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# Overactive bladder: Evaluation and management in primary care

## ABSTRACT

Primary care physicians must initiate a discussion of overactive bladder and urinary incontinence with their patients who are at risk. A stepwise approach to evaluation and diagnosis and the use of systematic evaluation and treatment algorithms suitable to the primary care setting will improve identification and effective management of the incontinent patient.

## KEY POINTS

Overactive bladder with urinary incontinence is common and imposes significant burdens on individuals, their families, and society and is detrimental to quality of life.

Women with overactive bladder are far more likely than men to have episodes of incontinence.

Identify and evaluate patients at risk on the basis of the medical history, urinary tract symptoms, physical examination, and laboratory tests.

Anticholinergic agents are the first choice for drug therapy. New extended-release formulations have improved tolerability.

Treatment that couples drug therapy with behavioral techniques aimed at modifying abnormal voiding patterns may provide the best results for many patients with incontinence due to overactive bladder.

\*Dr. Rosenberg has indicated that he is on the speakers' bureau of Watson, Pfizer, and Ortho-McNeil, is a consultant for Pfizer and Ortho-McNeil, and has received grant or research support from Ortho-McNeil. Dr. Dmochowski has indicated that he is a consultant for Watson and Indevus.

This paper discusses therapies that are experimental or are not approved by the US Food and Drug Administration for the use under discussion.

**O**VERACTIVE BLADDER—urinary urgency at least four times a month, usually with more than eight micturitions per day and nocturia, but without a clear pathologic or metabolic cause<sup>1</sup>—affects 16.9% of women and 16.0% of men in the United States,<sup>2</sup> or approximately 33.3 million adults.<sup>3</sup> More than half of women with overactive bladder have related episodes of urinary incontinence (vs less than one fourth of men).

Yet, as prevalent as it is, overactive bladder often goes untreated. The primary care practitioner should initiate a discussion of overactive bladder and urinary incontinence with patients at risk. A stepwise approach to evaluation and diagnosis and the use of systematic evaluation and treatment algorithms suitable to the primary care setting will improve identification and effective management of urinary incontinence.

This review summarizes the features, prevalence, and consequences of overactive bladder, as well as management strategies in primary care.

## BURDEN OF OVERACTIVE BLADDER

The International Continence Society<sup>1</sup> defines overactive bladder as a feeling of urinary urgency at least four times in the past month, with or without urge incontinence, usually with urinary frequency (more than eight micturitions per day) and nocturia, but without pathologic or metabolic factors that would explain the symptoms.<sup>1</sup> The symptoms suggest idiopathic detrusor overactivity.

## Economic burden

The estimated cost of urinary incontinence (including incontinence due to overactive

TABLE 1

**Major subtypes of urinary incontinence with associated symptoms and signs**

TYPE	DEFINITION	PATHOPHYSIOLOGY	SYMPTOMS AND SIGNS
<b>Urge</b>	Involuntary loss of urine associated with a strong sensation of urinary urgency	Involuntary bladder detrusor contractions Detrusor overactivity with impaired bladder contractility Involuntary sphincter relaxation	Loss of urine with an abrupt and strong desire to void, usually with loss of urine en route to bathroom Elevated postvoid residual volume Involuntary loss of urine, without symptoms
<b>Stress</b>	Urethral sphincter failure usually associated with increased intra-abdominal pressure	Urethral hypermobility due to anatomic changes or defects, such as fascial detachments (hypermobility) Intrinsic urethral sphincter deficiency; failure of the sphincter at rest	Small amount of urine loss during coughing, sneezing, laughing, or other physical activities Continuous leak at rest or with minimal exertion (postural changes)
<b>Mixed</b>	Combination of urge and stress incontinence	Combination of urge and stress features as above Common in women, especially older women	Combinations of urge and stress incontinence symptoms as above Patient finds one symptom (urge or stress) often more bothersome than another
<b>Overflow</b>	Bladder overdistention	Acontractile detrusor Hypotonic or underactive detrusor secondary to drugs, fecal impaction, diabetes, lower spinal cord injury, or disruption of the motor innervation of the detrusor muscle In men—secondary obstruction due to prostatic hyperplasia, prostatic cancer, or urethral stricture In women—obstruction due to severe genital prolapse or surgical overcorrection of urethral detachment	Variety of symptoms, including frequent or constant dribbling or urge or stress incontinence symptoms, as well as urgency and frequent urination

FROM FANTL JA, KASCHAK-NEWMAN D, COLLING J, ET AL. MANAGING ACUTE AND CHRONIC URINARY INCONTINENCE. CLINICAL PRACTICE GUIDELINE UPDATE. QUICK REFERENCE GUIDE FOR CLINICIANS, NO. 2, 1996 UPDATE. ROCKVILLE, MD: US DEPARTMENT OF HEALTH AND HUMAN SERVICES, PUBLIC HEALTH SERVICE, AGENCY FOR HEALTH CARE POLICY AND RESEARCH. AHCPR PUB. NO. 96-0686. NOVEMBER 1996

bladder) in 1995 for those age 65 and older was \$26.3 billion, or \$3,565 per person affected.<sup>4</sup> Most of the cost was for routine care (70%), followed by nursing home admissions (14%), treatment (9%), complications (6%), and diagnosis and assessment (1%).<sup>5</sup>

### Complications

The complications of overactive bladder and urinary incontinence include physical comorbidities and consequences of incontinence, such as skin ulceration, urinary tract infection, increased incidence of falls and fall-related fractures, and sleep disturbances.<sup>5,6</sup> Psychological and lifestyle-related consequences include

restricted mobility, impaired work productivity, social isolation, impaired sexual functioning, and depression, with a significant reduction in health-related quality of life.<sup>7-9</sup>

### ■ CLASSIFICATION OF INCONTINENCE

Because there are several types of incontinence (TABLE 1), requiring different treatments, the differential diagnosis is important.

**Urge incontinence**, or involuntary leakage accompanied or immediately preceded by urgency,<sup>1</sup> is most commonly associated with overactive bladder.

**Stress incontinence** is involuntary leak-

**TABLE 2****Key questions in evaluating urinary incontinence**

- Do you find yourself having the sudden urge to go, and barely making it to the bathroom?\*
- Do you have leaks or wetting incidents during either the day or the night?\*
- Have you started wearing panty liners or pads “just in case”?†
- Do you tend to wear dark clothes in case of wetting incidents?†
- Do you check out the bathroom location wherever you go?\*
- How frequently do you empty your bladder during the day?\*
- How many times do you get up to urinate after going to sleep? Is it the urge to urinate that wakes you?\*
- Do you ever leak urine during sex?\*
- Do you leak urine when you cough, laugh, lift something, or sneeze? How often?‡
- Do you ever find urine on your pads or clothes and are unaware of when the leakage occurred?†
- Does it hurt when you urinate?§
- Do you ever feel that you are unable to completely empty your bladder?§

\*Helps diagnose overactive bladder

†Assesses the severity of urine loss

‡Helps identify the symptom of stress urinary incontinence

§Identifies outlet obstruction, interstitial cystitis, or urinary tract infection

age associated with increased intra-abdominal pressure from mild physical stress that occurs with laughing, sneezing, coughing, or climbing stairs, and reflects malfunction of the urethral sphincter. Stress incontinence does not preclude concomitant overactive bladder and related urge incontinence.

**Mixed incontinence** involves the co-occurrence of urge and stress incontinence symptoms and is quite common.

**Overflow incontinence**, much more common in men, occurs when the bladder becomes overdistended as a result of outlet obstruction and may manifest itself as constant dribbling. Detrusor overactivity with low bladder compliance may accompany this condition.

## ■ EVALUATION AND DIAGNOSIS

### Identifying patients at risk

Only about 15% of people with overactive bladder seek treatment.<sup>10,11</sup> Even those with incontinent episodes may be reluctant to mention their symptoms out of embarrassment or the belief that leakage is a normal part of aging. The yearly physical is a good time to initiate discussion about this problem with patients who may be at risk for incontinence. A question as simple as “Are you having trouble with urine control, or any other problems with your bladder?” is a good point

of departure. **TABLE 2** presents additional questions to facilitate the diagnosis.<sup>12</sup>

Complaints about urinary symptoms should be followed up, even when they emerge in the context of evaluation of another condition.

### Risk factors

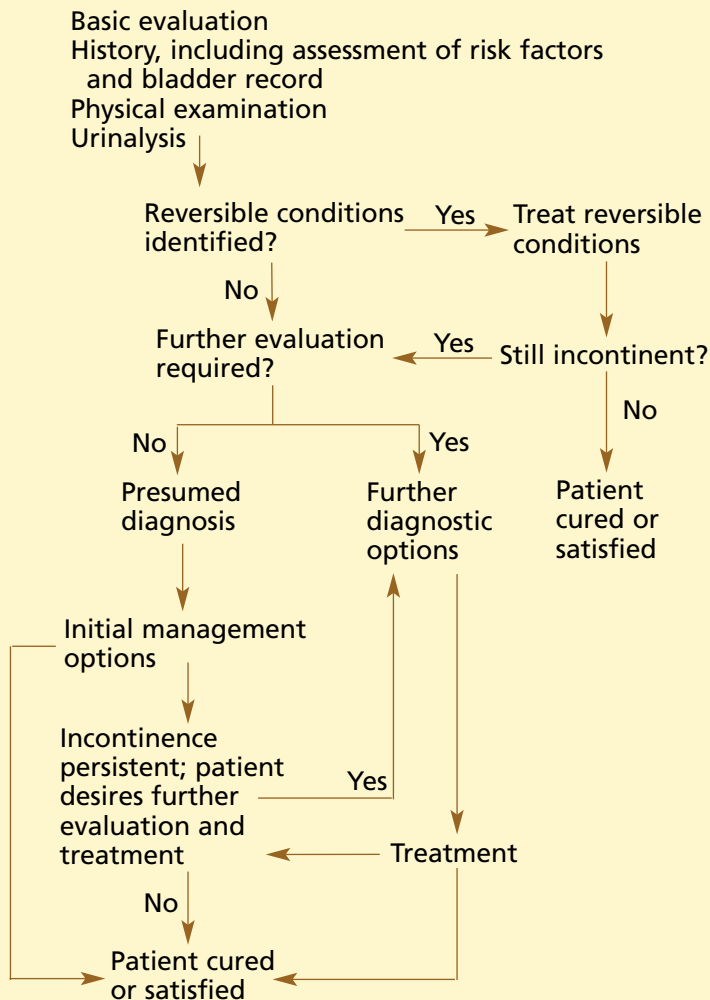
The most important risk factors for incontinence of any type include immobility (commonly associated with chronic degenerative disease), diminished cognitive status and delirium (caregivers should be questioned), stroke, diabetes, lumbar disk disease, fecal impaction, urinary tract infection, use of medications such as diuretics and hypnotics, multiple vaginal deliveries, hysterectomy, and vaginal or bladder surgery.<sup>12,13</sup>

In a large recent study, Hannestad and colleagues<sup>14</sup> found a strong relationship between increasing body mass index and the likelihood of female urinary incontinence. The relationship between obesity and severe urinary incontinence was particularly strong. Thus, one should be alert to the possibility of incontinence in older, obese patients.

Of interest was the lack of any clear-cut relationship between urinary incontinence and consumption of caffeinated beverages and alcohol, with the exception of tea. Daily tea drinkers had a slightly higher rate of incontinence.<sup>14</sup>

**Only about 15% of people with overactive bladder seek treatment**

## Algorithm for the evaluation and management of urinary incontinence



FANTL JA, KASCHAK-NEWMAN D, 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

FIGURE 1.

### EVALUATION AND DIAGNOSIS

An algorithmic approach to the evaluation of patients with overactive bladder and urinary incontinence (FIGURE 1) is helpful in the primary care setting, whether the examination is performed at the yearly physical or in response to a specific complaint by the patient.

An empirical diagnosis of overactive bladder can be made and therapy initiated on the

basis of the history and physical examination, assessment of the patient's lower urinary tract symptoms, and results of basic laboratory tests to rule out other conditions (ie, blood tests to check glucose, serum urea nitrogen, creatinine, and electrolytes).<sup>12,15,16</sup>

The physical examination should include checking the abdomen for scars, masses, or hernias, and checking the back for gross abnormalities such as surgical scars.

### Genitourinary examination

A genitourinary examination with the patient in the dorsal recumbent (lithotomy) position should be performed to evaluate mucosal integrity and urethral mobility. Vaginal atrophy should be noted.

**Pelvic floor muscle function.** When support of the bladder neck or proximal urethra is compromised by pelvic floor weakness, rotational descent (hypermobility) of these structures may be evident, especially with an increase in abdominal pressure induced by coughing or the Valsalva maneuver. Pelvic floor muscle function can be assessed by asking the patient to contract these muscles with the examiner's fingers in the vagina and rectum.

**Urethral mobility.** Stress urinary incontinence may accompany urethral hypermobility, and leakage may be evident during the Valsalva maneuver. One simple way to quantify urethral mobility in women is to insert a lubricated cotton swab into the urethra to the level of the urethrovesical junction. A deflection of the swab greater than 30° from the horizontal plane under conditions of maximal strain is considered indicative of hypermobility, although other factors such as vaginal prolapse may affect the outcome.<sup>17,18</sup>

**Vaginal wall herniation.** Check for herniation of the anterior and posterior vaginal walls by having the patient perform a Valsalva maneuver. In particular, protrusion of the bladder into the anterior vaginal wall, or cystocele, may be associated with voiding difficulties.<sup>19</sup> A cystocele of grade 2 (bladder descends to introitus with straining)<sup>20</sup> or greater may require evaluation by a specialist, as does any symptomatic prolapse.

**Nerve function.** A brief neurologic examination should be performed to detect any sen-



Name \_\_\_\_\_

Date \_\_\_\_\_

### Instructions

Place a check in the appropriate column next to the time you urinated in the toilet or when an incontinence episode occurred. Note the reason for the incontinence, and describe your liquid intake (for example, coffee, water) and estimate the amount (for example, one cup).

Time interval	Urinated in toilet	Had a small incontinence episode	Reason for incontinence episode	Type/amount of liquid intake
6–8 am				
8–10 am				
10 am–noon				
Noon–2 pm				
2–4 pm				
4–6 pm				
6–8 pm				
8–10 pm				
10 pm–midnight				
Overnight				
Number of pads used today		Number of episodes		
Comments				

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**FIGURE 2.** Sample form for voiding diary. Patients should complete diaries for 2 to 7 days.

sory or motor loss. This should include a rectal examination to evaluate sphincter tone and control.

### Urinalysis

Urinalysis can detect bacteria and glycosuria, both of which can cause or exacerbate urge incontinence. It can also identify hematuria, which may indicate nephrolithiasis or a more serious problem such as malignancy. The finding of hematuria necessitates further evaluation, often by a specialist.

### Keeping a voiding diary

Having the patient keep a urinary diary for 2 to 7 days before the office visit provides an objective assessment of lower urinary tract habits. Keeping a diary for even 1 or 2 days

may be helpful. The patient should record the amounts and types of fluid intake, the time and volume of each micturition, and episodes of incontinence with precipitating factors. A preprinted urinary voiding diary form can simplify record-keeping (FIGURE 2).<sup>21</sup> Urinating into a “voiding hat,” a hat-shaped receptacle inserted into the toilet, will help the patient quantify voided volume.

### Concerns when evaluating elderly patients

In elderly patients it is important to rule out functional incontinence secondary to impaired mobility and cognition or caused by narcotic or beta-adrenergic agonist drugs. Factors such as delirium or cognitive impairment may reduce the patient’s awareness of the need to void.<sup>15</sup> Impaired mobility may

TABLE 3

**Instructions for Kegel exercises**

Pull in or "squeeze" your pelvic muscles as if you were trying to stop urine flow or keep from passing gas

Hold the contraction for several seconds

Relax completely, then repeat

Perform at least 3 sets of 10 contractions every day

Keep exercising. Improved bladder control may not be evident for 3 months

compromise the patient's ability to reach the toilet in time.

**Referral for further evaluation**

In most cases, more specialized testing and assessment are not necessary. If initial therapy fails, it is then appropriate to refer a patient for advanced testing, which may include urodynamic studies.<sup>21</sup>

**■ BEHAVIOR THERAPY**

Nonpharmacologic treatment, ie, behavioral therapy, has long been considered the first line, based on its safety. The goal is to teach the patient to inhibit urgency and to improve voluntary control over bladder function. The techniques are often combined with lifestyle modifications aimed at avoiding exacerbating factors such as daily tea consumption and the use of drugs such as diuretics. If a diuretic is medically necessary, it is worth attempting to alleviate bothersome urinary side effects by changing the timing of the dose. In the severely obese, weight loss is recommended.

**Options**

Behavioral therapy for patients with overactive bladder and urge incontinence can include:

- Scheduled or prompted voiding, to increase the interval between voids
- Physical therapy, such as Kegel exercises or use of weighted vaginal cones, to help rehabilitate the musculature of the pelvic floor, and which can be performed at home (TABLE 3)
- Biofeedback to help the patient isolate the correct muscles to exercise.

A recent systematic review<sup>22</sup> concluded that we still lack sufficient data as to which behavioral therapy is best in the long term.<sup>22</sup>

**Obstacles to successful nondrug treatment**

Proper execution may be difficult for many patients, especially when training consists only of simple verbal instructions.<sup>23</sup> Given that these methods are labor-intensive and time-consuming, long-term compliance with therapy may also be an issue.<sup>24</sup> However, many patients benefit from these strategies, and their effectiveness in the treatment of urge incontinence may be enhanced by combining them with drug therapy.<sup>25–27</sup> The primary care physician is in an excellent position to use his or her knowledge of the patient's history and circumstances to individualize a therapeutic plan.

**■ DRUG THERAPY**

The drugs most commonly used to manage overactive bladder (TABLE 4) include anticholinergic agents and tricyclic antidepressants, particularly imipramine.<sup>28,29</sup>

**Anticholinergic drugs**

Anticholinergic agents such as oxybutynin chloride or tolterodine tartrate suppress or diminish the intensity of involuntary detrusor muscle contractions and are the first choice for overactive bladder and also the urge component in patients with mixed incontinence.<sup>30,31</sup>

A systematic review of anticholinergic therapies demonstrated significant improvements in several indices of bladder function.<sup>32</sup> Although there have been concerns that anticholinergic therapies may contribute to urinary retention by impairing normal bladder emptying, this is more likely to occur in men with prostatic enlargement<sup>33</sup> and is not a problem for most patients who have episodes of incontinence.<sup>34</sup>

The most common side effects of anticholinergic agents are constipation and dry mouth.

**Extended-release vs immediate-release**

The newer extended-release anticholinergic





drugs are better tolerated than immediate-release formulations. A randomized, controlled, fixed-dose trial compared the efficacy and tolerability of extended-release (ER) formulations of oxybutynin chloride 10 mg daily and long-acting tolterodine tartrate 4 mg daily in 790 women with overactive bladder.<sup>35</sup>

At 12 weeks, all outcome measures showed significant improvement compared with baseline in both treatment groups. However, at 12 weeks, women taking oxybutynin reported fewer micturations per week vs those taking tolterodine ER (66.4 vs 71.1 times per week,  $P = .003$ ). In addition, more of them reported that they had no incontinent episodes of any kind (23% vs 16.8%, respectively,  $P = .03$ ).

The adverse effect profiles were similar for both groups, although mild dryness of the mouth was reported significantly more frequently by patients treated with oxybutynin ER.<sup>35</sup> Treatments were well tolerated, as indicated by the low frequency of discontinuation, which was similar for both groups.

An additional and important benefit of treatment with oxybutynin ER is dosing flexibility: the dosing options range from 5 mg to as high as 30 mg daily. An even higher rate of complete continence (41%) has been observed in a study that permitted patients to select the dose of oxybutynin ER that achieved the best balance between efficacy and tolerability.<sup>36</sup> In contrast, tolterodine ER is approved at only two doses (2 mg and 4 mg daily), and data regarding the efficacy of the 2-mg dose are limited.<sup>37</sup>

These findings suggest that oxybutynin ER may be a good first choice for drug therapy in patients with overactive bladder whose key complaint is incontinence.

Oxybutynin has recently become available as a transdermal patch. This system delivers oxybutynin 3.9 mg daily. The patch is changed twice a week.<sup>38</sup> Transdermal oxybutynin appears to be as effective as oral immediate-release oxybutynin<sup>39</sup> and extended-release tolterodine<sup>40</sup> in reducing episodes of incontinence. It has fewer anticholinergic side effects, and it is more tolerable because it avoids gastrointestinal and hepatic first-

**TABLE 4**

### Drugs used to treat overactive bladder

**Imipramine** 25–75 mg once daily\*

**Hyoscyamine sulfate** 0.125 mg four times daily  
0.375 mg twice daily

**Oxybutynin chloride** 5 mg two or three times daily

**Oxybutynin ER** (extended-release) 10 mg once daily (range 5–30 mg)

**Tolterodine tartrate** 2 mg twice daily

**Tolterodine ER** 4 mg once daily (range 2–4 mg)

**Transdermal oxybutynin** 3.9 mg daily; patch applied twice weekly

\*All drugs listed here are anticholinergics, except for the tricyclic antidepressant imipramine, which is not approved by the US Food and Drug Administration for this use

pass metabolism and because it reduces the formation of a metabolite thought to be primarily responsible for anticholinergic adverse events associated with oxybutynin.<sup>40</sup> Disadvantages include local skin irritation, possible long-term compliance problems due to irregularity of application, and lack of the dosing flexibility available with oral extended-release oxybutynin ER.

### Tricyclics and other options

Although controlled studies are lacking, there is some evidence that the stress component of mixed incontinence may respond to the tricyclic antidepressant imipramine,<sup>41</sup> or to an alpha-adrenergic agonist such as pseudoephedrine, which increases outlet resistance.<sup>42</sup> These drugs may work synergistically with anticholinergic therapy in patients with mixed incontinence.

If one symptom appears to predominate, treatment should be geared to that symptom.<sup>12</sup> Neither imipramine nor pseudoephedrine is FDA-approved for treating overactive bladder or stress urinary incontinence.

Some practitioners prescribe estrogen therapy for urge incontinence associated with vaginal atrophy. However, we lack good data to support any particular dosing regimen, route of administration, or treatment duration.<sup>43</sup>





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