A Primary Care Approach to Evaluation and Treatment of Urinary Incontinence

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FM Education
November 7, 2012
Objectives

- Discuss the prevalence and impact of urinary incontinence in the female population
- Understand the different types of urinary incontinence
- Discuss the basic evaluation and work-up for urinary incontinence
- Understand initial management of urinary incontinence appropriate in the primary care setting
Incontinence

- Women > Men
- 10 - 25% premenopausal women
- 30 - 42% postmenopausal women
- >50% institutionalized patients
- <50% women who consider their incontinence a problem seek help
Table. Weighted Prevalence Rates of Pelvic Floor Disorders by Demographic Categories in Nonpregnant US Women (N = 1961)a.

<table>
<thead>
<tr>
<th>Variable</th>
<th>No. of Women</th>
<th>Urinary Incontinence (n = 331)</th>
<th>Fecal Incontinence (n = 176)</th>
<th>Pelvic Organ Prolapse (n = 58)</th>
<th>≥1 Pelvic Floor Disorder (n = 470)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overall</td>
<td>1961</td>
<td>15.7 (13.2-18.2)</td>
<td>9.6 (7.3-10.7)</td>
<td>2.9 (2.1-3.7)</td>
<td>23.7 (21.2-26.2)</td>
</tr>
<tr>
<td>Age, y</td>
<td></td>
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<tr>
<td>20-39</td>
<td>641</td>
<td>6.9 (4.9-9.0)</td>
<td>2.9 (1.9-3.9)</td>
<td>1.6 (0.6-2.6)</td>
<td>9.7 (7.8-11.7)</td>
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<tr>
<td>40-59</td>
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<td>17.2 (13.9-20.5)</td>
<td>9.9 (7.4-12.5)</td>
<td>3.6 (2.0-5.7)</td>
<td>26.5 (23.0-29.9)</td>
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<td>60-79</td>
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<td>23.3 (17.0-29.7)</td>
<td>14.1 (10.4-18.3)</td>
<td>3.0 (0.9-5.1)</td>
<td>36.8 (32.0-41.6)</td>
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<td>≥80</td>
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<td>31.7 (22.3-41.2)</td>
<td>21.6 (12.8-30.4)</td>
<td>4.1 (1.1-7.1)</td>
<td>49.7 (40.3-59.1)</td>
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<tr>
<td>P value</td>
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<td>&lt; .001</td>
<td>&lt; .001</td>
<td>.14</td>
<td>&lt; .001</td>
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<td>Race/ethnicity</td>
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<td>Hispanic</td>
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<td>5.1 (1.6-8.6)</td>
<td>20.6 (14.5-26.8)</td>
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<tr>
<td>Non-Hispanic white</td>
<td>993</td>
<td>16.0 (13.1-19.0)</td>
<td>9.6 (7.6-11.9)</td>
<td>2.8 (1.8-3.8)</td>
<td>24.8 (21.8-28.0)</td>
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<td>Non-Hispanic black</td>
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<td>7.9 (4.9-11.0)</td>
<td>1.9 (0.1-3.6)</td>
<td>20.7 (16.4-24.9)</td>
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<td>Other</td>
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<td>0</td>
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<td>6.3 (2.9-9.6)</td>
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<td>12.8 (9.0-16.6)</td>
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<td>1</td>
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<td>2</td>
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<td>24.6 (19.5-29.8)</td>
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<tr>
<td>≥3</td>
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<td>11.5 (8.7-14.3)</td>
<td>3.8 (2.1-5.4)</td>
<td>32.4 (27.8-37.1)</td>
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<tr>
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<td>.49</td>
<td>.38</td>
<td>.06</td>
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<td>&lt;High school</td>
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<td>10.6 (5.3-14.8)</td>
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<td>High school diploma</td>
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<tr>
<td>&gt;High school</td>
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<tr>
<td>P value</td>
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<td>.49</td>
<td>.38</td>
<td>.06</td>
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<td>Family poverty income ratio</td>
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<td>&lt;1</td>
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<td>8.1 (4.2-12.1)</td>
<td>5.5 (2.4-8.6)</td>
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<td>1-2</td>
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<td>10.7 (8.1-13.4)</td>
<td>4.0 (1.8-6.2)</td>
<td>29.7 (25.1-34.3)</td>
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<td>&gt;2</td>
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<td>8.5 (6.3-10.8)</td>
<td>2.2 (1.3-3.2)</td>
<td>20.8 (18.1-23.5)</td>
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<tr>
<td>P value</td>
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<td>.37</td>
<td>.08</td>
<td>&lt; .001</td>
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<td>BMI</td>
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<td>&lt;25.0</td>
<td>658</td>
<td>8.1 (5.4-10.7)</td>
<td>6.4 (4.6-8.3)</td>
<td>1.7 (0.6-2.9)</td>
<td>15.1 (11.6-18.7)</td>
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<td>25.0-29.9</td>
<td>533</td>
<td>19.0 (14.8-23.1)</td>
<td>9.3 (6.4-12.2)</td>
<td>3.4 (1.2-5.5)</td>
<td>26.3 (21.7-30.9)</td>
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<td>≥30.0</td>
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<td>21.1 (16.9-25.4)</td>
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<td>3.6 (2.0-5.2)</td>
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<td>&lt; .001</td>
<td>.05</td>
<td>.20</td>
<td>&lt; .001</td>
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</table>

Abbreviation: BMI, body mass index, calculated as weight in kilograms divided by height in meters squared.

aComplete case analytic approach was used and of the 1961 women with pelvic floor disorders information, 14 women had missing age, 29 missing parity, 1 missing education, 32 missing poverty income ratio, and 34 missing BMI. See the “Methods” section for descriptions of race/ethnicity, parity, education, family poverty income ratio, and BMI. bRelative standard errors of more than 50% (reflecting unreliable estimates).
Prevalence of Urinary Incontinence among the Elderly

Among Nursing Home Residents:
- 40-70%

Home-Bound Elderly:
- Approximately 53%

Hospitalized Elderly:
- 11% w/ persistent UI on admission
- 23% w/ persistent UI on discharge
# Direct Cost of Illness in the United States (1995 U.S. Dollars)

<table>
<thead>
<tr>
<th>Disease</th>
<th>Billions of Dollars</th>
</tr>
</thead>
<tbody>
<tr>
<td>Incontinence—women only</td>
<td>12.4</td>
</tr>
<tr>
<td>Osteoporosis</td>
<td>13.8</td>
</tr>
<tr>
<td>Pneumonia / Influenza</td>
<td>15.8</td>
</tr>
<tr>
<td>Incontinence—women and men</td>
<td>16.3</td>
</tr>
<tr>
<td>Incontinence</td>
<td>17.5</td>
</tr>
<tr>
<td>Arthritis</td>
<td>17.6</td>
</tr>
<tr>
<td>Stroke</td>
<td>25.5</td>
</tr>
<tr>
<td>Dementia / Alzheimer’s</td>
<td>25.8</td>
</tr>
<tr>
<td>Smoking</td>
<td>27.0</td>
</tr>
<tr>
<td>Diabetes</td>
<td>41.4</td>
</tr>
<tr>
<td>Congestive Heart Disease</td>
<td>46.0</td>
</tr>
</tbody>
</table>

Projected Demands for Consults for Pelvic Floor Disorders 2000 vs 2030

Bladder Functions

- Storage
- Evacuation
Bladder Storage

- Storage of urine
  - Low pressure system
  - Urethral resistance
Storage Malfunction

- Failure of low compliance
- Increased sensation
- Decreased sensation
- Failure of sphincter mechanism
Bladder Emptying

- Voluntary micturition reflex
- Relaxation
  - Pelvic floor
  - Urethra
- Coordinated detrusor contraction
Emptying Malfunction

- Impaired pelvic floor relaxation
- Impaired urethral relaxation
- Impaired detrusor contraction
Urinary Continence

- Normal storage
  - Urethral pressure > bladder pressure (internal/external urethral sphincter)

- Normal evacuation
  - Detrusor contraction with urethral and pelvic floor relaxation
  - Intact neurologic system
Extrinsic Factors – Patient weight, occupation, anatomical changes to vagina

Intrinsic factors- Urethral sphincter, blood flow

Quiet Bladder Muscle

Strong Urethra
In the right place
The Bad News
The Good News

- Studies indicate treatment is effective for most patients with urinary incontinence
- Approximately 80% of patients with incontinence can be helped
What is urinary incontinence?

- International Continence Society Definition of Urinary Incontinence
  - Involuntary urine loss that is severe enough to constitute a social or hygiene problem and that is objectively demonstrable
Classifying Urinary Incontinence

- Stress
- Urge (overactive bladder)
- Mixed
- Overflow
- Other
  - Functional
  - Unconscious or Reflex
Two most common types

- Overactive bladder/Urge urinary incontinence (OAB/UUI)
- Stress urinary incontinence (SUI)
OAB/UUI

- **Overactive Bladder**
  - Urgency, with or without urge incontinence, usually with frequency and nocturia, can be described as the overactive bladder syndrome

- **Urge Urinary Incontinence**
  - Complaint of involuntary leakage accompanied by or immediately proceeded by urgency

  - International Continence Society
Overactive Bladder

Range of clinical symptoms
- Urge urinary incontinence
- Urinary frequency
- Urgency
- Nocturia

Etiology of OAB

- Obstruction
- Interference with Integration of Neural Stimuli
  - Detrusor hyperreflexia
  - Neurologic disorder
- Neurotransmitter or pacemaker cell abnormality
- Generalized smooth muscle disorder
- Idiopathic
Obstruction

Wall, Practical Urogynecology, 1993.
Detrusor Hyperreflexia
Broken Bladder Brain Connection
Stress Urinary Incontinence

- Stress urinary incontinence is the complaint of involuntary leakage on effort or exertion, or on sneezing or coughing

International Continence Society
Etiology of SUI

- Anatomic distortion
  - childbirth
Woa. Woah. Woah. You have to do WHAT to get that kid out of there?
Etiology of SUI

- Anatomic distortion
  - childbirth, collagen disease, obesity, chronic cough
- Neurological damage
- Iatrogenic
- Idiopathic
SUI

- Pressure transmission
- “Hammock” Hypothesis
- Intrinsic sphincteric function
Pressure Transmission

- Intraabdominal urethra with transmission of abdominal pressure to the urethra equalizes pressure transmission
- Passive, structural hypothesis
- Descent of the urethra below the pelvic floor removes it from the region where pressure transmission could influence urethral closure
- Results in stress incontinence

Enhorning Acta Chir Scand 1961
Urethral Mobility

Mobile UVJ (90 %)

q-tip > 30 °

> 10 mm by US
Hammock Hypothesis

- Urethra compressed against supportive layer
  - endopelvic “fascia”
  - arcus tendinous fascia pelvis
  - levator ani muscles

SUI: Mobility or Sphincter?
Intrinsic Sphincter Deficiency

- Age greater than 65 years
- Previous anti-incontinence surgery
- Radiation
- Neurologic disorders (diabetes)
- Trauma

Horbach Obstet Gynecol 1994; 84:188
Urethral Immobility

Immobile UVJ (5-10%)
Intrinsic sphincteric deficiency
Low pressure urethra

Brubaker LT, The Female Pelvic Floor. 1996.
### Comparison OAB and SUI

<table>
<thead>
<tr>
<th></th>
<th>Urge Incontinence</th>
<th>SUI</th>
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</thead>
<tbody>
<tr>
<td><strong>Symptoms</strong></td>
<td>Frequency (8), nocturia, loss on way to BR, loss of bladder contents, loss of large amounts of urine</td>
<td>Loss with laugh, cough and sneeze Loss of small amounts of urine</td>
</tr>
<tr>
<td><strong>Physical Exam</strong></td>
<td>Varies</td>
<td>Mobile urethra</td>
</tr>
<tr>
<td><strong>Treatment</strong></td>
<td>Behavioral, pharmaceutical, physical therapy</td>
<td>Same, pessary and surgical</td>
</tr>
</tbody>
</table>
Look, it's almost 11 o'clock!

Wow, the last two hours really flew by!

I hope the teacher didn't say anything important.
Tenets of Effective Management

- Assessment of patient
- ID risk factors and *reversible* causes
- Treatment of reversible conditions
- Discussion of treatment options
- Effective management plan consistent with patient’s condition, goals, & wishes
- Education & QOL improvement
So what to do?

- Ask
- History and Physical Exam
  - Medications!!
- Pelvic Exam
- UA
- Post void residual
Risk Factors

- Gender
- Immobility
- Environmental Barriers
- Altered Cognition & Delirium
- Medications
- Smoking

- High Impact Physical Activity
- Diabetes
- Stroke
- Menopause
- Pelvic Muscle Weakness
- Childbirth
Treatment

- Treat Reversible Causative Conditions
- Behavioral Modification
- Medications
- Physical therapy
- Devices
- Surgery
Reverse Reversible Causes

- UTI
- Atrophic urethritis/vaginitis
- Pregnancy
- Stool Impaction
- Medications
- Caffeine
- Excess fluid intake
Bladder Brain Connection - Behavioral Therapy
Behavioral Modification

Voiding Diary

Body Mechanics and exercise

Behavioral Therapy

Bladder Drills

Diet

Fluids

Bladder irritants

Caffeine

Alcohol

Carbondated beverages

Fiber

Taster's Choice

100% Pure Instant Coffee

NET WT 7 oz (198 g)
Pelvic Floor Exercises - “Kegels”
Pelvic Floor Exercises

- Treatment for SUI and OAB/UUI
  - “Kegels” - levator ani and external urethral sphincter
  - Reflex relaxation of detrusor muscle
- Verbal instruction
  - Weighted cones
  - EMG, Biofeedback
Voiding Diary

- Patients write down intake and urine output over 72 hour period
- Indicate when episodes of incontinence occur
- May lead to simple interventions for treatment
Bladder Drills

- Urgency / frequency / urge incontinence
- Behavioral modification
  - voiding diary
  - break cycle
  - gradual increase time between voiding
  - use clock as “stimulus”
  - relearn voluntary micturition reflex
  - suppress involuntary reflex
Medications

- Increase urethral resistance
  - SUI
- Relaxation of detrusor muscle
  - urgency / frequency
Medications:

- Estrogen
- Anticholinergics
- Tricyclic Antidepressants
Overactive Bladder
Medications: Think Thirsty
Overactive Bladder
Medications: Think Prunes
Physical Therapy
Why Physical Therapy?

- Used to treat both SUI and OAB/UUI
  - Work on behavioral therapy
  - Kegel Exercises
    - 30 - 40% cured
    - 75 - 85% improved / cured
Biofeedback

- **Goals of Biofeedback**
  - Facilitate the self-regulation of biological processes
  - Awareness, control, strength, endurance, coordination

- **Indications:**
  - Failed office management
    - Behavioral modification
    - Kegels
  - Unable to perform pelvic floor exercise
Electrical Stimulation

- Muscle re-education
- Improves strength
- Identifies pelvic floor musculature
Electrical Stimulation
Patient Selection

- SUI, OAB, or Mixed incontinence diagnoses
- Cognitively A & O
- Manual Muscle Test $\geq 3/5$ can use surface electrodes
- MMT $< 3/5$ will benefit from internal electrodes
Pessaries....
Pessaries

- No good clinical trials comparing interventions
- Low-risk
- Low-cost if patient can care for pessary themselves
Ideal Surgical Procedure

- Make patient continent
- Consistent results in many hands
- Few complications
- Does not create new problem
  - retention, OAB, prolapse
- Durable results
Surgery for SUI

- Mid-urethral sling
- Mesh
- No tension
- Outpatient procedure
- TVT/TOT
Urethral Bulking Agents

- Minimally invasive
- Low risk
- Treatment for severe incontinence associated with non-mobile urethra
- Traditionally poor cure rates
- Success rates 40-50%
- May need multiple injections
Start with this....
End with this....
Surgical Treatment for OAB

- Refractory cases
- Neuromodulation
  - Interstim Device
- Onabotulinum
- Augmentation Cystoplasty
  - Last resort procedure
Bladder Pacemaker: Sacral Neuromodulation

Photos courtesy of Medtronics®
What is OnabotulinumtoxinA? Botox

- Neurotoxin derived from Clostridium Botulinum
- Types A & B most used clinically
- Type A used for OAB/UUI
- FDA website 'OnabotulinumtoxinA'
Sites Action Botox (OnabotulinumA)

- Classic teaching: Inhibits ACH release
- Recent: Inhibits bladder afferents
- ↓ ATP & NO release urothelium
- ↓ Bladder contractility
- ↓ neuropeptide release from bladder afferents
- ↓ Bladder contractility

Kanai et. al Neurourol and Urodyn 2011:30:684-91
OnabotulinumA Evidence

- Efficacy: 19 RCTs Onabotulinum toxin
- Onabotulinum toxin superior to controls
- Neurogenic OAB (majority)
- Idiopathic OAB (minority)
- Significant clinical response 60-90%
- UUI 66% may be completely dry
- Inject intravesically
- 100-300 units
- Lasts 3-12 months
- CISC if retention
Primary Care

- Ask
- Incontinence Questionnaire
- Basic Work Up
  - UA, PVR, Prolapse
Primary Care

- Pelvic Floor Exercise
- Voiding Diary
- Bladder Drills
- Medications
Primary Care

- Pessary
- Refer for Physical Therapy
- Refer for Surgical Evaluation
Prevention

- Basic toilet training
- Lifelong healthy bladder and bowel habits
- General physical fitness and weight control
- Healthy diet high in fiber and water, low in caffeine, alcohol, and sodas
Prevention

• Pelvic Floor Trauma in Childbirth
  • < Forcep/Vacuum Extraction
  • < Episiotomy
• Prepartum pelvic floor exercises
I DON'T THINK YOU SHOULD HAVE TO DO SOMETHING UNLESS YOU'RE ENTHUSIASTIC ABOUT IT.
WHEN TO REFER?

- Failed trial of conservative therapy
- Pronounced anatomic defect
- Persistent infection
- Desire or need for surgery
- Associated problems
Summary

- A major clinical problem
- Prevalent, disruptive, and disabling
- Affects greater than 13 million Americans
- Widespread physical, psychological, & economic effects
Summary

- Investigation of the incontinent patient should start with:
  - History
  - Physical Exam
  - Urinalysis and Culture, PVR
Summary

- Treatment includes:
  - Behavioral techniques
  - Medications
  - Devices
  - Surgery
Conclusions

- Despite high prevalence and cost
  - Less than 50% of people with urinary incontinence seek help!

- So please ASK your patients about it!

- We can help!
So the next time your patient comes in with the complaint of leaking urine — you will not feel like this…
Questions?