Urinary Incontinence

Urinary incontinence is the involuntary leakage of urine significant enough to be considered a problem. It is a very common and undertreated condition affecting up to 60% of adult women (Lukacz, 2024) and up to 34% of men aged 65 and older (Clemens, 2024). Men with incontinence are only half as likely as women to seek care despite a variety of available treatment options (Clemens, 2024). Incontinence can negatively impact a patient's health and quality of life, causing sexual dysfunction, complications from moisture and irritation, falls and fractures due to urinary urgency, and increased caregiver burden (Lukacz, 2024).

Classification

Types of Urinary Incontinence

Type	Description	Causes
Stress incontinence *Most common*	Involuntary leakage of urine that occurs with an increase in abdominal pressure (i.e., with exertion, sneezing, coughing, laughing), and without bladder contraction or urge to urinate prior to leakage	Women: • Urethral hypermobility – lack of support of the pelvic floor muscles preventing the urethra and bladder neck to completely close • Intrinsic sphincteric deficiency (ISD) – loss of intrinsic urethral mucosal and muscle tone that keeps the urethra closed Men: • Prostate surgery • Poor urethral sphincter function
Urgency incontinence *"Overactive bladder"*	Strong urge to void immediately preceding or accompanied by involuntary leakage of urine	Detrusor muscle (bladder) overactivity, leading to involuntary bladder muscle contractions during bladder filling. Causes may include: • Neurologic disorder (spinal cord injury) • Bladder abnormalities • Increased or altered bladder microbiome • Idiopathic
Mixed incontinence	Concomitant stress incontinence and urgency incontinence	As described for stress and urgency incontinence
Functional incontinence	Inability to toilet oneself in a timely manner	• Cognitive impairment • Decreased mobility post-surgery • Change in mental status (i.e., due to medications)

		• Neurologic disorder (i.e., multiple sclerosis, Parkinson's disease)
Overflow incontinence	May appear as stress incontinence, urgency incontinence or mixed urinary incontinence; symptoms include involuntary, intermittent, or continuous leakage without warning or sensation; dribbling; and incomplete bladder emptying.	Two types: • Detrusor (bladder muscle) underactivity caused by impaired contractility of the detrusor muscle • Bladder outlet obstruction caused by external compression of the urethra due to fibroids, pelvic organ prolapse, tumors, or urethral stricture
Incontinence with pregnancy	Common during pregnancy (up to 60%) and resolve in many after delivery (up to 70%)	• Pregnancy and childbirth may cause injury to the pelvic floor due to compression, stretching, and/or tearing of nerve, muscle, and connective tissue. • Symptoms of urinary continence may develop or be exacerbated during pregnancy. • Manage conservatively with pelvic floor muscle training or pessary device.

Evaluation (Lukacz, 2024)

History

Assess for the following conditions which place the patient at increased risk:

- Age: prevalence and severity of urinary incontinence increase with age.
- Obesity: threefold increased risk; weight reduction is associated with improvement.
- Parity: the number of times a woman has given birth increases her risk for incontinence.
- Mode of delivery: vaginal delivery places a woman at higher risk compared to cesarean section.
- Prostate disease, history of prostate surgery or radiation in men.
- Family history: risk may be higher in patients with a family history of urinary incontinence.
- High-impact activities may cause stress urinary incontinence.
- Impaired functional status or inability to toilet oneself
- Genitourinary syndrome of menopause/vaginal atrophy, hormone replacement therapy, genitourinary surgery (i.e., hysterectomy), and radiation
- Recurrent urinary tract infections (UTIs)
- Bladder symptoms, such as enuresis in childhood
- Bladder cancer or invasive cervical cancer
- Neurologic diseases such as stroke, spinal cord injury, and impaired cognition/dementia
- Other: smoking, caffeine and alcohol intake, diabetes, depression, or fecal incontinence

Classification

Assess the patient for the following incontinence characteristics to help classify the type of incontinence that is occurring:

- Frequency
- Volume
- Severity
- Hesitancy
- Precipitating triggers
- Nocturia
- Intermittent or slow stream
- Incomplete emptying
- Continuous urine leakage
- Straining to void
- Functional status, mobility, and cognitive changes in older adults

Systemic Symptoms

The following may prompt additional workup and specialist referral:

- Urinary tract infection (UTI) – assess for fever, dysuria, pelvic pain, and hematuria.
- Abdominal/pelvic/flank pain or hematuria without UTI
- Recurrent documented UTIs (≥ 3 per year)
- Lifelong or sudden onset of incontinence
- Changes in gait or new lower-extremity weakness
- Cardiopulmonary or neurologic symptoms
- Mental status changes
- Advanced pelvic organ prolapse beyond the hymen
- Elevated post-void residual (PVR) greater than 1/3 of the total volume
- Long-term urinary catheterization
- Difficulty passing a urinary catheter
- Changes in bowel function (e.g., constipation)

Medications

Several drug classes may affect bladder function:

- Antihistamines and decongestants (pseudoephedrine, phenylephrine)
- Benzodiazepines and opioids
- Antimuscarinics (overactive bladder medications) and spasmolytics
- Anticholinergics (antiparkinson medications)
- Angiotensin-converting enzyme (ACE) inhibitors, alpha-agonists, alpha1- blockers, antiarrhythmics, and diuretics
- Antidepressants and antipsychotics
- Skeletal muscle relaxants, estrogens, and beta 3-agonists
- Alcohol and caffeine

Impact on Quality of Life

- Identify symptoms that are most burdensome to the patient.
- Utilize quality of life questionnaires; several examples are available online:
    - Kings Health Questionnaire
    - Pelvic Floor Distress Inventory
    - Pelvic Floor Impact Questionnaire
    - Patient Global Impression of Improvement (PGII)
    - Patient Global Impression of Severity (PGIS)

Physical Examination

- Conduct pelvic exams for women with atypical symptoms, uncertain diagnosis, or those who have not improved with initial treatment strategies.
- Assess for pelvic floor muscle integrity, vaginal atrophy, pelvic masses, and advanced pelvic organ prolapse beyond the hymen.
- Assess cardiovascular, abdominal, and neurologic systems in both men and women.

Laboratory Tests

- Perform urinalysis for all patients.
- Perform Urine culture if UTI is suspected or hematuria is present.
- Urine cytology should be performed only if hematuria is present or the patient has risk factors for bladder cancer (i.e., smoking history, previous bladder tumor).
- Renal function tests should only be performed for severe urinary retention.
- Consider measuring prostate-specific antigen (PSA) in men.

Clinical Tests

- Bladder stress test is used to confirm stress incontinence diagnosis; ask patient to Valsalva and/or cough vigorously while standing with a full bladder, then observe for leakage from the urethra.
- Post-void residual (PVR) is not required but may be helpful if diagnosis is uncertain.
    - PVR less than 1/3 of total voided volume (or less than 50 mL) is normal.
    - PVR greater than 150 mL or greater than 1/3 of total volume is abnormal.
    - Routine PVR testing is not recommended in men with mild to moderate lower urinary symptoms related to prostatic hyperplasia.

Voiding Diaries

Ask the patient to record the frequency and volume of incontinence each day.

- Helps determine if urinary incontinence is associated with high fluid intake
- May indicate severity of the problem
- May identify maximum bladder capacity and the time interval between voids (helpful in bladder training)
- Assists in evaluating the impact of treatment

Urology Referral

Male patients with any of the following history or symptoms should be referred to a urologist:

- Prior pelvic radiation or surgery
- Pelvic pain
- Severe incontinence
- Severe lower urinary tract symptoms
- Neurologic disease
- Abnormal prostate examination
- Hematuria
- Elevated PSA level

Treatment (Lukacz, 2024)

While most patients with incontinence will experience improvement with therapy, some will not regain full continence. Be sure to set appropriate goals and expectations with your patient.

Initial Treatment of Urinary Incontinence *The following interventions should be continued for a duration of 6 weeks before considering advanced therapies.*	
Intervention	**Clinical Considerations**
Address medical conditions and medications	• Treat infections, diabetes, depression, and other conditions. • Stop medications that contribute to incontinence. • Treat constipation and/or stool impaction.

Lifestyle modifications	• Recommend weight loss for obese patients.
	• Dietary changes:
	  ○ Reduce alcohol, caffeinated, and carbonated beverages.
	  ○ Advise patient to drink liquids in small amounts throughout the day; avoid excess amounts (>64 ounces).
	  ○ For nocturia, decrease or avoid liquid consumption after dinner or within several hours before bedtime.
	• Constipation should be treated where indicated
	• Smoking cessation

Pelvic floor muscle exercises (Kegel exercises)	• Instruct the patient to contract the pelvic muscles used to hold urine.
	• Perform three sets of 8 to 12 contractions, held for 8 to 10 seconds each, 3 times/day, every day, for 15 to 20 weeks.
	• Strategies for women who cannot perform exercises properly:
	  ○ Supervised pelvic floor therapy with a pelvic floor physical therapist or continence nurse
	  ○ Vaginal weighted cones – held in vaginal cavity during activity
	  ○ Biofeedback – pressure sensor is placed in the vagina and provides an audible or visual feedback of strength of the pelvic floor contraction
	  ○ Mobile applications (apps) (both free and fee-based) exist to help with pelvic floor muscle training and have been shown to be efficacious.

Bladder training	• Identify the shortest voiding interval based on the voiding diary.
	• Instruct patient to void by the clock at regular intervals while awake, starting with the shortest interval between voids.
	  ○ Encourage distraction or mental relaxation techniques (i.e., deep breathing) along with quick contractions of the pelvic floor to control urgency between voiding times.
	  ○ When patient avoids leakage for one day, the time between scheduled voids is increased by 15 minutes.
	  ○ Intervals should be gradually increased until the patient is voiding every three to four hours without urinary incontinence or frequent urgency.
	• Training may take up to six weeks.

Topical vaginal estrogen for women	• Useful in peri- or postmenopausal women with either stress or urgency incontinence and vaginal atrophy due to genitourinary syndrome of menopause (GSM).
	• Medications include:
	  ○ Topical estrogen cream 0.5 grams applied twice weekly
	  ○ Intravaginal estradiol tablet 10 mcg twice weekly
	  ○ Estradiol vaginal ring every three months
	• May take up to three months to see improvement
	• Some patients may require higher doses.

Advanced Therapies for Urinary Incontinence *These may be considered when the options above are ineffective.*	
Stress Incontinence	
Devices	• Continence pessaries are support devices that can be used in addition to or as a substitute for pelvic floor muscle exercises. • May not work for all patients, but can be useful for patients who experience stress incontinence with specific activities (i.e., exercise)
Surgery	• Midurethral sling – rapid and more definitive treatment (women) • Perineal slings – surgical implantation of synthetic mesh to compress the urethra (men and women) • Artificial urinary sphincter – an option for men with previous pelvic radiation therapy or severe incontinence
Urgency Incontinence/Overactive Bladder	
Antimuscarinic agents • Darifenacin • Fesoterodine • Oxybutynin • Solifenacin • Tolterodine	• Decrease involuntary bladder contractions by blocking muscarinic cholinergic receptors in the detrusor muscle cells • Effects may take 4 to 12 weeks. • May cause urinary retention, dry mouth, constipation, blurred vision, tachycardia, drowsiness, and decreased cognitive function.

• Trospium	• Contraindicated with uncontrolled tachyarrhythmias, myasthenia gravis, gastric retention and narrow angle-closure glaucoma
Beta 3-adrenergic agent • Mirabegron • Vibegron	• Promotes selective beta receptor stimulation of the detrusor muscle to enhance smooth muscle relaxation • Alternative for patients who do not tolerate antimuscarinics or are at risk for central nervous system side effects • Monitor for urinary retention by measuring PVR. • Avoid in patients with hypertension.
Alpha blocking agents • Alfuzosin • Doxazosin • Silodosin • Tamsulosin • Terazosin	• Use for men with urgency incontinence associated with benign prostatic hyperplasia (BPH) • Relax smooth muscle of the bladder neck and prostate • May enhance bladder emptying • Side effects include hypotension and dizziness.
Overflow Incontinence (Treatment depends on cause)	
Bladder outlet obstruction	• Refer to a specialist for further evaluation and possible surgery.
Detrusor underactivity	• Treat reversible causes (i.e., stop medications that impair detrusor contractility or treat constipation). • Sacral nerve stimulation may be beneficial for nonobstructive urinary retention. • Clean intermittent catheterization may be a management strategy.
Chronic urinary retention	• Clean intermittent catheterization may be used for chronic partial urinary retention. • Chronic transurethral catheterization should not be used long-term; refer patient for suprapubic catheterization or urinary diversion.

Adjunctive Measures

Consider the following adjunctive measures in the treatment plan for urinary incontinence:

- For patients with functional or cognitive impairment:
    - Provide prompts to void.
    - Schedule toileting at regular intervals.
    - Use anticholinergic medications with caution.
    - In neurological patients, clean intermittent catheterization (CIC) may be performed at regular intervals, usually every 4 hours, with a target bladder volume of less than 500 mL to avoid bladder distention.
    - Avoid high bladder pressures, retention, and infection.

- Use pads and protective garments as needed until urinary continence is controlled. Change them frequently to prevent contact dermatitis and skin breakdown. Note that these products are costly and rarely covered by insurance.
- Indwelling catheters should not be used as first-line treatment as they are associated with urethral trauma, infection, and nephrolithiasis.
- External moisture-wicking catheters remove urine as it is voided to minimize perineal moisture and the associated skin breakdown that can result. It is beneficial for patients with limited mobility and/or the ability to independently toilet. External urinary catheters may be useful with fewer adverse effects; however, they may be difficult to keep in place.
- Penile incontinence clamps for men may be used in ambulatory men with stress incontinence and good bladder storage function. Do not use in men with sensory abnormalities, as tissue damage can occur with prolonged use.

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