Taking Control of your Bladder, or…

“Don't make me laugh”
when laughter isn't the best medicine:
a discussion on urinary incontinence

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Female Pelvic Medicine and Reconstructive Surgery
Objectives

- Anatomy/Physiology
- Epidemiology
- Define urinary incontinence
- Initial diagnosis and management
- Available resources
Case presentation

- 45 y/o G2P2 ♀ w/ c/o leakage “all the time”
- Leaks w/ jumping
- Leaks before reaching the toilet
- Wears panty liners daily
- Notices pads sometimes damp
Normal Bladder Function

- Adequate compliance with appropriate sensation
- Outlet closed at rest and with increases in abdominal pressure
- Absence of involuntary bladder contractions
Normal Bladder Function

Storage phase

- Bladder Contracts
- Urethral Sphincter opens

Central Nervous System

Elimination phase

- Bladder relaxes
- Urethral sphincter contracts
Storage Phase

Rahn, DD, Roshanravan S. Pathophysiology of Urinary Incontinence, Voiding Dysfunction, and Overactive Bladder Obstet Gynecol Clin N Am 2009; 36 463–474
Micturition Phase

Rahn, DD, Roshanravan S. Pathophysiology of Urinary Incontinence, Voiding Dysfunction, and Overactive Bladder Obstet Gynecol Clin N Am 2009; 36 463–474
Urinary Incontinence

- UI – any involuntary loss of urine

- Stress
  - On effort or exertion, or on sneezing or coughing

- Urgency
  - accompanied by or immediately preceded by urgency

- Mixed
  - With urgency and also with exertion, effort, sneezing, or coughing

SUI is reported in half of the patients with urinary incontinence.

Definitions

- **URGENCY**
  - sudden, compelling desire to pass urine, which is difficult to defer

- **FREQUENCY**
  - ≥8 voids/24 hours

- **NOCTURIA**
  - waking up to void ≥1 time

E. Ann Gormley et al. DIAGNOSIS AND TREATMENT OF OVERACTIVE BLADDER (Non-Neurogenic) IN ADULTS: AUA/SUFU GUIDELINE. 2012
Overactive bladder syndrome

- Urinary urgency
- +/- urgency urinary incontinence
- Usually with frequency and nocturia
- No UTI or other obvious pathology

OVERACTIVE BLADDER

- Frequency
- Nocturia
- Urgency
- Urgency incontinence
Detrusor over activity

- **Urodynamic observation**
- Involuntary detrusor contractions during the filling phase
  - idiopathic
  - neurogenic
Epidemiology

- UI highly prevalent
  - $\geq 30\%$ women worldwide

- Impacts
  - Quality of Life
  - Health
  - Financial resources
UI Prevalence vs. other Chronic Diseases in Women

- Obesity: 35%
- HTN: 28%
- Depression: 9%
- DM: 8%
- UI: 30%

Source: www.cdc.gov
UI & Quality of life

- Lower psychological well being
- Decreased participation in social activities
- Physical morbidity
- Loss of independence
- Sexual dysfunction

OAB reduces QoL

UI & population

- UI more common in women than men

- U.S. women with UI 18.3 million in 2010 → 28.4 million in 2050

- UI prevalence increases with age
  - Americans >65 y/o
  - 2008 - 38.6 million → 2050 - 88.5 million


Prevalence of OAB Symptoms

Prevalence of OAB Symptoms

# Etiology of Urinary Incontinence

<table>
<thead>
<tr>
<th>GU conditions</th>
<th>Non-GU conditions</th>
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<tbody>
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<td>Filling &amp; storage</td>
<td>Functional</td>
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<tr>
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<td>DO</td>
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<td>Fistula</td>
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<td>Bladder, urethral, ureters</td>
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<td>Other Common Causes</td>
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<tr>
<td>Infection</td>
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<td>Ectopic ureter</td>
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<td>epispadias</td>
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</table>
Reversible causes of UI
- Delirium
- Infection
- Atrophy
- Pharmacologic
- Psychological (esp. depression)
- Excessive UO (heart failure/diabetes insipidis)
- Restricted Mobility
- Stool impaction/constipation
Diagnosis

- H&P
- Lab tests (UA, +/- ucx)
- Office evaluation
  - Void & PVR
  - Assess bladder capacity
  - Cough stress test
- Urodynamic testing
- Cystoscopy
Diagnosis & Treatment Algorithm: AUA Guideline on Non-Neurogenic Overactive Bladder in Adults

History and Physical; Urinalysis
- Signs/symptoms of OAB, - urine microscopy

Diagnosis unclear or additional information needed
- Consider urine culture, post-void residual bladder diary, and/or symptom questionnaires

Not OAB or Complicated OAB; treat or refer
- Signs/symptoms of OAB

Follow-up for efficacy and adverse events
- In extremely rare cases, consider urinary diversion or augmentation cystoplasty

Patient education:
- Normal urinary tract function
- Benefits/risks of treatment alternatives
- Agree on treatment goals

Patient desires treatment and/or treatment is in patient’s best interests

Behavioral Treatments*
- (consider adding anti-muscarinic if partially effective)

Treatment goals met

Treatment goals not met; Patient desires further treatment and/or further treatment in patient’s best interests

Anti-muscarinics* with active management of adverse events; consider dose modification or alternative medication if initial medical treatment is effective but adverse events or other considerations preclude continuation

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Reassess and/or refer; consider urine culture, post-void residual, bladder diary, symptom questionnaires, other diagnostic procedures as necessary for differentiation

Signs/symptoms consistent with OAB diagnosis
- Treatment goals not met; Patient desires further treatment and/or further treatment in patient’s best interests

Consider in carefully-selected patients (multiple therapies may be tried but they should not be combined):
- Sacral neuromodulation (SNS) or Intradetrusor onabotulinumtoxinA
- Peripheral tibial nerve stimulation (PTNS) or

*As of June 28, 2012, B3-agonist class of medications (i.e., mirabegron) has been approved by the FDA for OAB treatment. This class of medications was not reviewed by this guidelines panel, as it has been FDA-approved since the Guideline publication. Prescribing clinicians are advised to educate themselves regarding the cost-benefit and adverse event profile for these pharmaceutical agents they prescribe.
Management

First Line

- Behavioral
  - Weight loss
  - Bladder diet*
    - Caffeine, alcohol, carbonation, acidic foods
  - Bladder drill*
    - Timed voids
- Pelvic floor PT
  - Internal & external work
  - Specify pelvic floor on referral
Medical management

- Estrogen-in patients with Atrophy
  - Urethra & bladder contain rich supply of estrogen receptors

- Pharmacologic
  - Anticholinergics, TCAs, and musculotropics
  - Inhibit contractility of the bladder
  - Address urgency, frequency, and UUI
Vaginal estrogen

- Estradiol vaginal cream, USP, 0.01%
  - Estrace®

- Conjugated estrogen vaginal cream
  - Premarin®

- Estradiol vaginal tablet, 10mcg
  - Vagifem®

- Estradiol vaginal ring, 2mg (7.5 mcg/24°)
  - Estring®
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The complete OAB Guideline is available at www.AUAnet.org/Guidelines.
Pharmacologic
Second Line

Anti-cholinergic/Anti-muscarinic therapy
- Oxybutynin
  - Ditropan®, Gelnique®, Oxytrol®
- Darifenacin
  - Enablex®
- Fesoterodine
  - Toviaz®
- Solifenacin
  - Vesicare®
- Tolterodine
  - Detrol®
- Trospium
  - Sanctura®
Anti-cholinergics

- Most frequently prescribed medications for UUI
- Primarily ↑ bladder capacity and ↓ urgency
- Choice depends on
  - cost
  - dosing
  - drug-drug interactions
  - potential side effects
  - co-morbid conditions
- Lack of response to one agent does not preclude response to another
Anti-cholinergic potential side effects

- Dry mouth (inhibit salivary secretion)
  - Increased water intake may worsen UI
  - May exacerbate dental caries, be careful

- Constipation (inhibit gut motility)
  - May worsen LUT sx/complaints

- Blurry vision (blockade of ciliary muscles)

- Cognitive changes
Anti-cholinergic contraindications

- Delayed gastric motility
- Narrow angle glaucoma
- Monitor use in pts w/
  - Dementia
  - Urinary retention
Alpha agonists

- Stimulate urethral smooth muscle contraction
- Imipramine (TCA)
  - alpha agonist and anticholinergic activity
  - mixed incontinence
  - not recommended for older patients in whom anticholinergic adverse effects and orthostatic hypotension may be significant
Beta-3 adrenergic agonists

- Facilitate urine storage through bladder relaxation
- **Mirabegron** (Myrbetriq®)
  - Approved by the US FDA in June 2012
  - reduced urinary frequency and wetting episodes
- The most common side effects
  - increased blood pressure
  - nasopharyngitis
  - urinary tract infection
  - constipation
  - fatigue
  - tachycardia
  - abdominal pain
- **NOT** recommended for use in those with severe uncontrolled high blood pressure
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**Follow-up for efficacy and adverse events**
- In extremely rare cases, consider urinary diversion or augmentation cystoplasty

**Treatment goals met**
- Inpatient cystogram or other imaging studies may be necessary
- Consider anticholinergic medications, treatment for interstitial cystitis, or referral to urology

**Consider urinary retention**
- Catheterization may be necessary

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Other management options

*Neuromodulation*
  - Sacral nerve stimulation
  - Posterior tibial nerve stimulation

*Botulinum toxin*

*Augmentation cystoplasty*
35 y/o G3P3

- Leaks with laugh, cough, sneeze
- Unable to exercise due to leakage
- Limits her activities with kids given leakage
Pathophysiology of Stress Urinary Incontinence

Urethral hypermobility
- Displacement of urethra during sudden increase in abdominal pressure
- Decreases pressure transmission to the urethra
Stress UI

- Diagnosis: leak w/ cough or valsalva
- Management options
  - Exp mgmt
  - Pelvic Floor PT
  - Pessary
  - Surgery
    - Midurethral sling
    - Periurethral injections/bulking
    - Retropubic urethropexy
    - Fascial pubovaginal sling
Complicated Incontinence

- Recurrent incontinence
- Continuous leakage
- Treatment failures
Consider referral

- Incontinence associated with
  - Pain
  - Hematuria
  - Recurrent UTI’s
  - Retention
  - Pelvic radiation
  - Radical pelvic surgery
  - Suspected fistula
  - Pelvic organ prolapse beyond the hymeneal ring
  - Neurological disease or spinal cord injury
Resources: Patient info

- Nat’l & Internat’l Organization info
  - ACOG: [http://www.acog.org/For_Patients](http://www.acog.org/For_Patients)
  - IUGA: [http://www.iuga.org/?patientinfo](http://www.iuga.org/?patientinfo)
Division of Female Pelvic Medicine and Reconstructive Surgery

Brett Vassallo

Michael Noone
Virtual Pelvic Health Center

Female Pelvic Medicine and Reconstructive Surgery

Imaging

Urology

General OB/GYN

Physical Therapy

Colo-Rectal

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THANK YOU!

Questions?