גישה למטופלת צעירה עם שלפוחית שתן רגיזה

Dolzanski Eliyau, MD

Case

מטופלת בשם גיל, בת 23, פרופיל 97. עובדת בעבודה משרדית .

- אשקנזיה, שוללת תרופות קבוע. שוללת חבלות קשות או היסטוריה . תאונת דרכים
- שוללת ניתוחים והריונות
- מתלוננת על דחיפות במתן שתן בכמות מספר טיפות בזמן שיעול או אימון גופני במשך שנתיים.
- שוללת צריבת במתן שתן
- מציינת עליה במתן שתן בזמן שכיס השתן ריק

- בדיקה פיזיקלית תקינה
- בדיקת שתן כללית תקין, תרבית שתן תקין.
- STD תקין
- נבדקה אצל רופא נשים – 23.03.19 – בדיקה תקינה

What is it?

URINARY INCONTINENCE

Neurogenic Bladder

ANXIETY

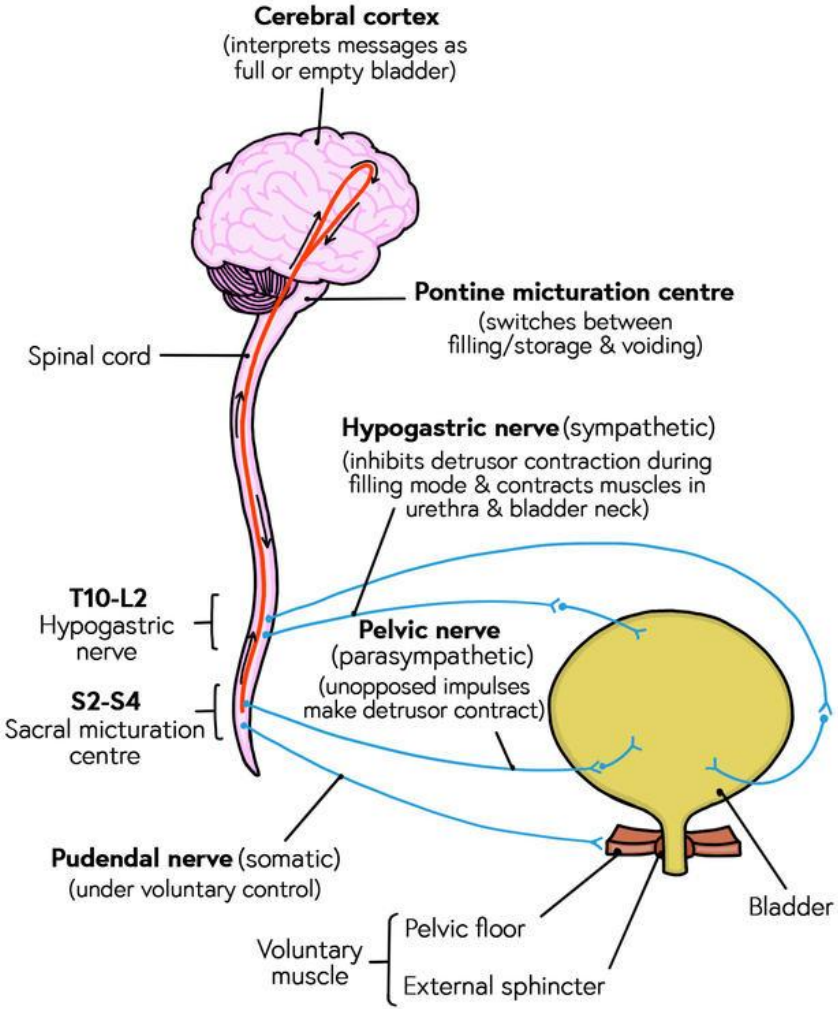
Nicturia

Enuresis

Definitions

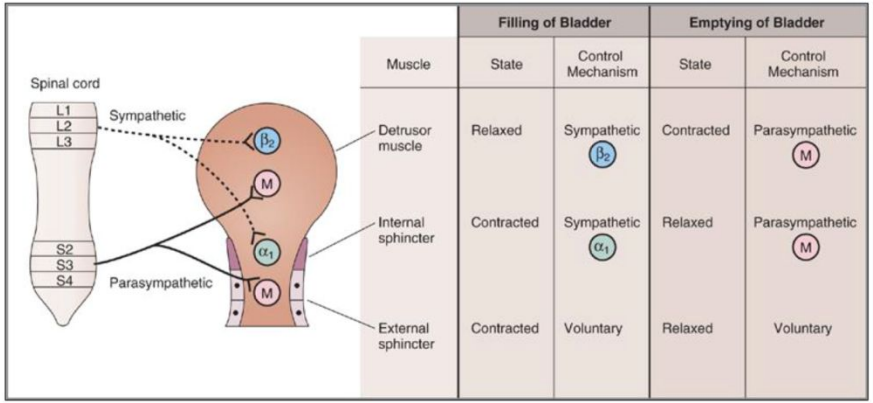
- **Dysuria** is a symptom of pain, discomfort, or burning when urinating
- **Nocturia** is “the complaint that the individual has to wake at night one or more times for voiding (*i.e. to urinate*).”
- Enuresis - is a repeated inability to control urination
- **URINARY INCONTINENCE -** any uncontrolled leakage of urine
- Neurogenic bladder is a condition that causes problems with bladder control

- Guidelines for diagnosis and treatment of urinary incontinence were published in 2012 by the American Urological Association



Costanzo, L., Physiology, Fig. 2-4, p 55

Example: Autonomic control of bladder function

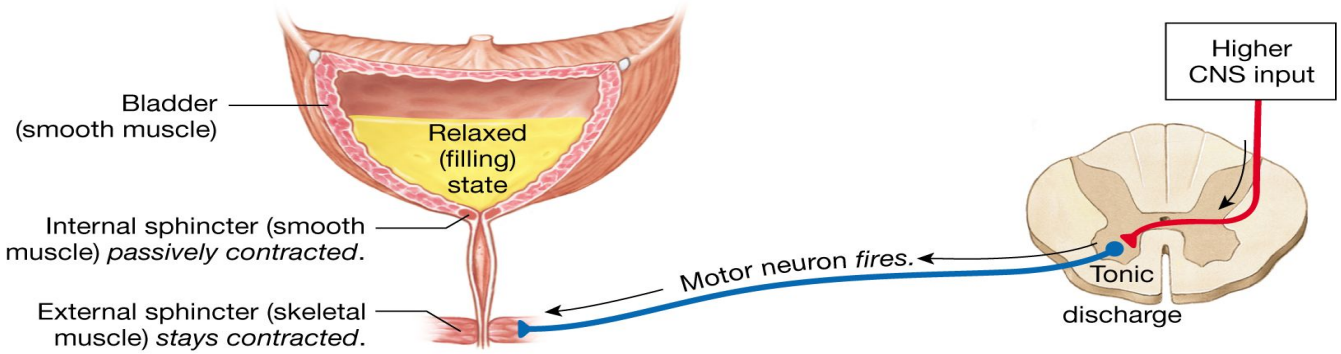


Muscle	Filling of Bladder: State	Filling of Bladder: Control Mechanism	Emptying of Bladder: State	Emptying of Bladder: Control Mechanism
Detrusor muscle	Relaxed	Sympathetic (β2)	Contracted	Parasympathetic (M)
Internal sphincter	Contracted	Sympathetic (α1)	Relaxed	Parasympathetic (M)
External sphincter	Contracted	Voluntary	Relaxed	Voluntary

During filling of the bladder, sympathetic control predominates, causing relaxation of the detrusor muscle and contraction of the internal sphincter. During micturition, parasympathetic control predominates, causing contraction of the detrusor muscle and relaxation of the internal sphincter. Dashed lines represent sympathetic innervation; solid lines represent parasympathetic innervation. α1, Adrenoreceptor in internal sphincter; β2, adrenoreceptor in detrusor muscle; L2-L3, lumbar segments; M, muscarinic cholinoreceptor in detrusor muscle and internal sphincter; S2-S4, sacral segments.

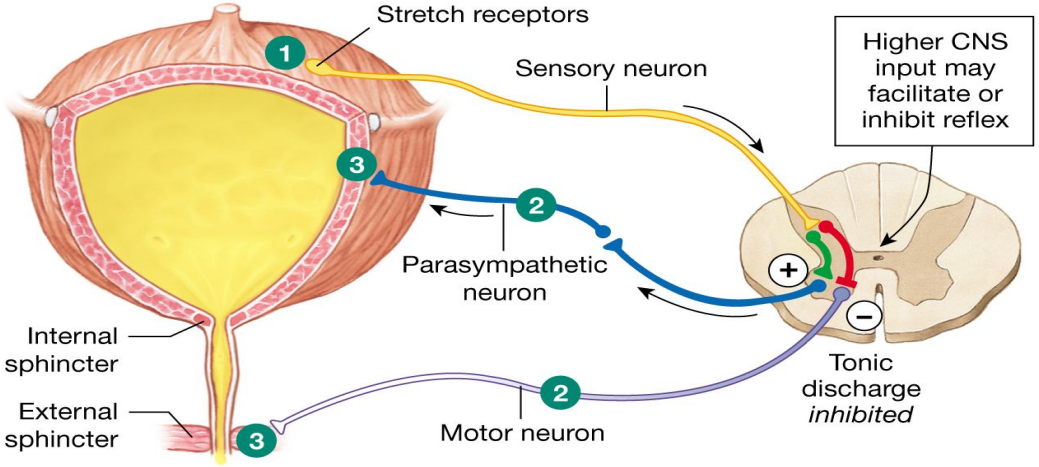
Micturition is a spinal reflex subject to higher brain control.

(a) Bladder at Rest



(b) Micturition

1. Stretch receptors fire.
2. Parasympathetic neurons fire. Motor neurons stop firing.
3. Smooth muscle contracts. Internal sphincter is passively pulled open. External sphincter relaxes.



AMERICAN FAMILY PHYSICIAN

Diagnosis of Urinary Incontinence

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Am Fam Physician. 2013 Apr 15;87(8):543-550.

- **Epidemiology**

- Urinary incontinence affects millions of persons, and the prevalence increases with age. Roughly 20 million American women and 6 million American men experience urinary incontinence at some time in their lives.[1]

- Although women report incontinence more often than men,[2,3] after 80 years of age, both sexes are affected equally.[3] Women commonly experience stress or urge incontinence (i.e., overactive bladder), or a combination of the two, with approximately equal frequency.[4] In men, prostate problems, which lead to overflow incontinence, and their treatments, which lead to stress incontinence, are the most common causes.[5]

- **1.** Fantl AJ. Urinary incontinence in adults: acute and chronic management/urinary incontinence in adults. Guideline Panel Update. Rockville, Md.: U.S. Department of Health and Human Services, 1996; Agency for Health Care Policy and Research; Clinical Practice Guideline Number 2: AHCPR publication no. 96-0682.

- **2.** Holroyd-Leduc JM, Tannenbaum C, Thorpe KE, Straus SE. What type of urinary incontinence does this woman have? *JAMA*. 2008;299(12):1446–1456.

- **3.** Gibbs CF, Johnson TM II, Ouslander JG. Office management of geriatric urinary incontinence. *Am J Med*. 2007;120(3):211–220.

- **4.** Thom D. Variation in estimates of urinary incontinence prevalence in the community: effects of differences in definition, population characteristics, and study type. *J Am Geriatr Soc*. 1998;46(4):473–480.

- **5.** DuBeau CE, Kuchel GA, Johnson T II, Palmer MH, Wagg A; Fourth International Consultation on Incontinence. Incontinence in the frail elderly: report from the 4th International Consultation on Incontinence. *Neurourol Urodyn*. 2010;29(1):165–178.

- **Classification**
- Incontinence can be classified as
- transient - spontaneously reverses after the underlying cause is resolved
- chronic - classified into five types:
- - stress,
- - urge,
- - mixed,
- - overflow,
- - functional
- Characteristics of each type are shown in *Table 1*

Table 1. Types of Chronic Urinary Incontinence

Type	*Prevalence*	*Pathophysiology*	*Symptoms*	*History*	*Etiology*
Stress	24 to 45 percent in women older than 30 years	Sphincter weakness (urethral sphincter and/or pelvic floor weakness)	Loss of small amount of urine during physical activity or intra-abdominal pressure (coughing, sneezing jumping, lifting, exercise); can occur with minimal activity, such as walking or rising from a chair	Patient usually can predict which activities will cause leakage	Childbirth and obesity in women; may occur after prostatectomy in men
Urge	9 percent in women 40 to 44 years of age 31 percent in women older than 75 years 42 percent in men older than 75 years	Detrusor overactivity (uninhibited bladder contractions) caused by irritation within the bladder or loss of inhibitory neurologic control of bladder contractions	Loss of urine preceded by a sudden and severe desire to pass urine; patient typically loses urine on the way to the toilet Bladder contractions may also be stimulated by a change in body position (i.e., from supine to upright) or with sensory stimulation (e.g., running water, hand washing, cold weather, arriving at the front door)	Volume of urine loss is variable, ranging from minimal to flooding (if entire bladder volume is emptied) Frequency and nocturia are common Symptoms of urgency may also occur without urinary loss, which is known as overactive bladder	Bladder irritation caused by cystitis, prostatitis, atrophic vaginitis, bladder diverticuli, prior pelvic radiation therapy Loss of neurologic control caused by stroke, dementia, spinal cord injury, Parkinson disease
Mixed	20 to 30 percent of patients with chronic incontinence	Combination of stress and urge incontinence	Involuntary leakage associated with symptoms of urgency; loss of urine with exertion, effort, sneezing, or coughing	Patient should determine which symptom is predominant and most bothersome	Combination of the etiologies for stress and urge incontinence
Overflow (urinary retention)	5 percent of patients with chronic incontinence	Overdistention of the bladder caused by impaired detrusor contractility or bladder outlet obstruction; leads to urine leakage by overflow	Dribbling of urine, inability to empty bladder, urinary hesitancy, urine loss without a recognizable urge or sensation of fullness/pressure in lower abdomen	Does not usually occur unless bladder emptying is poor (postvoid residual volumes > 200 to 300 mL)	Anticholinergic medications, benign prostatic hyperplasia, pelvic organ prolapse, diabetes mellitus, multiple sclerosis, spinal cord injuries
Functional	Uncertain	Variable leakage of urine, usually caused by environmental or physical barriers to toileting	Caused by nongenitourinary factors, such as cognitive or physical impairments that result in the patient's inability to void independently	Impaired physical function (immobility) and/or impaired cognition Possible lower urinary tract deficits	Severe dementia, physical frailty or inability to ambulate, mental health disorder (e.g., depression)

Information from references 9, and 12 through 14.

	urge	stress	reflex	overflow	functional
שלפוחית	חוסר יציבות או היפראקטיביות/התכווצות יתר של הדטרוזור	אינקומפוטנטיות של הספינקטר חולשת שרירי האגן	הפרעה לתחושה ולקורדינציה של הדטרוזור והספינקטר (משנית להיעדר שליטה מרכזית או פגיעה בחוט השדרה מעל החלק הסקראלי) המובילה ל- ספסטיות ואקטיביות יתר של הדטרוזור ו – functional outlet obstruction	היפוטוניה/אס"ק של הדטרוזור השלפוחית הופכת להיפוטונית ומורחבת (לעיתים שלפוחית מורחבת ניתנת למישוש) התרוקנות מורכבת בעיקר משפיכה של ה- overflow	חוסר יכולת להגיע לשירותים – זמן לצורך התרוקנות
שלפוחית עצבית	*הזדקנות* ***היעדר אינהיביציה של התכווצות ע"י הקורטקס:*** שבץ, אלצהיימר, גידול מוחי, פרקינסון. ***אירטציה של השלפוחית:*** טריגוניטיס, אינטרסטיציאל נפריטיס, פיברוזיס לאחר הקרנה, היפרטרופיה של הדטרוזור עקב חסימה ממושכת (סטריקטוריה או BPH)	הזדקנות נשים לידות וגינליות קשות או מרובות, פציעה פריאנלית ישירה מחסור באסטרוגן בנשים, פרוסטטקטומי בגברים דנרבציה חלקית שמפחיתה את טונוס הספינקטר	**סכרת – הכי שכיח** **פגיעה בחוט השדרה –** הכי שכיח MS טבס דורסליס לחץ אינטרנזי/אקסטרנזי על חוט חוט השדרה (גידול, הרניאצית דיסק, ספיינל סטנוזיס)	**חסימה ממושכת של ה- outlet** – BPH **פגיעה ב- LMN** או **תחושה פגועה** - פגיעה בעמו"ש סקראלי או נוירופיה פריפרית - **סכרת**, חסר ויטמין בי 12 (תרופות אנטיכולינרגיות יכולות להחמיר את מצב)	נכות פיזית או מנטלית תרופות דסטביות (מחמירות)

	urge	stress	reflex	overflow	functional
סימפטומים		בריחת שתן בעת מאמץ (שיעול, צחוק, התעטשות, הרמת משא)	אובדן תחושת הצורך להשתין	סימפ' חסימתיים: זרם איטי או מופרע, זרם מהסס צורך במאמץ על מנת להשתין	
	דחיפות (אזהרה כמה רגעים לפני)		דחיפות (אין סימני אזהרה)		
	תכיפות		תכיפות	תכיפות- בייחוד בלילה, לאחר העמסת נוזלים ובנטילת משתנים.	
	נפח שתן בינוני-גדול	אובדן נפח שתן קטן-בינוני	נפח שתן בינוני	נפחים קטנים בתדירות גבוהה	
	הרטבה לילית	לעיתים רחוקות יש דליפת לילה	סימפט שווים ביום ובלילה	בעיקר סימפטומים ליליים	
	שארית קטנה לאחר התרוקנות	שארית שתן קטנה לאחר התרוקנות		שארית גדולה לאחר ההשתנה	
	אין פגיעה ברפלקסים	אין פגיעה ברפלקסים	אין פגיעה ברפלקסים סקרליים.	אובדן רפלקסים אם הפגיעה נוירולוגית	
	תחושה שמורה	תחושה שמורה	אובדן תחושה פריאנלית	אובדן תחושה אם הפגיעה נוירולוגית	

Algorithm for the diagnosis of urinary incontinence

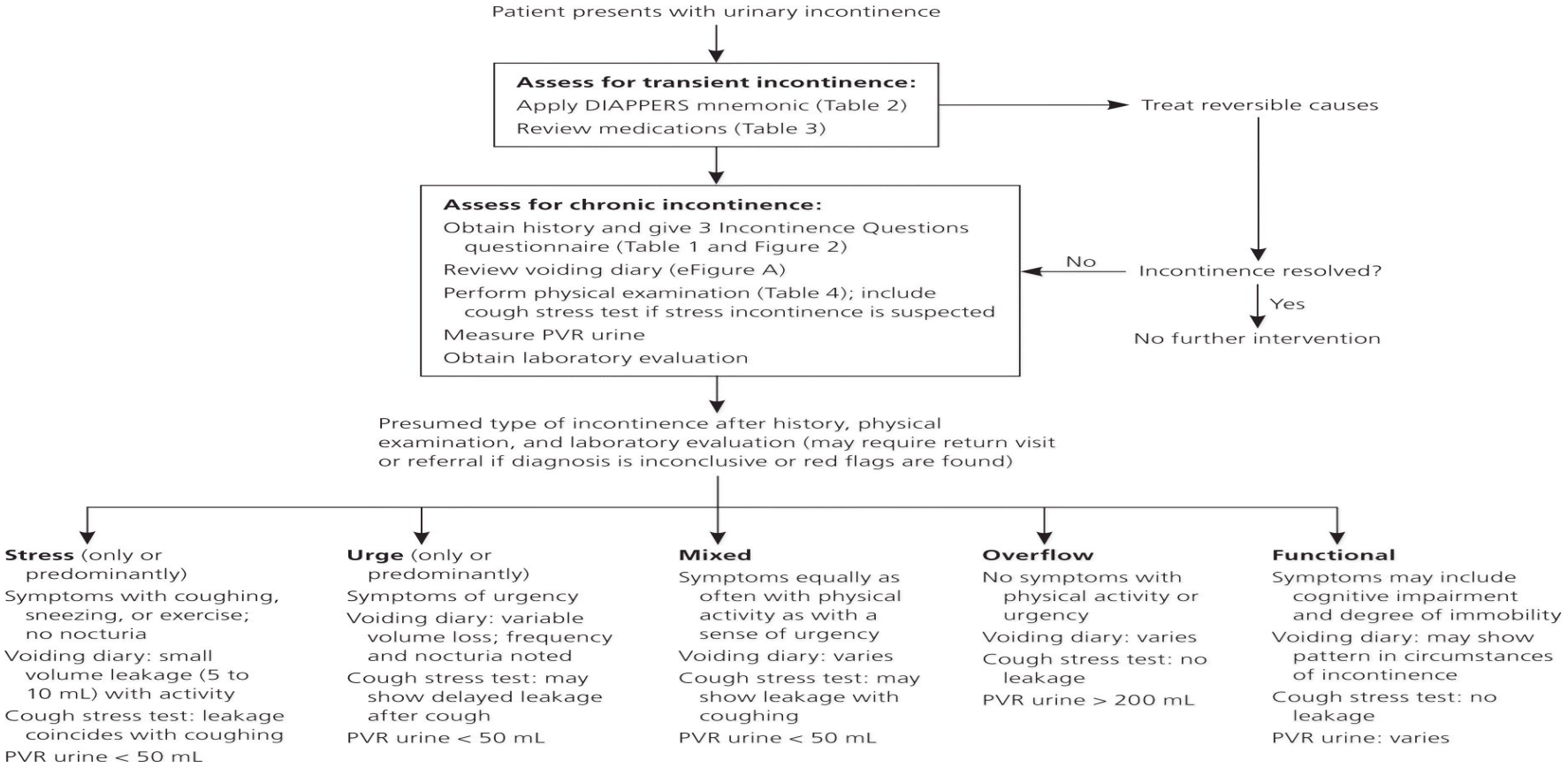

Table 2.

Differential Diagnosis of Transient Causes of Urinary Incontinence (DIAPPERS Mnemonic)

Delirium

Infection (acute urinary tract infection)

Atrophic vaginitis

Pharmaceuticals (Table 3)

Psychological disorder, especially depression

Excessive urine output (e.g., hyperglycemia)

Reduced mobility (i.e., functional incontinence) or reversible (e.g., drug-induced) urinary retention

Stool impaction

Table 3. Common Medications and Substances That Can Cause Urinary Incontinence

Class	*Mechanism of effect*
Antihypertensives	
Alpha-adrenergic antagonists	Decrease sphincter tone, causing stress incontinence
Angiotensin-converting enzyme inhibitors	May increase coughing, causing stress incontinence
Calcium channel blockers	Relax the bladder, causing retention and overflow incontinence
Diuretics	High urine flow that leads to bladder contractions, causing urge incontinence
Pain relievers	
Cyclooxygenase-2 selective nonsteroidal anti-inflammatory drugs	Increase fluid retention, causing nocturnal diuresis and functional incontinence
Opioids	Relax the bladder, causing fecal impaction, sedation, retention, and overflow incontinence
Skeletal muscle relaxants	Inhibit bladder contractions, causing sedation, retention, and overflow incontinence
Psychotherapeutics	
Antidepressants, antiparkinsonian agents, antipsychotics	Inhibit bladder contractions, causing retention and overflow incontinence
Sedatives and hypnotics	Lead to sedation and impaired cognition, causing functional or overflow incontinence
Others	
Alcohol	Leads to diuretic effect and depressed central inhibition, causing urge incontinence, overflow incontinence, or both
Antihistamines, anticholinergics	Inhibit bladder contractions, causing sedation, retention, and overflow incontinence
Medications for urinary urgency	Inhibit bladder contractions, causing sedation, retention, and overflow incontinence
Thiazolidinediones	Increase fluid retention, causing nocturnal diuresis and functional incontinence

Information from references 6 and 13.

Chronic Urinary Incontinence

The 3 Incontinence Questions is a reliable questionnaire available free of charge- It asks three multiple choice questions about if, when, and how often patients experience urine leakage.

1. During the last three months, have you leaked urine (even a small amount)?

☐ Yes ☐ No → *Questionnaire completed*

2. During the last three months, did you leak urine:
(Check all that apply)

☐ a. When you were performing some physical activity, such as coughing, sneezing, lifting, or exercise?

☐ b. When you had the urge or the feeling that you needed to empty your bladder, but you could not get to the toilet fast enough?

☐ c. Without physical activity and without a sense of urgency?

3. During the last three months, did you leak urine *most often*:
(Check only one)

☐ a. When you were performing some physical activity, such as coughing, sneezing, lifting, or exercise?

☐ b. When you had the urge or the feeling that you needed to empty your bladder, but you could not get to the toilet fast enough?

☐ c. Without physical activity and without a sense of urgency?

☐ d. About equally as often with physical activity as with a sense of urgency?

Definitions of type of urinary incontinence are based on responses to question 3:

Response to question 3	Type of incontinence
a. Most often with physical activity	Stress only or stress predominant
b. Most often with the urge to empty the bladder	Urge only or urge predominant
c. Without physical activity or sense of urgency	Other cause only or other cause predominant
d. About equally with physical activity and sense of urgency	Mixed

- **ASSESSMENT OF MEDICAL PROBLEMS**

- The patient history should include an assessment of other medical conditions and symptoms, with their temporal relationship to urinary incontinence.

- a history of bowel, back, gynecologic, or bladder surgery could affect the anatomy and innervation of the lower urinary tract, leading to incontinence.

- Gynecologic history can assess estrogen status; estrogen deficiency may result in atrophic vaginitis or atrophic urethritis, a potentially reversible cause of urinary incontinence.

- about other comorbidities, such as chronic obstructive pulmonary disease (chronic cough can result in stress incontinence); cardiovascular disease (volume status or diuretic therapy can increase urine flow and cause incontinence in patients with an overactive bladder); neurologic conditions (central nervous system dysfunction can impair inhibition of detrusor contractions, or lead to denervation of the detrusor muscle with resultant retention and overflow incontinence); and musculoskeletal conditions (impaired mobility can cause functional incontinence).

- **ASSESSMENT OF QUALITY OF LIFE**

- Patients should be asked about the effects of incontinence on work, activities of daily living, sleep, sexual activity, social interactions, interpersonal relationships, and general perception of health and quality of life.

- **A voiding diary**

- A voiding diary an also serve as a baseline for comparing the severity of incontinence after treatment, thereby assessing the effectiveness of management. A three-day diary is as informative as a longer-term assessment

- **PHYSICAL EXAMINATION**

- The physical examination can identify anatomic abnormalities or transient causes that may not have been considered after applying the DIAPPERS mnemonic. Findings associated with incontinence are listed in *Table 4*

Table 4. Physical Examination Findings Associated with Urinary Incontinence

Organ system	*Finding or comorbidity*	*Mechanism of effect*	*Type of incontinence*
Abdominal	Masses	Chronic outflow obstruction from detrusor overactivity	Overflow
	Palpable bladder	Detrusor overactivity from a neurologic or obstructive cause	Overflow
Cardiac	Arteriovascular disease	Detrusor underactivity or areflexia from ischemic myopathy or neuropathy	Urge
	Volume overload (congestive heart failure)	Fluid excretion shift toward increased volume of urine	Urge
Musculoskeletal	Mobility restriction, pain, arthritis	Postponement of voiding and/or detrusor overactivity	Urge, functional, or both
Neurologic	Cerebral vascular accident, normal pressure hydrocephalus	Detrusor overactivity from central cause; failure to recognize need to void or to use toilet; environmental barriers	Urge, functional, or both
	Impaired mental status (delirium), dementia	Failure to recognize need to void or to use toilet; environmental barriers	Urge, functional, or both
	Spinal stenosis	Detrusor underactivity; damage to detrusor upper motor neurons (cervical stenosis) or areflexia (lumbar stenosis)	Overflow
Pelvic	Enlarged prostate, pelvic mass	Chronic outflow obstruction from detrusor overactivity	Overflow
	Following prostatectomy	Sphincter and/or nerve damage	Stress
	Vulvar or vaginal atrophy	Diminished estrogen effects on periurethral tissues can contribute to inflammation-induced detrusor overactivity	Stress, urge, or mixed
	Weak pelvic floor muscles	Denervation of pelvic floor and/or striated sphincter trauma	Stress
Pulmonary	Chronic cough from chronic obstructive pulmonary disease or bronchitis	Increase in intra-abdominal pressure overcomes sphincter closure mechanisms in the absence of a bladder contraction	Stress
Rectal	Fissures may indicate chronic constipation from fecal impaction	Intravesical pressure exceeds maximum urethral pressure, detrusor underactivity	Overflow
	Reduced or absent anal sphincter tone; peripheral neuropathy caused by diabetes mellitus, alcoholism	Detrusor underactivity	Overflow

Information from references 6, 11, and 16.

- **COUGH STRESS TEST**

- If stress incontinence is suspected, the cough stress test is the most reliable clinical assessment for confirming the diagnosis.

- With a full bladder (although not to the point of abrupt urination), the patient should be in the lithotomy position. Women should separate the labia. The patient should relax the pelvic muscles and forcibly cough once.If the test is initially performed supine and no leakage is observed, the test should be repeated in the standing position. The patient stands while wearing a pad or with his or her legs shoulder-width apart over a cloth or paper sheet on the floor to see the leakage. If urine leaks with the onset of the cough and terminates with its cessation, the test is positive for stress incontinence.

- A negative test shows no leak or a delayed leak by five to 15 seconds, and rules out most cases of stress incontinence.[36] False-negative results may occur if a patient's bladder is empty, if the cough is not forceful enough, if the pelvic floor muscles contract to override urethral sphincter incompetence, or if severe prolapse masks the leakage.

- **LABORATORY TESTS**
- a serum creatinine level - may be elevated if there is urinary retention (overflow bladder) caused by bladder outlet obstruction or denervation of the detrusor.
- urinalysis - exclude acute urinary tract infection as a cause of reversible incontinence, a urinalysis should be obtained to rule out hematuria, proteinuria, and glycosuria, any of which require a diagnostic workup.

- **POSTVOID RESIDUAL URINE**

- A measurement of postvoid residual (PVR) urine is recommended to diagnose overflow incontinence.Although overflow incontinence is present in only a minority of patients with incontinence, it is important to exclude this diagnosis because chronic failure of bladder emptying can lead to hydronephrosis and irreversibly impaired renal function. Overflow is more common in older persons, but it can also occur in young adults as a manifestation of neurologic disorders, such as multiple sclerosis. Expert opinion recommends that PVR urine always be measured in patients who may have overflow incontinence, and some experts recommend measuring PVR urine when another cause is not obvious.[5]

- To measure PVR urine, the patient empties the bladder, and then the amount of urine remaining in the bladder is measured. This can be performed with a handheld ultrasound unit, which is the preferred method if available. The alternative is in-and-out urethral catheterization.[28] In-and-out catheterization requires training to decrease the risk of infection and urethral trauma, which is important in men with significant prostate enlargement. If PVR urine cannot be measured in the office setting and if overflow incontinence is strongly suspected, further urodynamic evaluation is warranted.[10,12]

- A PVR urine measurement less than 50 mL is negative for overflow; 100 to 200 mL is considered indeterminate (and the measurement should be repeated on another occasion); and greater than 200 mL is suggestive of over-flow as a main contributing factor of incontinence.

- If the cause of urinary incontinence is unclear after the assessment, referral to a urologist or urogynecologist is recommended!!!
- **Indications for Urologic Referral**
- Incontinence associated with relapse or recurrent symptomatic urinary tract infections
- Incontinence with new-onset neurologic symptoms, muscle weakness, or both
- Marked prostate enlargement
- Pelvic organ prolapsed past the introitus
- Pelvic pain associated with incontinence
- Persistent hematuria
- Persistent proteinuria
- Postvoid residual volume > 200 mL
- Previous pelvic surgery or radiation
- Uncertain diagnosis

- Routine referral for urodynamic testing is not recommended, even if a patient is a candidate for surgical treatment of stress incontinence. Studies show that routine preoperative urodynamic testing in patients who have uncomplicated stress incontinence does not result in better surgical outcomes.

- Nager CW, Brubaker L, Litman HJ, et al.; Urinary Incontinence Treatment Network. A randomized trial of urodynamic testing before stress-incontinence surgery. *N Engl J Med*. 2012;366(21):1987–1997.

	urge	stress	reflex	overflow	functional
טיפול התנהגותי	יעיל לפחות כמו טיפול תרופתי אם לא יותר : השתנה לפי זמנים קבועים + יומן השתנה **תרגילי קגל** **אימון השלפוחית**: הדחקת הרצון להשתין ע"י כיווץ שרירי האגן והרפייה איטית או ע"י פעילויות מסיחות דעת והארכת הזמנים בין ההשתנות	התעמלות לחיזוק שרירים פריאנליים, **קגל,** **אימון השלפוחית** וביופידבק ירידה במשקל	**קטטריזציה**	לחסימה אקוטית/כרונית **קטטריזציה** **Crede מנובר** – לחץ חיצוני על הסופרפיביק או וולסלבה בעת ההתרוקנות	סיר לילה חיתול קטטר

Table 3. Common Behavioral Therapy for Urinary Incontinence

Intervention	*Description*	*Indication*	*Procedure*
Bladder training	Retrain pelvic mechanisms and the central nervous system to inhibit urge sensation between voids	Urge incontinence in patients without cognitive impairment	Instruct the patient as follows: Remain stationary when urgency occurs Concentrate on decreasing the sense of urgency through rapid successive pelvic muscle contractions, mental distraction (e.g., mathematical problem solving), and relaxation techniques (e.g., deep breathing) After controlling the sense of urgency, walk slowly to the bathroom and void After mastering this, attempt to extend the time that urination can be postponed; aim to extend the interval by 30 to 60 minutes Continue this process until voiding occurs every three to four hours without incontinence
Habit training	Individualized toileting scheduled to preempt involuntary voiding	Urge incontinence in patients with cognitive impairment	Check for wetness at intervals to determine when the patient urinates Bring the patient to the toilet, or provide commode or bedpan at intervals slightly shorter than the patient's normal voiding interval
Pelvic floor muscle exercises	Muscle contraction and relaxation to reduce incontinence by producing urethral closure and decreasing central nervous system stimulation of detrusor muscle	Urge and/or stress incontinence in patients without cognitive impairment	Assist the patient in isolating pelvic floor muscles by instructing her to hold urine during urination and to feel pelvic muscle floor contraction (while avoiding buttock, abdomen, or thigh muscle contraction) Ask the patient to perform three sets of eight to 10 contractions (held for six to eight seconds) three to four times weekly; extend contraction time to 10 seconds, if possible Continue regimen for at least 15 to 20 weeks
Prompted voiding	Reminder to urinate on a regular schedule	Urge incontinence in patients with cognitive impairment	Remind the patient to use the toilet at regular intervals, ideally timed to the patient's normal voiding intervals
Scheduled voiding	Voiding on a regular schedule	Urge incontinence in patients with cognitive impairment	Bring the patient to the toilet at regular intervals (e.g., every two to three hours)

Information from reference 13.

- **Pelvic floor muscle (Kegel) exercises** — Consistent with guidelines from the American College of Physicians, we suggest pelvic floor muscle (Kegel) exercises for women with urinary incontinence, particularly stress urinary incontinence [24]. Pelvic muscle (Kegel) exercises strengthen the pelvic floor musculature to provide a backboard for the urethra to compress on and to reflexively inhibit detrusor contractions.

- **Initial instructions** — These exercises can be effective for both stress and urgency incontinence [25] (see "Patient education: Pelvic floor muscle exercises (Beyond the Basics)"). The basic regimen consists of three sets of 8 to 12 contractions sustained for 8 to 10 seconds each, performed three times a day. Patients should try to do this every day and continue for at least 15 to 20 weeks

- **PHARMACOLOGIC THERAPY**

- Medications can be used to treat urge and mixed incontinence if behavioral therapy is unsuccessful. Cure is rarely achieved solely with drug therapy, however, and in many studies improvement over placebo is modest. Combination therapy with medication and behavioral treatments is more effective than either modality alone.

- *Anticholinergic Drugs*. Anticholinergics are the preferred agents for the treatment of urge incontinence. They reduce detrusor overactivity by antagonizing M2/M3 muscarinic receptors in the bladder

Table 4. Anticholinergic Drugs for Treatment of Urge Incontinence

Drug	*Formulations*	*Unique factors*
Nonselective agents		
Fesoterodine (Toviaz)	Extended release	High drug levels in persons with poor metabolism of cytochrome P450 2D6
Oxybutynin (Ditropan)	Extended release	Originally the preferred medication
	Immediate release	
	Topical gel	Highest rate of anticholinergic adverse effects
	Transdermal patch	
Tolterodine (Detrol)	Extended release	Fewer adverse effects than oxybutynin
	Immediate release	
Trospium (Sanctura)	Extended release	Renally cleared
	Immediate release	
M2/M3-selective agents		
Darifenacin (Enablex)	Extended release	Higher selectivity for M3 muscarinic receptors
Solifenacin (Vesicare)	Extended release	

NOTE: *Adverse effect profile of these drugs includes tachycardia, palpitations, edema, confusion, psychomotor retardation, nausea, vomiting, abdominal pain, constipation, urinary retention, blurry vision, and dry mouth.*

Information from references 3, 9, 10, 20, and 21.

urge	stress	reflex	overflow	functional
Muscarinic bloxking agents – גורמים לרלקסציה של שריר חלק ומפחיתים את הטונוס של הדטרוזור. **ת' לוואי:** יובש בפה, עצירות, ישנוניות, סחרחורת, פגיעה בקוגניציה, טשטוש ראייה, בחילה, כאב ראש בלבול **אינטרקציות בין תרופתיות (הארכת QT):** אנטיהיסטמינים, מעכבי ציטוכרום **קונטרינדקציות:** הריון והנקה, אצירת שתן, IBD, MG, חסימה בדרכי השתן. לשלול גלאוקומת זווית סגורה!		**אלפה בלוקרס:** Tamsulosin **(אומניק)** Alfuzosin **(xatral)**	**אלפה-בלוקר:** Prazosin Doxazosin Terazosin Tamsulosin **(אומניק)** Alfuzosin **(קסטרל)**	

	urge	stress	reflex	overflow	functional
טיפול	לא סלקטביים: **oxybutynin (Novitropan)** סלקטביים לפי גורול אך לא סלקטביים לפי AFP: **Tolteridine (Detrol)** **(דטרוזיטול)** (להמנע במחלת כליות) **Trosioum (Sanctura))** **ספזמקס)** סלקטביים: **Solifenacin (Vesicare),** (להמנע במחלת כליות) **Darifenacin (Enablex)**	בנשים פוסטמנופאוזליות עם וגיניטיס אטרופית – **משחת אסטרוגן** מקומית או טבעת אסטרוגן אינטרווגינלית (טיפול הורמונלי סיסטמי מחמיר את המצב) **SNRI – Duloxetine**		הוספת **bethanechol**	

- *Beta-Adrenergic Agonists*. Approved by the FDA in 2012, mirabegron (Myrbetriq) is from a new class of drugs used to treat urge incontinence. Mirabegron acts on beta$_3$-adrenergic receptors to relax the detrusor.[27] Studies have shown that use of mirabegron results in one to two fewer incontinence episodes per day, similar to sustained-release tolterodine (Detrol).[28] Common adverse effects are nausea, diarrhea, constipation, dizziness, and headache.[27] Increased blood pressure can also occur, and mirabegron should not be used in patients with uncontrolled hypertension.[27]When used with an anticholinergic, the risk of urinary retention increases.[27]

- *OnabotulinumtoxinA*. Also recently approved by the FDA, injection of onabotulinumtoxinA (Botox) into the detrusor muscle can be considered for treating urge incontinence that has not responded to conservative treatments.[7,9,25,29] OnabotulinumtoxinA is superior to placebo in reducing incontinence as well as in improving quality of life.[29] Symptom reduction lasts three to six months.[9,29] Optimal doses for effectiveness and long-term safety have not yet been determined.[14,29]

- *Estrogen*. Although intravaginal estrogen is sometimes used to treat urge incontinence, neither intravaginal nor systemic estrogens are FDA-approved for this. Systemic estrogen has been shown to worsen incontinence.[10,30]

SURGERY

Urge incontinence can be treated with surgically implanted devices that stimulate the sacral, paraurethral, and pudendal nerves. Sacral nerve stimulators are most commonly used, and up to two-thirds of patients experience improvement in symptoms, which is notable because these devices are used only for symptoms that are refractory to all other treatment.

	urge	stress	reflex	overflow	functional
טיפול כירורגי	הזרקת בוטוליניום טוקסין לקיר השלפוחית – Sacral nerve stimulators מושתלים ניתוחית.	Penile clamp Traditional suspension surgery Sling procedure – tension free vaginal tape Urethropexy	ספינקטרוטומי		
טיפול כירורגי		**Pessary** – תומך באיברי האגן. טבעות/צורות סיליקון שמכניסים לנרתיק. -1 2 פעמים בשבוע .			

תודה