful in directing patient management, each patient and situation must be considered individually.

MANAGEMENT

General Principles

There are several therapeutic options available for managing urinary incontinence in older patients. **Table 3** outlines the primary treatments for the basic types of chronic incontinence. Treatment decisions should be individualized and will depend on the findings of the basic evaluation and preferences of the patient and the health care provider.

Supportive measures can be helpful in managing urinary incontinence and should be used with other, more specific treatment measures. Education about bladder health, environmental manipulation (such as safe lighted path to the bathroom), the appropriate use of toilet sub-

Table 4 Key Aspects of the Office Evaluation of an Older Patient with Urinary Incontinence

Procedure	Description
Focused history	<ul style="list-style-type: none"> ● Chronic conditions and medications that can contribute to urinary incontinence ● Onset, previous treatment and response ● Characteristics of symptoms <ul style="list-style-type: none"> ○ Overactive bladder ○ Stress incontinence ○ Voiding difficulty (hesitancy, straining, dribbling, etc.) ○ Pain, dysuria, hematuria ○ Other ● Frequency/severity of urinary incontinence* ● Fluid intake ● Bowel habits ● Most bothersome symptom(s), and degree of bother† ● Treatment goals and preferences
Targeted physical examination	<ul style="list-style-type: none"> ● General <ul style="list-style-type: none"> ○ Volume status/signs of heart failure (for patients with prominent nocturia or nocturnal urinary incontinence) ○ Screening neurological examination (for patients with symptoms suggestive of neurological disease in addition to urinary incontinence) ○ Abdominal – suprapubic palpation ● Rectal <ul style="list-style-type: none"> ○ Resting and active sphincter tone ○ Impaction, masses ○ Prostate size, contour, tenderness ● External genitalia and skin condition ● Pelvic <ul style="list-style-type: none"> ○ Severe atrophy, vaginitis ○ Severe prolapse ○ Mass/tenderness
Simple office tests‡	
Cough test for stress incontinence	● Forceful cough with comfortably full bladder
Measurement of voided volume	● Prep for clean catch urine and measure volume
Urinalysis	● Dipstick for glucose, blood, leukocyte esterase, nitrite
Urine Culture	● If urine dipstick is positive for leukocyte esterase or nitrite and patient's symptoms suggest urinary tract infection (ie, recent onset or worsening of urinary incontinence)
Measurement of post-void residual volume	<ul style="list-style-type: none"> ● Bladder ultrasound (if available) ● In and out catheterization for patients at risk for retention (see text)

Adapted from Kane RL, Ouslander JG, Abrass IB, eds. *Essentials of Clinical Geriatrics*, 5th ed. New York, NY: McGraw Hill; 2004.

*A bladder record or voiding diary can be helpful (see example at www.niddk.nih.gov).

†Standard scales are available. See Figure 2 for American Urological Association (AUA) Symptom Inventory (for men).

‡A noninvasive measurement of peak urinary flow rate is very helpful in men, but requires a flowmeter, which is generally not available in primary care office practices.

stitutes (urinals, bedside commodes), modifications of diuretic and fluid intake patterns, and good skin care are all important examples of such supportive measures.⁶

Behavioral Interventions

Behavioral interventions are well studied in the geriatric population and recommended by most guidelines as an initial approach to therapy. They are generally noninvasive, effective for the most common types of geriatric incontinence, and conducive to an outpatient primary care set-

ting.¹⁰⁻¹² Key aspects of behavioral therapy are outlined in Table 6.

Behavioral interventions can be categorized as “patient-dependent” and “caregiver-dependent” therapies. Patient-dependent interventions necessitate adequate function, learning capability, and motivation of the patient. Their goal is to restore a satisfactory pattern of voiding and continence.⁶ Pelvic floor muscle (Kegel) exercises are an essential component of patient-dependent behavioral interventions and involve repetitive con-

For each question, circle the answer that best describes your situation.

	Not at all	Less than one in five times	Less than half of the time	About half of the time	More than half of the time	Almost always
1. In the past month, how often have you had a sensation of not emptying your bladder completely after you finished voiding?	0	1	2	3	4	5
2. In the past month, how often have you had to urinate again less than 2 hours after you finished urinating before?	0	1	2	3	4	5
3. In the past month, how often have you found you stopped and started again several times when you urinated?	0	1	2	3	4	5
4. In the past month, how often have you found it difficult to postpone urination?	0	1	2	3	4	5
5. In the past month, how often have you had a weak urinary stream?	0	1	2	3	4	5
6. In the past month, how often have you had to push or strain to begin urination?	0	1	2	3	4	5
7. In the past month, how many times did you typically get up to urinate from the time you went to bed until you arose in the morning?	0 (none)	1 (one time)	2 (two times)	3 (three times)	4 (four times)	5 (five times)

Total: _____

SCORING KEY: 0 to 7 = mild, 8 to 19 = moderate, 20 or more = severe

Source: Barry MJ et al: *The American Urological Association symptom index for benign prostatic hyperplasia. J Urol 1992 Nov; 148:1549-57.*

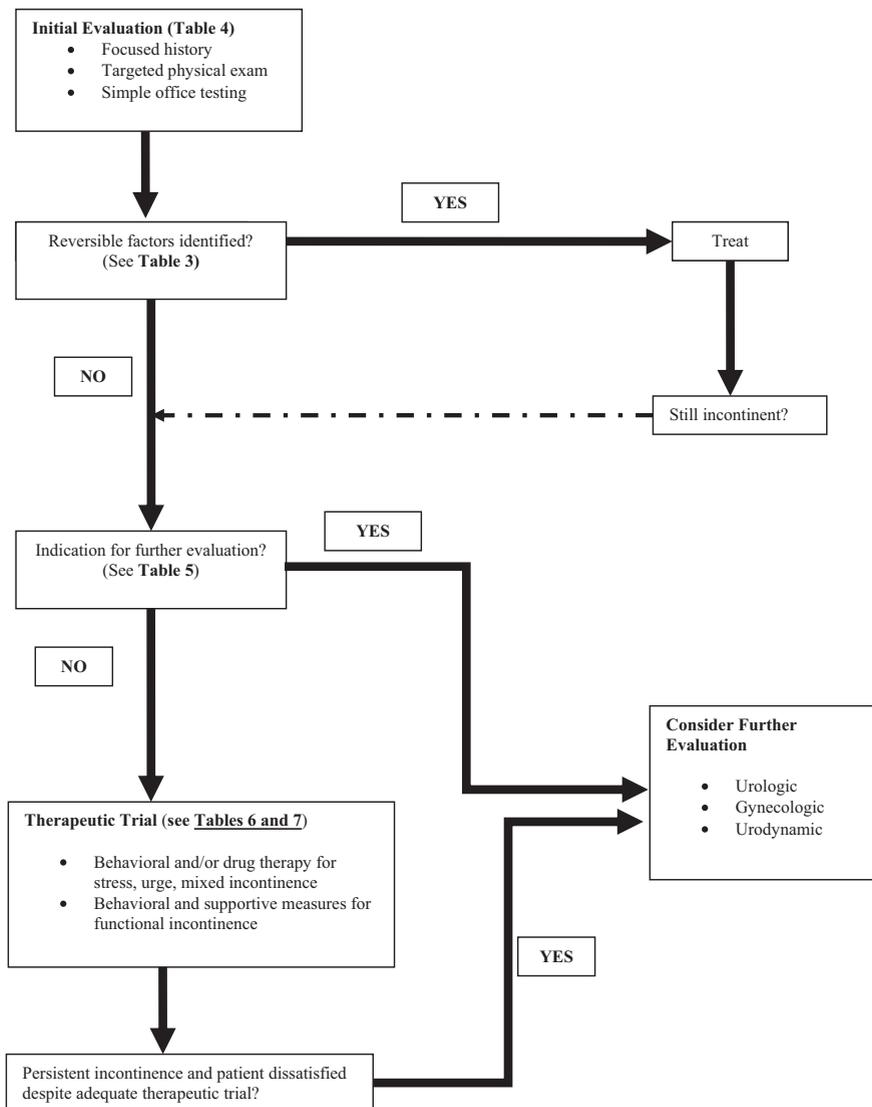
Figure 1 The American Urological Association, Seven Symptom Inventory for Benign Prostatic Hyperplasia

tractions and relaxations of the pelvic floor muscles. These exercises can be taught by having women squeeze the examiner's finger during vaginal examination or by having men or women squeeze the examiner's finger by contracting the anal sphincter during rectal examination.

Many older patients have difficulty identifying and isolating pelvic floor muscles and may benefit from referral to a physical therapist or a nurse specialist. Although biofeedback and electrical stimulation have not been shown to increase the efficacy of behavioral therapy,

Table 5 Examples of Criteria to Refer an Older Patient with Incontinence for Further Urologic, Gynecologic, or Urodynamic Evaluation

- Surgery/irradiation involving the pelvic area or lower urinary tract within past 6 months
- Two or more symptomatic urinary tract infections in a 12-month period
- Marked pelvic prolapse on physical examination
- Post-void residual volume >200 mL measured by straight catheterization or bladder ultrasound
- Difficulty passing a 14-Fr straight urinary catheter
- Marked prostatic enlargement, prominent asymmetry, or induration of the prostatic lobes
- Greater than 5 red cells per high-power field on repeated microscopic examinations in the absence of infection
- Persistent bothersome symptoms after adequate trials of behavioral or drug therapy



Adapted from Kane RL, Ouslander JG, Abrass IB, eds. *Essentials of Clinical Geriatrics*, 5th Edition. New York: McGraw Hill, 2004.

Figure 2 Suggested algorithm for office-based management of geriatric urinary incontinence

these techniques can be helpful in patients who have difficulty isolating the proper muscles.

Caregiver-dependent interventions (regular toileting, prompted voiding) are useful in functionally disabled patients. The success of these interventions is largely dependent on caregiver knowledge and motivation, rather than on the patient's physical function and mental status.⁶

Drug Treatment

Table 7 lists the various drugs used to treat the different types of incontinence. Drug treatment is often prescribed in conjunction with behavioral therapy, which can enhance its effectiveness.⁶ For urge or mixed incontinence, antimuscarinic drugs targeting bladder smooth muscle are most commonly used. A variety of drugs are available with similar efficacy in clinical trials.^{13,14} All can have bothersome systemic anticholinergic side effects, especially dry mouth,

constipation, and exacerbation of gastroesophageal reflux. Reductions in urge incontinence in clinical trials are generally in the range of 60% to 80% (compared with 30% to 50% on placebo),^{10,14,15} with an overall incidence of dry mouth of approximately 20% (>5% severe).¹⁴ These medications may precipitate urinary retention, and patients at risk, including diabetics, those with elevated baseline postvoid residual volumes, and men with outflow obstruction should be monitored carefully.⁶ Elderly patients on anticholinergics should be monitored for worsening cognitive function or drug-induced delirium, as there have been reports of cognitive side effects mimicking dementia.¹⁶⁻¹⁸

The role of estrogen in treating geriatric incontinence is controversial. Topical estrogens may be used in postmenopausal women with urge incontinence associated with atrophic vaginitis or severe vaginal atrophy.^{19,20} However, combination oral hormone replacement therapy with estrogen

Table 6 Key Aspects of Behavioral Therapy for Incontinence

<p>Patient/caregiver education and resources</p> <ul style="list-style-type: none"> ● Booklets ● Websites <ul style="list-style-type: none"> ○ American Geriatrics Society Foundation for Health in Aging (www.healthinaging.org) ○ National Association for Continence (www.nafc.org) ○ The Simon Foundation (simonfoundation.org) ○ American Urogynecological Society (www.augs.org) ○ National Institute on Aging (www.nia.nih.gov) ○ National Institute of Diabetes and Digestive and Kidney Diseases (www.niddk.nih.gov) ○ American Urological Association (www.UrologyHealth.org) <p>Fluid management</p> <ul style="list-style-type: none"> ● Avoid caffeine ● Limit nighttime fluids (for nocturia/nocturnal incontinence) <p>Alleviation of constipation</p> <ul style="list-style-type: none"> ● Dietary fiber ● Fluid intake ● Appropriate use of stool softeners, laxatives, suppositories <p>Pelvic floor muscle exercises</p> <ul style="list-style-type: none"> ● Self-taught or taught during examination ● Taught using biofeedback ● Home practice for strengthening ● Use of exercises in situations that precipitate incontinence and for urge suppression <p>Regular voiding to avoid a full bladder (stress incontinence), or prevent involuntary bladder contractions (urge incontinence)</p> <p>Regular toileting assistance (for mobility impaired patients)</p>

and progestin has been associated with an increased incidence of incontinence.^{21,22} In men with benign prostatic enlargement, irritative voiding symptoms associated with urge incontinence may be effectively treated with an α -adrenergic antagonist (average reduction in AUA scores of 4 to 6 points²³). Newer agents (alfuzosin and tamsulosin) may have less effect on blood pressure and should be considered for older men who have low blood pressure, orthostasis, or dizziness. If α -adrenergic antagonist therapy alone does not control irritative voiding symptoms, the addition of an antimuscarinic drug should be considered. Although α -adrenergic antagonists alone are probably not efficacious for long-term treatment of overflow incontinence,²⁴ 5 α -reductase inhibitors alone and in combination have been shown to reduce the voiding symptoms from benign prostatic hyperplasia, as well as the incidence of urinary retention.²⁵

Estrogens and α -adrenergic agonists have been recommended as treatments for stress urinary incontinence, however, use of both of these medications is controversial. Estrogens may worsen urinary incontinence,^{21,22} and there is weak evidence to suggest that the use of alpha adrenergic agonists is better than placebo.²⁶ Drug treatment for chronic overflow incontinence using a cholinergic agonist or an α -adrenergic antagonist is rarely efficacious.⁶

Drug treatment is often prescribed in conjunction with behavioral therapy, which can enhance the effectiveness of drug treatment.

Surgery

Surgery should be considered in selected geriatric patients who fail nonsurgical treatment and want further interven-

tion, and in those with a major anatomic abnormality. For women with stress incontinence, surgery offers high short-term cure rates but is invasive, potentially morbid, and lacking long-term follow-up data. Stress incontinence in older women also may be effectively treated with periurethral injection of bulking agents.¹ Surgery also may be indicated in men in whom incontinence is associated with anatomically or urodynamically documented outflow obstruction. For older males with postprostatectomy stress incontinence, periurethral injection of bulking agents may be helpful in milder cases. Artificial urinary sphincters may be considered, but their cure rates are only 50% and morbidity may be as high as 40%.²⁷ The decision must be individualized, weighing carefully the degree to which the symptoms bother a patient and the potential risks and benefits of surgical treatment.

Incontinence Undergarments and Catheters

Incontinence undergarments can be helpful in patients with urinary incontinence but should be used appropriately. Although extensively marketed and readily available, these products are relatively expensive and are not covered by Medicare or most other insurance. They should generally not be used as the first response to urinary incontinence or before a diagnostic evaluation is performed. Many older patients prefer undergarments to other treatments.²⁸ For patients who prefer or need these undergarments, proper fit and absorptive capabilities are important. Information on products and other educational material can be found on internet sites of national organizations such as the National

Table 7 Drug Treatment for Urinary Incontinence

Drugs	Dosages	Mechanisms of Action	Type of Incontinence	Potential Adverse Effects
Antimuscarinic Darifenacin	7.5-15 mg q day	Increase bladder capacity	Urge or mixed with urge predominant	Dry mouth, constipation blurry vision, elevated intraocular pressure, cognitive impairment, delirium
Oxybutynin Short-acting Long-acting Transdermal	2.5-5 mg tid 5-30 mg q day 3.9 mg patch q 4 days	Diminish involuntary bladder contractions		
Solifenacin Tolterodine	5-10 mg q day 4 mg q day, or 2 mg bid			
Tropium α -Adrenergic agonist* Pseudoephedrine	20 mg bid 30-60 mg tid, or 60-120 mg long-acting	Stimulate contraction of urethral smooth muscle	Stress	Headache, tachycardia, elevation of blood pressure
Topical estrogen* Topical cream	0.5-1.0 g per day for 2 weeks, then twice weekly	Strengthen periurethral tissues Increase periurethral blood flow	Urge associated with severe vaginal atrophy or atrophic vaginitis Stress	Local irritation
Vaginal estradiol ring	One ring every 3 months			
Vaginal tablets	One 25- μ g tablet per day for 2 weeks, then twice weekly			
Cholinergic agonists* Bethanechol	10-30 mg tid	Stimulate bladder contraction	Overflow incontinence with atonic bladder	Bradycardia, hypotension, bronchoconstriction, gastric acid secretion, diarrhea
α -Adrenergic antagonists Alfuzosin Doxazosin Tamsulosin Terazosin	10 mg qd 1-8 mg qd† 0.4 mg qd 1-10 mg qhs†	Relax smooth muscle of urethra and prostatic capsule	Urge incontinence and related irritative symptoms associated with benign prostatic enlargement	Postural hypotension

Adapted from Kane RL, Ouslander JG, Abrass IB, eds. *Essentials of Clinical Geriatrics*, 5th ed. New York, NY: McGraw Hill; 2004.

*Weak evidence supporting use in treatment of urinary incontinence.

†Most studies have used the higher range dosages (doxazosin 4 to 8 mg and terazosin 5 to 10 mg).

Association for Continence (NAFC.org) and the Simon Foundation (Simonfoundation.org).

Urinary catheters should never be used as a means of convenience but may be appropriate management in specific patient situations.^{9,29,30} Clean intermittent catheterization is a treatment option for those with ongoing bladder emptying problems and high postvoid residual. Frequency of catheterization needs to be based on individual bladder volumes and patient tolerance.⁹ Chronic indwelling catheters should be used only after alternative management strategies have been considered. They are considered appropriate in patients with urinary retention causing persistent overflow incontinence, symptomatic infections, or renal dysfunction that cannot be corrected surgically or medically and cannot

be managed practically with intermittent catheterization. Chronic indwelling catheters also can be considered for patients with skin wounds, pressure sores, or irritations being contaminated by incontinent urine and for patients who are terminally ill or severely impaired for whom bed and clothing changes are uncomfortable.⁶ While both indwelling catheters and diapers should not be considered as a first resort, a small proportion of patients may express a strong preference for this type of management of their urinary incontinence.²⁸

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