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 close to 50% of adult women (Lukacz, 2017) and up to 34% of men aged 65 and older (Clemens, 2018). Incontinence can have a negative impact on 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, 2017).

Classification (Lukacz, 2017)

<table>
<thead>
<tr>
<th>Type</th>
<th>Description</th>
<th>Causes</th>
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</table>
| **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 | Causes in 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  
  Causes in men:  
  - Prostate surgery  
  - Poor urethral sphincter function |
| **Urgency incontinence** “Overactive bladder” | Strong urge to void immediately with an inability to make it to the bathroom on time. | 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 | Symptoms of both 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 | Two types:  
  - Detrusor (bladder muscle) underactivity – caused by impaired contractility of the detrusor muscle |
### Incontinence with Pregnancy

<table>
<thead>
<tr>
<th>Conditions</th>
<th>Management</th>
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<tbody>
<tr>
<td>Pregnancy and childbirth may cause injury to the pelvic floor due to compression, stretching, and/or tearing of nerve, muscle, and connective tissue.</td>
<td>Manage conservatively with pelvic floor muscle training or pessary device.</td>
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<tr>
<td>Symptoms of urinary continence may develop or be exacerbated during pregnancy.</td>
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### Evaluation (Lukacz, 2017)

#### 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 disease** 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 and classify type based on descriptions above.

- 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, 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) > 1/3 total volume.
- Long-term urinary catheterization.
- Difficulty passing a urinary catheter.
- Changes in bowel function (i.e. constipation).

Medications
Several drug classes may affect bladder function:

- Allergy: antihistamines and decongestants (pseudoephedrine, phenylephrine).
- Analgesic and sedative: benzodiazepines and opioids.
- Anticholinergics: antimuscarinics (overactive bladder medications) and spasmolytics.
- Cardiac meds: Angiotensin converting enzyme (ACE) inhibitors, alpha-agonists, alpha1-blockers, antiarrhythmics, diuretics.
- Psychotropic: antidepressants, antipsychotics.
- Other: skeletal muscle relaxants, estrogens, beta3-agonists.
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 exam for women with atypical symptoms, uncertain diagnosis, or those who have had failure of 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

- Urinalysis for all patients.
- 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 – 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 < 1/3 of total voided volume (or < 50 mL) is normal.
  - PVR > 150 mL or > 1/3 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 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, 2018)

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.

<table>
<thead>
<tr>
<th>Initial Treatment</th>
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<td>The following interventions should be continued for a duration of 6 weeks before considering advanced therapies.</td>
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</table>

| 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 modification | • Recommend weight loss in obese patients.  
• Dietary changes:  
  o Reduce alcohol, caffeinated, and carbonated beverages.  
  o Advise patient to drink liquids in small amounts throughout the day; avoid excess amounts (>64 ounces).  
  o For nocturia, decrease or avoid liquid consumption after dinner or within several hours before bedtime. |
| Pelvic floor muscle (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:  
  o Supervised pelvic floor therapy with a pelvic floor physical therapist or continence nurse.  
  o Vaginal weighted cones – held in vaginal cavity during activity.  
  o Biofeedback – pressure sensor is placed in the vagina and provides an audible or visual feedback of strength of the pelvic floor contraction. |
| 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. |
Urgency between voiding times is controlled with either distraction or mental relaxation techniques (i.e. deep breathing) along with quick contractions of the pelvic floor.

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 if Initial Treatments are Ineffective (Lukacz, 2018)

If the above treatment strategies are ineffective, the following advanced therapies may be considered.

### Stress Incontinence Advanced Treatment

#### 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 Advanced Treatment

#### Antimuscarinic Agents

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<th>Drug</th>
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<tr>
<td>Darifenacin</td>
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<tr>
<td>Fesoterodine</td>
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<tr>
<td>Oxybutynin</td>
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<tr>
<td>Solifenacin</td>
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<tr>
<td>Tolterodine</td>
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<tr>
<td>Tropium</td>
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</table>

- 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.
### Contraindicated with
- uncontrolled tachyarrhythmias,
- myasthenia gravis,
- gastric retention and narrow angle-closure glaucoma.

### Beta 3-Adrenergic Therapy
**Mirabegron**
- 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 blockers
- **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 Advanced Treatment
**Treatment depends on cause.**

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<tr>
<th><strong>Bladder outlet obstruction</strong></th>
<th>Refer to a specialist for further evaluation and possible surgery.</th>
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| **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

| **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 < 500 mL to avoid bladder distention.
- Avoid high bladder pressures, retention, and infection.

<table>
<thead>
<tr>
<th>Pads and protective garments</th>
<th>Utilize until urinary continence is controlled.</th>
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<tr>
<td></td>
<td>Should be changed frequently to prevent contact dermatitis and skin breakdown.</td>
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<td></td>
<td>Products are costly and rarely covered by insurance.</td>
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</tbody>
</table>

| Indwelling catheters | Should not be used as first-line treatment as they are associated with urethral trauma, infection, and nephrolithiasis. |

<table>
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<tr>
<th>External urinary catheters for men</th>
<th>May be useful with fewer adverse effects.</th>
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<td>May be difficult to keep the catheter in place.</td>
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<th>Penile incontinence clamps for men</th>
<th>May be used in ambulatory men with stress incontinence and good bladder storage function.</th>
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<td></td>
<td>Do not use in men with sensory abnormalities as tissue damage can occur with prolonged use.</td>
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References:

