Urinary Incontinence: A Hidden Challenge

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Learning Objectives

• Review basic physiology of micturation
• Distinguish between potentially treatable and persistent causes of urinary incontinence
• Perform a basic evaluation on a patient with urinary incontinence
• Identify management strategies appropriate for the individual patient with urinary incontinence

Urinary Incontinence (UI)

- Involuntary loss of urine
- Not normal aging but more common with aging
- 3x more common in women than men until age 80yrs when 50% report UI
- 50 - 75% of incontinent persons never voluntary describe their symptoms to physicians

Screening

- AHCQ recommends routine screening all frail older men and women.
- ACOVE 3 recommends screening all vulnerable elders at the time of initial evaluation
- 3 Incontinence Questions (3IQ)-help distinguish urge from stress UI with sensitivity of 75% and specificity of 77%
Case

68 yo woman comes into the office c/o urgency and frequency of urination with occasional involuntary loss of urine.

What other information would you want to know?

Risk Factors Associated with UI

- Forceps delivery/vaginal delivery > C-section
- Hysterectomy
- Benign Prostatic Hyperplasia (BPH)
- Obesity
- Diabetes, stroke, COPD, CHF, neurologic disorders
- Estrogen depletion
- Impaired functional, cognitive and/or mobility status
- Medications (eg., estrogen, diuretics)
- Environmental barriers

Evaluation

- Duration, frequency, severity, timing
- Associated symptoms, precipitants
- Bowel and sexual function, parity, status of other medical conditions, medications, functional status
- GU history (e.g. previous anti-incontinence surgery)

Medications that May Affect Continence

<table>
<thead>
<tr>
<th>Types of Medication</th>
<th>Potential Effects on Continence</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sedative/hypnotics</td>
<td>Sedation, delirium, immobility</td>
</tr>
<tr>
<td>Alcohol</td>
<td>Frequency, urgency, sedation</td>
</tr>
<tr>
<td>Anticholinergics</td>
<td>Urinary retention, overflow incontinence, fecal impaction, delirium</td>
</tr>
<tr>
<td>Antipsychotics</td>
<td>Urinary retention, sedation, fecal impaction</td>
</tr>
<tr>
<td>Antidepressants</td>
<td></td>
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<tr>
<td>Antihistamines</td>
<td></td>
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<tr>
<td>Narcotic analgesics</td>
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</table>

Potential Effects on Continence

- Urethral relaxation → stress UI
- Urinary retention
- Nocturnal incontinence
- Polyuria, frequency, urgency
- Drug-induced cough
- Urinary urgency and UI
Case

- She is G3P3, has a BMI 32, and drinks 3 cups of coffee a day.
- She notes occasional dysuria and has nocturia x2. She has had loss of urine w/coughing. She denies any constipation.
- She has Type 2 DM and takes metformin and lisinopril. No pelvic surgeries.

What are some type(s) of urinary incontinence she could have?

Types of Persistent Incontinence

- **Urge**
  - more common in older women
- **Stress**
  - more common in younger women
- **Mixed**
  - most common overall in women
- **Overflow**
  - most common in men

Potentially Reversible Causes of Incontinence*

- Delirium
- Infection, urinary (symptomatic)
- Atrophic urethritis/vaginitis
- Pharmaceuticals
- Psychological disorders
- Endocrine disorders/excessive urine production
- Restricted mobility
- Stool impaction


**Urge Incontinence**

“I can’t get to the bathroom on time.”

- An abrupt desire to void (urgency) that cannot be suppressed
- Usually thought to be idiopathic
- Other causes - bacterial cystitis, bladder tumor, bladder stones, atrophic vaginitis/urethritis, stroke, Parkinson’s disease, dementia
- Especially in frail elderly, may have detrusor hyperactivity with impaired contractility (DHIC)
Stress Incontinence
“l leak urine when I cough, laugh, sneeze or when running.”
- Increases in intra-abdominal pressure overwhelm urethral sphincter
- Hypermobility of bladder neck and urethra (85% cases) - aging, hormonal changes, multiple childbirths, hysterectomy, pelvic surgery
- Intrinsic sphincter deficiency (15% cases) - previous pelvic/anti-incontinence surgery, pelvic radiation, trauma, neurogenic disorders

Functional Incontinence
- Does not involve lower urinary tract
- Result of physical (e.g. arthritis, stroke) and/or cognitive impairment

Overflow Incontinence
“I dribble urine most of the time.”
- Overdistension of the bladder caused by:
  - Bladder outlet obstruction –
    - Stricture, pelvic prolapse, BPH, cystocele, fecal impaction
  - Impaired detrusor contractility –
    - Diabetes, MS, lumbar spinal stenosis, spinal cord injury, medications

Case
- What do you look for on Physical Exam?

Physical Examination
- Mental status
- Mobility
- Evidence of volume overload
- Neurologic - evaluation of lumbosacral nerves, focal findings, peripheral neuropathy
- Pelvic exam - atrophic vaginitis, urethral hypermobility, cystocele, uterine prolapse, rectocele, masses
- Rectal - sphincter tone (active/resting) to assess integrity of sacral plexus (S2-S4), perineal sensation, fecal impaction, masses

Stress Test
- Best done when bladder is relatively full, in standing position with relaxed perineum
- Patient asked to vigorously cough once while a pad is held underneath perineum or on the floor
- In women, positive test sensitive but not specific for impaired sphincter function
Post-void Residual Volume (PVR)

- Perform within 5 minutes of voiding
- Catheterization or bladder ultrasound
  - PVR < 50cc - adequate bladder emptying
  - PVR < 100cc - adequate bladder emptying > 65 years
  - PVR 100-200cc - inadequate emptying vs normal
  - PVR > 200cc - refer

Basic Laboratory Evaluation for UI

- Calcium, glucose
- BUN/Cr - especially if PVR > 200cc
- Urinalysis and culture

Urodynamic Testing

- Not routinely recommended
- Mainly used when surgery is being considered

Case

- She has no mobility or mental status abnormalities.
- Monofilament testing is normal
- Pelvic exam reveals vaginal atrophy, bulging of the anterior vaginal wall when asked to cough, no leakage
- Rectal sphincter tone is intact
- PVR - 65cc
- Fasting blood sugar level of 87 with HgbA1C 6.5%. Urinalysis was normal.

What is your assessment?

Management of UI Overview

- Behavioral therapies
- Pharmacological therapies
- Surgery
- Pessaries
- Periurethral bulking agents
- Garments and pads
- Catheters

Case

- Overweight
- Vaginal atrophy
- Pelvic prolapse
- Mixed UI-urge>stress

What is your treatment plan?
**Behavioral Interventions**

- Reduce amount and timing of fluid intake (e.g. stop at 7pm)
- Avoid bladder stimulants such as caffeine, alcohol
- Use diuretics judiciously and not before bedtime
- Elevate legs before bedtime in patients with edema
- Make toilet easier to get to - suggest bedside commode
- Lose weight if obese

**Patient Dependent Behavioral Interventions for Incontinence**

<table>
<thead>
<tr>
<th>Procedure</th>
<th>Definition</th>
<th>Effect</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bladder retraining</td>
<td>Progressive lengthening of the voiding interval</td>
<td>20% &quot;dry&quot; rate 75% with 50% reduction</td>
</tr>
<tr>
<td>Biofeedback</td>
<td>Rectal or vaginal pressure recording to train patients to contract pelvic floor and relax bladder</td>
<td>50-87%</td>
</tr>
<tr>
<td>Pelvic muscle (Kegel) exercises</td>
<td>Repetitive contraction of pelvic floor muscles 3 sets of 8-12 contractions lasting 5-8 secs</td>
<td>66-95% Stress UI 80% Urge UI *3-4 x per week x 15 weeks minimum</td>
</tr>
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**Caregiver Dependent Behavioral Interventions for Incontinence**

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<th>Effect</th>
</tr>
</thead>
<tbody>
<tr>
<td>Scheduled Toiling</td>
<td>Fixed toilet schedule</td>
<td>29-85%</td>
</tr>
<tr>
<td>Habit Training</td>
<td>Toiling based on individual pattern</td>
<td>86%</td>
</tr>
<tr>
<td>Prompted voiding</td>
<td>Regular opportunities to toilet (useful in NH setting)</td>
<td>↓ 0.5-1.5 incontinent episodes</td>
</tr>
</tbody>
</table>

**Anticholinergic Therapy for Urge UI-Overactive Bladder Syndrome (OAB)**

- Oxybutynin
  - Immediate release
  - Extended release
  - Transdermal patch
  - Topical gel
- Tolterodine
  - Immediate release
  - Long acting
- Trospium
- Darifenacin
- Solifenacin
- Fesoterodine

**Potential Adverse Effects of Antimuscarinic Drugs**

- CNS: Dizziness, Somnolence, Impaired Cognition
- Iris/Ciliary Body = Blurred Vision
- Lacrimal Gland = Dry Eyes
- Salivary Glands = Dry Mouth
- Heart = Tachycardia
- Stomach = Dyspepsia
- Colon = Constipation
- Bladder = Retention


**Beta 3 adrenergic agonist**

- Mirabegron improves bladder storage capacity
- 25-50mg/day
- Side effects - tachycardia, increased BP, constipation
- Not for use w/ESRD, uncontrolled hypertension
**Medications to Treat Stress Incontinence**

<table>
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<tr>
<th>Medication</th>
<th>Improvement</th>
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<tr>
<td>Pseudoephedrine *</td>
<td>11% (ARR)</td>
</tr>
<tr>
<td>Duloxetine *</td>
<td></td>
</tr>
<tr>
<td>Estrogen (topical cream, Estring®)</td>
<td>Up to 25%</td>
</tr>
<tr>
<td>Imipramine **</td>
<td>?</td>
</tr>
</tbody>
</table>

* not FDA approved for this indication  
** dual alpha agonist/anticholinergic activity

**Case**

- Lifestyle modifications  
  Wt loss, Reduce/eliminate caffeine  
- Behavioral therapies  
  Kegel exercises, bladder retraining, scheduled toileting  
- Pharmacological therapies  
  Topical estrogen cream, oxybutynin, discontinue lisinopril

**Case**

- She comes back reporting that she got a dry mouth from the oxybutynin and stopped it. She is losing weight and the topical estrogen cream is helping.

  What other options can you give her?

**Percutaneous Tibial Nerve Stimulation (PTNS)**

- Used for urge incontinence, OAB, nonobstructive urinary retention  
- Electrode placed at medial aspect of ankle leads to neuromodulation thru tibial nerve to S2-S4 plexus  
- Cochrane review of 1-3 times/wk x 12wks  
  - 55% improvement vs 21% sham

**Botulinum toxin B**

- Direct injection into the urethral and bladder skeletal and smooth muscle results in reversible chemical denervation  
- Treatment for overactive bladder due spinal cord injury, MS  
- Studies have shown complete continence in 32% to 86% of patients with mean duration of 6 months

**InterStim System**  
(Sacral Neuromodulation)

- Useful for patients with intractable symptoms of urge incontinence, urgency-frequency, or retention.  
- Temporary, percutaneous sacral nerve test stimulation (S 3) and if > 50% improvement over 1-4 weeks--permanent device with implanted lead and neurostimulator, hand held programmer  
- 50% improvement in symptoms and QOL
**Stress Incontinence**

Procedural Interventions

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<thead>
<tr>
<th>Procedure</th>
<th>Indication</th>
<th>Imp Rates</th>
</tr>
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<tbody>
<tr>
<td>Retropubic (e.g., Burch)</td>
<td>Urethral hypermobility</td>
<td>80-84%</td>
</tr>
<tr>
<td>Sling procedure</td>
<td>Urethral hypermobility/ Intrinsic sphincter deficiency</td>
<td>80%</td>
</tr>
<tr>
<td>Periurethral bulking injections</td>
<td>Urethral hypermobility/ Intrinsic sphincter deficiency</td>
<td>50-67%</td>
</tr>
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</table>

- Injection of glutaraldehyde cross-linked bovine collagen or carbon-coated beads under cystoscopic guidance into an incompetent periurethral area
- UTI and transient urethral irritation are most common side effects
- Complications - urgency, UI, urinary retention


**Pessary Use**

- Genital prolapse (uterine or vaginal), cystocele
- Stress incontinence
- Older women who are at risk for surgery
- Women who have had previous surgery for stress incontinence

**Criteria for Further Evaluation**

- 2 or more UTI's within 12 months
- History of previous anti-incontinence surgery or radical pelvic surgery
- Symptomatic pelvic prolapse, pelvic pain
- Abnormal PVR > 200cc*
- Hematuria in the absence of infection
- Failure to respond to an adequate therapeutic trial or uncertainty in diagnosis

*except in known BPH and those taking relevant meds

**Conclusions**

- Urinary incontinence is common, especially with increasing age
- Usually multifactorial causes
- Persistent types include failure to store (urge/stress) and/or failure to empty (overflow) and mixed
- Once type(s) identified then choose appropriate intervention(s)
- Improvement rates with intervention are high with nonsurgical management

**Resources for Patients**

- The Simon Foundation [www.simonfoundation.org](http://www.simonfoundation.org)
- National Association for Continence [www.nafc.org](http://www.nafc.org)
- The AGS Foundation for Health in Aging [www.healthinaging.org](http://www.healthinaging.org)
References


