

# Urinary Incontinence: Basic Evaluation and Management in the Primary Care Office

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Urinary incontinence (UI) is the involuntary loss of urine in any amount, from a few drops to total emptying of the bladder. Although UI has received much media and pharmaceutical attention in the last 2 decades, some clinicians still do not ask about urine leakage or offer evaluation and intervention. In addition, patients and health care providers may consider UI a normal part of aging. Although the prevalence of UI increases with age, the condition is not normal or inevitable. Furthermore, with appropriate evaluation and targeted interventions, UI and its associated symptoms can be relieved and the consequences mitigated. This article presents a basic overview of UI in the older adult and an approach to its evaluation and management in the primary care office-based setting. UI in other settings, such as the nursing home and hospital, and UI in younger adults is not addressed.

## Scope of the problem

UI occurs in 14% to 25% of community-dwelling older individuals [1]. Prevalence increases with age, with one third of women over age 65 years experiencing some degree of UI and 12% reporting daily urine leakage [2]. In men, prevalence ranges from 3% to 11% [3]. Thirty percent to 40% of individuals over age 75 years will develop urinary urgency and frequency, often with associated leakage [4]. Faced with so prevalent a condition, office-based clinicians should periodically ask each older adult in the practice about UI and initiate a simple, systematic evaluation when it is present.

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Estimated direct and indirect costs related to UI are staggering, with estimates at \$28 billion or more annually [5]. Direct costs include provider visits, diagnostic studies, and medical and surgical interventions, whereas indirect costs include personal expenses for laundering, dry cleaning, absorbent products, specialty undergarments, and specialty barrier and skin cleansing products. Annual expenditures to manage UI rival those of many chronic diseases in women especially, with expenditures for women over age 65 years reported to be twice that for women under age 65 years [6].

These monetary costs notwithstanding, the most profound cost of UI may be on quality of life. Although most clinicians working with older adults recognize that maintaining function and independence is important, the connection between UI, function, and quality of life may not always be obvious. Active older adults who develop UI or who experience worsening UI symptoms often give up community activities (eg, volunteering, church attendance), hobbies (eg, bird watching, hiking), lifelong interests (eg, theater, musical events), and traveling. Older adult women with UI also report a decreased desire to be sexually intimate because of urine leakage. This insidious withdrawal from these important life events and experiences may eventually lead to social isolation, low self-esteem, spiritual distress, hopelessness, depression, functional decline, and falls and fractures. Research findings even suggest a relationship between UI and mortality, especially in older frail men [7], and UI has long been considered a risk factor for nursing home placement [8,9]. A more recent report, however, suggests that UI may not be an independent risk factor for death, nursing home admission, or functional decline [10]. Therefore, it is important to determine how UI affects each individual in terms of functional status and quality of life. One of the available quality-of-life tools can be used to measure the impact that UI has on an individual's life experience and feelings of well-being [11].

Nighttime UI with or without frequency or urgency can also have an adverse effect on function and quality of life. Although the number of arousals for urination increases with age, it should not interfere with the sleep experience. Generally, one or two trips to the bathroom during the night are considered usual with aging. Most individuals are able to fall back to sleep easily. Problems may arise when individuals get up three or more times at night and have difficulty returning to restful sleep. This decreased amount of sleeping time can lead to daytime drowsiness and even confusion in some patients, which may interfere with the performance of activities of daily living or instrumental activities of daily living [11].

### **Age-related changes**

Age-related changes usually occur gradually and progressively. A number of age-related changes in (and outside) the urinary system may predispose the older adult to the development of urinary incontinence [12]. Specific age-related changes can be magnified in the presence of comorbidities, certain

medications, and lifestyle choices. A brief overview of the physiologic and age-related changes that may contribute to UI is presented in Table 1 [11,13,14].

## Evaluation

Perhaps the most important aspect of evaluating and managing UI in the office setting is for the clinician to initiate dialog by asking the question, “Do you ever leak urine or have difficulty getting to the toilet in time?”

Table 1  
Some age-related changes that may contribute to urinary incontinence

Changes	Impact
Decrease in bladder elasticity and capacity	Increased frequency in voiding
Decrease strength of detrusor muscle	Incomplete emptying of the bladder
Spontaneous detrusor muscle contractions or increased muscle hyperactivity	Urge symptoms
Detrusor muscle laxity	Large, atonic bladder leading to insufficient intravesicular pressure to initiate urination [13]
Mass and renal weight decreased	Decreased surface area available for filtration
Decreased renal blood flow	Drugs excreted through the kidney require dose adjustment
Kidneys less efficient at concentrating urine	Increase in urine volume
Enlargement of the prostate gland	Decreased flow, difficulty initiating the urine stream, hesitancy, voiding prolonged
Decreased estrogen production	Changes perineum health
Female external urinary sphincter atrophies	Relaxation of the pelvic floor
Diurnal and nocturnal production of urine altered related to circadian sleep-awake pattern	Nocturia episodes increased; increased risk for falls
Changes in antidiuretic, atrial natriuretic and renin aldosterone hormones [14]	Nocturia
Atrophic vaginitis and urethritis	Decreased urethral mucosal seal, irritation, more prone to urinary tract infections
Decreased overall bone mass; spinal column curved and compressed; degenerative changes in joints	Decreased hand dexterity leading to inability to manipulate belts, suspenders, zippers and buttons on clothing; increased pain on ambulation; slower movement
Decreased muscle mass and strength	Falls or fear of falling [11]
Decreased pupil size, visual acuity, ability to accommodate	Decreased ability to adjust to changes in lighting, poor eyesight [11]

Partly due to the persistence of aging myths, women in particular believe that urine leakage is part of growing older. Generally, these individuals will not bring up the topic voluntarily. In addition to the myth that UI is a normal part of aging, other reasons for not broaching the subject may include embarrassment, fear of getting older and facing one's own mortality, fear of surgery, fear of taking another medication, expense, and the belief that there is no effective treatment. It has been estimated that fewer than 50% of individuals experiencing urine leakage report the problem to their health care provider [15,16]. Even when patients bring up symptoms of UI, only 40% receive information about treatment options [17]. After UI is recognized, an evaluation should follow. A caveat is that the amount and frequency of the incontinence should not be the determining factor in proceeding with an evaluation. If it is of concern to the patient, then evaluation is warranted.

The purpose of a systematic evaluation of UI is fourfold: (1) to identify reversible or transient causes of UI and individual patient risk factors, (2) to determine the actual or potential effect of UI on the patient's quality of life and functional status, (3) to anticipate and address potential complications based on established causes [13], and (4) to develop a set of interventions that targets the risk factors and causes for each patient through a consistent approach to evaluation.

According to the updated 1996 UI guideline developed by the Agency for Health Care Policy and Research (now the Agency for Health Care Research and Quality), the goals of evaluation are to confirm the presence of UI, to identify all current conditions that may be contributing to UI, to identify patients who require further evaluation, and if possible, to arrive at a diagnosis [18]. The guideline also emphasizes the concepts of preventing UI symptoms and promoting healthy bladder habits [19]. Both of these concepts confirm the importance being able to recognize each patient's risk factors, including current and past lifestyle choices.

Transient UI usually refers to leakage or other symptoms of relatively new onset and is often based on factors outside the urinary system. Transient UI may be temporary or reversible. Up to one third of community-dwelling older adults with UI may have transient UI [20]. Determining and treating the underlying cause or causes generally lead to resolution of the incontinence [21]. The clinician can use the mnemonic "DIAPPERS" to recall the causes of transient UI [11,22,23]. Although this mnemonic is useful in triggering the clinician's memory, it can also be viewed as disrespectful. One should not associate aging and UI with diaper products. Undergarments for older adults with UI should be referred to as absorbent products, briefs, or other neutral terminology to help eliminate the image that old people with incontinence are just like babies. The causes of transient UI are listed in **Box 1** [14,24]. As stated earlier, successful management of the underlying cause or causes may often eradicate the incontinence.

**Box 1. Causes of transient or reversible urinary incontinence**

- D—Delirium; dementia; other confusional states
- I—Infections: urinary (symptomatic), respiratory, skin
- A—Atrophic vaginitis, urethritis; alcohol ingestion; acute illness
- P—Psychologic causes: depression, grief/loss, spiritual distress, hopelessness
- P—Pharmacologic agents (including side effects): diuretics, sedative/hypnotics, anticholinergics,  $\alpha$ -adrenergic blockers,  $\alpha$ -adrenergic agonists, calcium channel blockers, antidepressants, antipsychotics, narcotic analgesics, antiparkinsonism medications, some angiotensin-converting enzyme inhibitors [14,24]
- E—Endocrine disorders (hypercalcemia, hyperglycemia); excess urine output; excessive fluid intake; pedal edema
- R—Restricted mobility: physical restraints, musculoskeletal disorders, inappropriate or no assistive devices, environmental barriers, lack of caregiver assistance
- S—Stool impaction; chronic constipation; fecal incontinence

If UI persists after addressing any potential transient causes or if no transient causes are identified, then the next step in the process is to identify risk factors. Many older adults may have more than one risk factor for UI. The more risk factors an individual has, the more likely she or he will develop UI. The more risk factors that can be successfully addressed, the better the chances for decreasing the incontinence and associated symptoms. The most common risk factors are listed in [Box 2](#) [9,11,13,25–43]. The clinician and patient should work together to identify and address as many of these risk factors as possible.

**History**

The clinician should obtain a focused history about UI, followed by a detailed review of the medical and surgical history to identify pre-existing or comorbid conditions. A systems review can identify sensory or mobility problems and cognitive or emotional disorders [44] and elicit clues to a change in functional status, weight, eating habits, or fluid intake [45].

During the focused history, patients should be questioned about usual bladder habits; frequency; urgency; leakage with coughing, sneezing, laughing, bending, or lifting; difficulty starting and maintaining the urine stream; postvoid dribbling; a feeling of bladder fullness that persists after urination; and straining to complete the voiding process [46]. Clinicians should ask about urinary tract infections and urinary tract procedures,

**Box 2. Risk factors associated with urinary incontinence**

Increasing age [25,26]

White race [26,27]

Sex: female-to-male ratio (2:1) over age 60 years [28]

Higher level of education [29]

Perimenopausal status related to decreased estrogen [30]

Increased body mass index [30]

Increased caffeine intake [31]

Impaired functional status [27]

Decreased cognition, delirium [13]

Medications: diuretics, psychotropics, narcotics, anticholinergics,  $\alpha$ -adrenergic agonists and antagonists, cholinergic agonists [32,33]

Medication noncompliance (eg, not taking prescribed diuretic for heart failure related to wanting to “avoid accidents”) [9]

Ingestion of food or beverages known to be bladder irritants: carbonated beverages, milk/milk products, citrus juices and fruits, highly spiced foods, tomatoes and tomato products, sugar, honey, corn syrup, artificial sweeteners, caffeine (coffee, tea, cola, chocolate) [34]

Current smoker or history of smoking [30,35]

Alcohol consumption [36]

Chronic constipation, fecal impaction, fecal incontinence [11,26]

Pregnancy-related factors: mode of delivery, increased parity, fetal birth weight [28,37,38]

History of abdominal, gynecologic, rectal, or prostate surgery; pelvic radiation [25,39]

Benign prostatic hyperplasia [36]

Presence of comorbid conditions, particularly diabetes, hypertension, arthritis, congestive heart failure, Parkinson's disease, chronic obstructive pulmonary disease [26,30,34,36,40]

Impaired mobility [11,41,42]

Decreased hand dexterity [43]

Pain: chronic, acute, undertreated [9]

History of stroke [26,36]

Depression [9,13]

Environmental barriers [43]

Lack of caregiver assistance [13]

Athletic lifestyles or high-impact physical activity in younger years [38]

including catheterization. Nighttime voiding habits, sleep and rest patterns, usual activity pattern, bowel habits, dysuria, and pain on urination also are important aspects of the history-gathering process. Duration and severity of all symptoms should be assessed [47]. Asking the patient about prior interventions and outcomes may also be informative.

If possible, the clinician should ask the patient to complete a 24-hour dietary recall or a similar instrument to collect information about usual dietary habits, favorite foods and drink, and alcohol consumption. Reviewing the form with the patient may provide a better understanding about eating and drinking patterns and consumption of potential of bladder irritants. In addition, because many older adults engage in socialization at mealtime or at other food- or drink-related activities, this is a logical place to ask about social support and relationships.

Questions about living arrangements and the environment should also be posed. Lighting, steps, rugs and floor covering, location and number of bathrooms, and distance required to get to the bathroom may be important on a case-by-case basis. For example, an older community-dwelling adult may have a bathroom on the second floor yet spend the daytime hours on the first level of the home. Under these circumstances, it may be easy to understand why urine leakage occurs while ascending the stairs to get to the bathroom. Such information allows the clinician to make positive suggestions that may enable the person to maintain independence with relatively modest changes (eg, in this case, keeping a urinal or portable commode in a private area on the first floor).

A urinary symptom/voiding diary (Table 2) or bladder log can provide patient-reported information that may be beneficial to the clinician. Some experts in UI consider the voiding diary to be one of the most important components of the evaluation [48] and suggest that it be sent to the patient along with instructions before the office visit to evaluate incontinence. Then, at the time of the office visit, the diary can be the focal point of the encounter and serve as the framework for collecting the historical information, as described earlier. When reviewing the diary, the clinician looks for patterns and associations. How frequent are the symptoms and is there any regularity? What activity was occurring at the time of leakage? Does consumption of a particular food or beverage seem to be associated with urge, incontinence, or both? In the author's experience, even frail older adults living independently are capable of keeping an accurate diary for 3 days. The sample diary shown in Table 2 is too small for many older adults to read and fill out, so it should be configured with a larger font and more room to jot notes in the boxes. This is best accomplished by placing the diary double-sided on a sheet of paper. The sample diary in Table 2 has an area at the bottom for the patient to record the number of pads used and a space to record the number of times that under garments or clothes needed to be changed. A section for bowel movements can also be helpful in diagnosing constipation. Finally, the diary

Table 2  
Urinary symptom/voiding diary

URINARY SYMPTOM/VOIDING DIARY			NAME:		DATE:		DAY#: _____	
TIME	FOOD		DRINK		ACTIVITY/FEELING	TOILET	LEAKAGE	
<div></div>	WHAT?	AMOUNT?	WHAT?	AMOUNT?		AMOUNT	AMOUNT	
Sample	Wheat toast/dry	2 slices	OJ	6 oz glass (1)	Washing dishes	X small		
5-6 AM								
6-7 AM								
7-8 AM								
8-9 AM								
9-10 AM								
10-11 AM								
11-noon								
12-1 PM								
1-2 PM								
2-3 PM								
3-4 PM								
4-5 PM								
5-6 PM								
6-7 PM								
7-8 PM								
8-9 PM								
9-10 PM								
10-11 PM								
11-12 mid								
12-1 AM								
1-2 AM								
2-3 AM								
3-4 AM								
4-5 AM								

Number of Pads Used: \_\_\_\_\_ Number of Times Clothes or Undergarments Changed: \_\_\_\_\_



can be used as a monitoring tool to determine the effectiveness of interventions.

Older adults often are on numerous medications, and a thorough review should be accomplished at least yearly. Asking patients to bring in all of the medications they have at home is a common approach used to gain perspective on past and current health issues. This technique has been called the “brown bag test” by some investigators [49]. It is important to review not only prescription medications but also all nonprescription drugs, home remedies, supplemental/herbal therapies, and caffeine and alcohol intake. Many times, in doing a medication review, the clinician discovers the potential reason for the patient’s UI. Any suspicious medication should be decreased or carefully discontinued if possible. If the patient requires a particular class of drugs, substituting another drug in the same class with a different side-effect profile can be considered [24].

### **Physical examination**

The physical examination helps the clinician clarify possible causes of transient UI, detect underlying conditions and causes associated with persistent UI, evaluate comorbid conditions, and determine functional ability [48]. General appearance, skin integrity, and cardiopulmonary status are important indicators of overall patient health. In addition, the clinician should look for lower extremity edema, palpate peripheral pulses, and check for venous insufficiency.

Functional status, especially mobility, is considered one of the keys for controlling UI [11]. Mobility status should be assessed, in part, when the older adult is not aware of the observation. A good time to do this is when staff escort the patient to the examination room. Is there an assistive device? If so, is it being used appropriately? Does the patient hold on to the wall or others for support in the absence of assistive devices? Does the patient require a rest period? The clinician should consider the gait pattern and balance. What type of shoe is the patient wearing? Is this his or her usual footwear? In the examination room, how does the patient get on and off the examination table or up and down from the chair? When the clinician enters the examination room, the hand should be extended to the patient for a handshake, which can provide information about vision, strength, dexterity, and gross coordination—all integral aspects of the toileting experience and manipulation of clothing.

From a practical perspective, the neurologic examination should include a measure of cognition. Does the person have sufficient cognition to recognize the stimulus to urinate, to find the bathroom, and to perform sequential toileting tasks? Lower extremity and perineal sensation, dexterity, strength and balance, and anal and bulbocavernosus reflexes should be assessed [4,21]. On abdominal examination, the clinician should look for diastasis recti, masses, hernias, ascites, and organomegaly that can influence

intra-abdominal pressure and urinary tract function [50]. Is there tenderness in the suprapubic region or evidence of bladder distention?

Part of the examination should be performed with a full bladder if the patient is able to tolerate it. To accomplish this, the patient can drink water during the history portion of the visit or come to the appointment with a full bladder. A full bladder allows the clinician to perform the evoked cough response or stress test and to conduct prevoid bladder scanning if the office has access to a portable bladder scanning device. Stress testing, when performed accurately, has a sensitivity and specificity of greater than 90% [48]. The maneuver is performed in two positions to determine the degree of pelvic organ support. First, the patient is positioned comfortably in a supine position, knees bent, and feet resting on the examination table. The abdominal assessment can be performed first and then the perineum can be examined. The clinician should step to the side of the examination table, visualize the urethral meatus, and ask the patient to cough [51]. The test is positive if there is any leakage of urine. The clinician should estimate the amount of leakage and the timing in relationship to the cough. The prevoid bladder scan can be completed next. The patient is assisted off the examination table, asked to stand upright with legs slightly spread and knees bent, and instructed to cough again. Leakage that starts with the cough is considered a positive finding. False negatives are possible for a variety of reasons, including presence of a large cystocele, less-than-full bladder, or patient inability to relax the pelvic floor. Following the tests for stress incontinence, the patient should provide a clean-catch midstream urine specimen and empty the bladder. After the patient has emptied the bladder, the bladder can be scanned or an in-and-out catheterization can be done to determine postvoid residual volume, which is discussed further later.

The gynecologic examination in some older women may need to be approached in a conservative manner, keeping it as minimally invasive as possible [52]. The clinician should assess for perineal dermatitis and look for signs of atrophy, prolapse, vaginal stenosis, or scar tissue [24,44]. The clinician may want to forego using a speculum and perform a digital vaginal examination instead [52].

In examining men, the glans penis should be examined for evidence of circumcision or mobility of the foreskin [24]. The clinician should assess testicular symmetry, tenderness, or enlargement. The prostate is palpated for nodularity, tenderness, and size. Enlargement of the prostate does not necessarily correlate with urethral obstruction but should raise suspicion and consideration for further evaluation [44].

For men and women, the rectal examination should include looking for skin irritation, perianal lesions, and symmetry of the gluteal creases and checking for fecal impaction, the presence of stool in the anal canal, masses, hemorrhoids, sphincter tone, and perianal sensation. The same sacral roots (S2-4) innervate the external urethral sphincter and the anal sphincter [48]. If stool is present, it should be tested for occult blood. The ability of the older

patient to tolerate this portion of the examination should always be considered. Providing explanations about what is being done and why can make the examination tolerable for the patient, allowing the clinician to gain valuable information.

## Diagnostic studies

The diagnostic tests conducted for patients with UI not only help to clarify the diagnosis but also help to direct treatment decisions and to inform prognosis [53]. As described in “History,” prevoid, portable, non-invasive ultrasonography (scanning the bladder) should be performed with the patient’s bladder full. This test provides an estimate of bladder capacity. The postvoid residual volume is an essential component of the UI evaluation and should be performed within 5 minutes of an intentional void [54]. When determining postvoid residual volume, bladder scanning is preferable to in-and-out catheterization because of the potential for trauma and infection, but not all primary care clinics have access to bladder scanners. A postvoid residual volume of 50 mL or less is considered normal. A postvoid residual volume of 50 to 100 mL is suggestive of weakness or possible obstruction. A postvoid residual volume greater than 100 mL is considered abnormal and a residual volume greater than 200 mL may indicate the need for referral [2].

Urinalysis by dipstick testing is useful in eliminating bladder infection and in detecting the presence of glucose, protein, and hemoglobin [26]. If dipstick findings are negative, then the specimen does not need to be sent for laboratory evaluation. If the sample is positive, it should be sent for microscopy, culture, and sensitivity. Further diagnostic tests should be ordered only if the results would change treatment interventions [55].

## Classification of urinary incontinence

Identification of UI, with or without a definitive diagnosis, is a priority [56]. After UI is identified, continued evaluation in the primary care office or by a consultant should provide information about its underlying cause and allow it to be classified into one of the standard categories: stress, urge, mixed stress/urge, overflow, and functional (Table 3).

A history of urine leakage during periods of increased abdominal pressure (laughing, sneezing, lifting) suggests a diagnosis of stress UI [54]. Feelings of urge or the inability to prevent urine leakage before arriving at the bathroom is generally considered urge UI. Urge UI occurs most commonly in older women [47]. The diagnoses of stress, urge, and mixed UI can usually be determined during the history [2]. A history of continual dampness or frequent dribbling may indicate a diagnosis of overflow UI [54]. There are not clear-cut symptoms that identify UI as functional, but after other types of incontinence are ruled out, functional UI becomes

Table 3  
Interventions for urinary incontinence

Type of UI	Intervention	Reference
Stress: leakage that occurs with increased abdominal pressure (coughing, laughing, sneezing, bending, lifting, stepping); inadequate urinary sphincter function; pelvic floor musculature laxity	<p>Patient education</p> <p>Pelvic floor muscle exercise or Kegel exercise</p> <p>“Timed voiding”—toileting on a fixed schedule that is consistent; 2 h while awake is typical; also referred to as Scheduled Voiding</p> <p>“Habit training”—utilizing the toilet at a set time interval based on findings from voiding diary; generally starting 30 min before leakage occurs; intervals can be adjusted related to the individual’s voiding pattern; goal is to gradually increase the intervals between voiding without leakage</p> <p>Diet modification (related to bladder irritants)</p> <p>Avoid caffeine and alcohol intake</p> <p>Weighted vaginal cones</p> <p>Pessaries and other intravaginal devices (requires manipulation, manual dexterity, and scheduled monitoring by the provider)</p> <p>External occlusive device (for men and women)</p> <p>Intraurethral occlusive device (urethral plug for women, requires manipulation and manual dexterity)</p> <p>Pelvic floor electrical stimulation</p> <p>Preventive skin care</p> <p>External collection device (condom catheter with leg bag for men)</p> <p>Absorbent products</p> <p>Medication review</p> <p>Biofeedback</p> <p>Collagen injections</p> <p>Surgery</p>	[2,13,14,18,26,28,42,45,52,54,61,67]

Urge: sudden overwhelming  
need to urinate without ability  
to control initiation of urine flow, whether  
bladder is full or not; uncontrolled detrusor  
contractions or detrusor hyperactivity

Patient education  
Pelvic floor muscle exercise  
Timed voiding  
Habit training  
“Urge inhibition”—resisting or inhibiting the urge to urinate;  
stopping current activity, relaxation, and distraction techniques  
including thinking about something other than urinating;  
counting backward from 100 by 7; “quick flicks” or squeezing  
and releasing pelvic floor muscle quickly; delay urge for  
only 10–20 min, and then continue to the bathroom  
“Bladder training”—starting with a short voiding interval (usually  
every hour) and gradually increasing (usually 2- to 3-h intervals)  
time between toileting, with the goal of staying dry and  
suppressing the urge  
Diet modification  
Fluid management  
Avoid caffeine and alcohol intake  
Voiding diary for 2–3 wk with detailed information  
Preventive skin care  
Absorbent products  
External collection device  
Medication review  
Anticholinergic agent  
Temporary, intermittent catheterization (requires manipulation  
and dexterity)

[2,13,14,18,51,52,67]

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Table 3 (continued)

Type of UI	Intervention	Reference
Mixed: combination of urge and stress symptoms	Directed at whichever type of UI seems to be predominant Patient education Pelvic floor muscle exercises Timed voiding Habit training Bladder training Urge inhibition Diet modification Fluid management Avoid caffeine and alcohol intake Preventive skin care Absorbent products Medication review Electrical stimulation	[2,52,67]
Overflow: involuntary leakage of urine in small amounts that is frequent or constant; associated with incomplete bladder emptying and reduction in the force of the urine stream	Patient education “Double-voiding technique”—attempting to void twice during one trip to the bathroom; patient may void, sit for 2–10 min, then try revoiding; if stable, may stand up, press abdomen up toward chin, sit down, then try revoiding “Cred’e maneuver”—using one or both hands to press firmly on the abdomen over the bladder during voiding to facilitate emptying Diet modification Avoid caffeine and alcohol intake Preventive skin care External collection device Absorbent products Use of barrier product to prevent skin breakdown Medication review Surgery	[4,14,18,67,68]

Functional: recognition of the urge to urinate but unable to physically get to the toilet, unable to ask for assistance, or no motivation to toilet; related to cognitive and functional status; diagnosis of exclusion

Patient education  
Appropriate assistive mobility devices in close proximity at all times  
Environment alterations to allow easier access to toilet (increase lighting, remove clutter)  
Use of elderly-friendly furniture for ease of maneuverability (arms on chairs, firm cushion seats)  
Adjustment to toilet facility (raised seat, grab bars)  
Consider adaptable clothing (elastic, snaps, Velcro)  
Preventive skin care  
Caregiver assistance  
Caregiver education  
“Prompted voiding”—setting an alarm clock or kitchen timer to remind older adults living alone to utilize the toilet facility; caregiver reminds or asks the patient to utilize the toilet on a regular schedule, generally every 2 h during waking hours; also called “routine toileting”  
Absorbent products  
Check for possible underlying depression or cognitive impairment and treat the condition  
Alternative toiletry device use (urinal, bedpan, bedside commode)  
Consider referral to physical or occupational therapy  
Medication review  
Use of substitute toiletry devices (urinal, bedpan, bedside commode), especially at night  
For poor vision: regular eye examinations, current eyeglass prescription, glasses available at all times (consider neck chain), remove old prescriptive lenses from home (can donate)

[14,17,18,67]

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Table 3 (continued)

Type of UI	Intervention	Reference
Nocturia: wakes during the night one or more times to urinate	Patient education No fluid 2 h prior to bedtime (fluid restriction) Decrease caffeine and alcohol intake Medication adjustment for diuretics to be taken no earlier than mid afternoon to early evening Voiding diary for 1–2 wk Padding the bed/mattress instead of wearing tight briefs overnight	[11,20,51,54]
Other		
Constipation, fecal impaction	Removal of impaction Nutritional consult to determine appropriate fluid and fiber intake Bran/applesauce/prune juice recipe Appropriate stool softeners Accurate bowel record Maintain at least three stools a week that are soft, formed, and evacuated without straining	[11,13]



a presumptive diagnosis, given the patient's cognitive and functional status and self-report of specific difficulties [57].

### **Treatment and management interventions**

Every older adult's life experience is unique, as is each person's experience with UI. Effective treatment requires a multifaceted approach that focuses on the level of individual patient understanding and the impact of UI on quality of life and function. The first choice for treatment should be the least invasive treatment that has the least number of potential complications. The clinician should keep in mind that the least invasive treatment may not lead to the best outcome in certain situations [48].

Behavior modification other behavioral therapies, lifestyle changes, and environmental interventions are first-line treatments for UI, with the goals of improved quality of life, maintaining function, and enhancing self-esteem. The clinician does not need the definitive UI diagnosis to begin treatment of UI with behavioral therapies and lifestyle changes [53]. Any clinician should be able to use behavioral modification as part of the UI management plan. Interventions are simple, relatively inexpensive, effective, and do not have significant adverse effects [45]. In one research study, patients who received a behavioral management intervention at home decreased UI severity by 61% compared with the control group whose UI severity increased by 184% without behavioral management [58]. Table 3 lists some common interventions for the common types of UI. All behavioral interventions require active participation and motivation on the part of the patient with UI; therefore, these interventions may not be suitable for some individuals with depression or cognitive impairment or other confusional states [18,59]. All interventions should be individualized and mutually agreed on with the older adult.

The initial step in the management of UI is to correct any transient or reversible causes (see Box 1) [60]. In addition, risk factors (see Box 2) such as obesity, smoking, inadequate fluid intake, and alcohol consumption should be addressed when appropriate. Education is a crucial component in the management of UI [60]. Patients should understand basic urinary system anatomy and physiology and the basic mechanism of micturition. Education helps to dispel myths and can help with compliance. Effective and appropriate health communication materials can be obtained from a number of health care agencies and organizations (Table 4). Office staff can provide patients with appropriate materials or such information can be displayed in the waiting room.

Pelvic floor muscle exercises, or Kegel exercises, provide the foundation for an effective UI management program. Although many women tell the clinician that they are familiar with the exercise, they explain it as being practiced while urinating on the toilet, starting and stopping the urine flow. This method actually disrupts voiding patterns and can lead to retention

Table 4  
Resource List UI Materials

Organization	Material	Web address
American Academy of Family Physicians	Patient education	<a href="http://familydoctor.org/798.xml?printxml">http://familydoctor.org/798.xml?printxml</a>
American Foundation for Urologic Diseases	Patient brochure	<a href="http://www.incontinence.org/publications/INCONT.PDF">http://www.incontinence.org/publications/INCONT.PDF</a>
American Geriatrics Society (AGS)	Patient education brochure	<a href="http://www.americangeriatrics.org/products/ui/ui_brochurev2.pdf">http://www.americangeriatrics.org/products/ui/ui_brochurev2.pdf</a>
Health Care Professional Resource List on UI	Organizations & agencies providing professional & public information	<a href="http://www.americangeriatrics.org/products/ui/resource_list.htm">http://www.americangeriatrics.org/products/ui/resource_list.htm</a>
National Institute on Aging	Age Page	<a href="http://www.niapublications.org/engagepages/Urinary_Incontinence.pdf">http://www.niapublications.org/engagepages/Urinary_Incontinence.pdf</a>
The Merck Institute of Aging & Health	Urinary Incontinence Toolkit: Professional tools & educational material	<a href="http://www.miahonline.org/tools/UI/tools.html">http://www.miahonline.org/tools/UI/tools.html</a>

and urinary tract infection. The correct method to perform the exercises must be explained to the patient and instructions should be given in writing. It is often helpful to have the patient do several exercises while in the office to confirm that they are being done correctly.

An effective approach to teaching pelvic floor muscle exercises is to ask the patient to imagine trying to “hold back” passing gas (flatus). The patient usually indicates that he or she would “squeeze my butt cheeks together.” The clinician can then ask the patient to concentrate on the rectum and imagine pulling or lifting it up through the body to the chin. Patients need to be told not to lift their buttocks, tighten the abdomen or thigh muscles, move their legs, strain down, or hold their breath. In the beginning, the activity should be held for a slow count of 5 to 10 depending on the functional status and frailty of the older adult. The patient is then told to relax for twice as long, or a count of 10 (20 if initially held for 10), to be sure the muscle has returned to baseline and there are no fasciculations. Pelvic floor muscle exercises should be performed in a series of 3 to 5 repetitions at least three times a day while lying, standing, and sitting. Patients should be instructed to do the exercises every day, indefinitely. To begin, the older adult should associate performing pelvic floor muscle exercises while engaged in a daily activity such as mealtime, grooming, or taking medication. This helps promote compliance to the treatment regimen. A minimum of 30 to 45 pelvic floor muscle exercises every day is recommended [4]. It is important to inform the patient that it generally takes from 4 to 8 weeks to see a difference in severity of urine leakage. Pelvic floor muscle exercises have been reported to provide an 81% reduction in urine leakage episodes [61]. It is important to emphasize the need for persistence with

these exercises that should become a part of the older adult's normal daily routine. If the exercises are stopped, then the positive benefits gained from performing pelvic floor muscle exercises will be lost because the muscles will atrophy [36].

A variety of devices is available for stress UI, especially for women. The foam pessary, bladder-neck support prosthesis, urethral occlusive devices, and intraurethral devices are just a few. Numerous research studies, however, report poor compliance with many of these devices [28]. The clinician must keep in mind the patient's manual dexterity, visual acuity, and willingness to touch themselves and insert the devices. Decisions on whether to use any of these devices should be individualized and made with the patient. If the patient is not going to use the device, why include it in the treatment plan?

There is a plethora of absorbent products on the market. The clinician should be knowledgeable about what is available and what is appropriate for each patient. Although the expected outcome is to decrease urine leakage, it may still be necessary for the older adult to wear some type of disposable product to allow them to comfortably engage in social activities and decrease the potential smell of urine, thus maintaining or improving their quality of life. The type of pads or protective garments should be individualized based on gender, UI diagnosis, volume of incontinence, and cost [54,55]. The use of products should not foster independence or take away from other desirable treatment [62]. Older adults should be discouraged from using plastic-lined, tight-fitting products during the night because of the potential for skin breakdown and infection related to the warm and moist environment created by various products and urine.

## Medications

A number of drugs have been and will continue to be introduced into the UI market. Comparisons between available drug treatments are limited and not much help to the health care provider [2]. It is important to keep in mind that most traditional anticholinergic therapies are limited in their effectiveness [63]. For the treatment of stress UI, anticholinergics are inappropriate and ineffective [2]. Medications for urge incontinence should not be used until other treatment interventions and modalities have failed over a sufficient length of time [64]. Drugs are a major cause of urinary incontinence and urinary retention in the elderly. Many frequently prescribed medications can cause urinary symptoms including frequency and urge (see Box 1). Keep in mind that when a patient is receiving a sedative, hypnotic, or analgesic, "any drug that dulls the brain, dulls the bladder, because your brain tells you when you have to void" [51].

Pharmacotherapy may be useful to augment behavioral and lifestyle treatment and management interventions [20]. Drugs can be particularly

helpful for women who have prominent urge symptoms, no cardiac problems or cognitive deficits, and can tolerate and address the side effects of dry mouth, blurry vision, or constipation. If possible, the clinician should delete or decrease dosages of current medications that may be contributing to UI before adding a drug to treat UI [11]. The well-known mantra for geriatric pharmacology, “start low and go slow,” should be invoked when prescribing a drug for the treatment of UI.

At times, the patient is so distraught about UI that he or she is unable to engage in behavioral interventions at the outset of the treatment process. Prescribing appropriate drug therapy may help the individual gain some control over symptoms and then become more motivated to work on behavioral or lifestyle interventions.

In the future, the treatment of UI may involve pharmacogenomic approaches or even gene therapy [63]. For now, behavioral therapies, lifestyle changes, and environmental enhancement are the interventions of choice. Table 3 lists some of the interventions for specific types of UI.

## Referral

UI can be handled effectively in the primary care setting most of the time. Interventions described earlier in this article can be appropriately implemented and monitored by knowledgeable office-based primary care providers. Circumstances for which referral should be considered include:

- Failure to respond to treatment over time
- Increasing symptoms
- Appearance of new symptoms
- Microscopic hematuria in the absence of infection
- Existence of anatomic abnormalities or severe prolapse
- History of prior urologic corrective surgery followed by urine leakage
- Inability to determine a diagnosis after working with the patient for a reasonable length of time
- Positive neurologic findings in the absence of a current diagnosis
- Postvoid residual volume of 200 mL or greater, repeated twice [54,55]

Maintaining positive relationships with health care providers and specialists in the community who have expertise in UI is imperative.

Continence surgery is indicated when conservative treatment fails or the patient wants definitive treatment [26]. Surgery is the final management option for UI [11]. Palliative measures can be used for those patients whose UI is not curable [11].

## Summary

With the increasing number of older adults in the population, the office-based clinician can expect to see more people with UI. Continued UI

research is warranted, especially research that includes older adults who reside in the community and frail elderly women who are still living in the community [52]. Better outcome measures should be developed to assess the effectiveness of interventions for UI [65]. Reliance on information obtained from voiding dairies is used extensively, yet the reliability and validity for any specific instrument have not been tested with older adults. Hopelessness and spiritual distress, as precursors to health decline and how they impact on quality of life, should be studied in older adults with UI. Given the prevalence of UI, should it be considered a public health problem for which population-based interventions are used [66]?

What is known is that older adults demonstrate significant improvement in symptoms of UI when education, counseling, support, and encouragement in behavior management and lifestyle interventions are provided. When motivated and positive, even frail older adults experience improvement in the severity of urine leakage. Perhaps the single most important action that the office-based clinician can take is to start asking every older adult about UI and to follow with the basic approaches to evaluation and management described in this article.

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