Urinary Incontinence: The Neglected Geriatric Syndrome

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Poll Question 1:

• Urinary incontinence is an expected consequence of aging.
  a) True
  b) False
Urinary incontinence is NOT a normal part of aging!!!
Urination: Physiological changes with aging

- Bladder
  - Decreased capacity
  - Decreased sensation to filling
  - Increased detrusor overactivity
  - Decreased contractile function
  - Increased residual

- Decreased urethral closure pressure (women)
- Increased night-time urine production (blunting of ADH peak)
- Altered central and peripheral neurotransmitter concentrations/actions
- Increased white matter hypodensities in the brain

Urinary Incontinence (UI) in the elderly is common

- International prevalence= 30-65% (Roe et al, 2011)
  - Dual incontinence= 20-64%
- Canadian estimates= 20-50%, 3.5 million Canadians (Canadian Continence Foundation, 2014)
- Underdiagnosed and undertreated (Santos et al, 2011)
  - Patient embarrassment
  - Incontinence is “normal part of aging”
  - Lack of motivation to investigate

Associated conditions and UI

- Peripheral vascular disease
- Diabetes mellitus
- Congestive heart failure
- Venous insufficiency
- Chronic lung disease
- Falls and contractures
- Sleep disordered breathing
- Stroke

- Dementia
- Diffuse Lewy body disease
- Parkinson’s disease
- Normal Pressure Hydrocephalus
- Recurrent infection
- Constipation
- Obesity
Downstream negative effects

- Increased anxiety
- Reduced self-esteem, depression, social isolation
- Self-reported decrease in overall health
- Increased workload for nurses
- Rising costs
- Decline in ADL performance
- Decreased mobility
- Impairments in oral intake
- Hygienic/skin problems

UI and mortality

• John et al, 2016
  • Systematic review and meta-analysis
  • 38 studies- 158456 patients, 19 countries
  • Hospital, community, LTC
  • All UI subtypes (stress, urge, mixed, enuresis)
  • 4 week-10 year follow up
We are not doing a great job!

- In the frail elderly, UI is often not adequately assessed
- Community-dwelling elderly
  - type of UI only diagnosed in 48% of cases (Du Moulin et al, 2009)
- Elderly in residential care
  - Assessments for UI only done in 24-48% of patients (Georgio et al, 2001)
  - Examinations not done in the majority of patients- rectal exam 15%, pelvic exam 2% (Watson et al, 2003)
  - In patients with dementia and UI- only 55% had care plans (Pringle-Specht et al, 2002)
Case Example
Case 1: Mrs. S

- 84yo female, widowed, living alone in apartment
- Urinary incontinence x 5 years
- Symptoms
  - Frequency: 10x/day, 4x/night
  - Leakage with urgency
  - Occasional leaking with cough, getting out of chair
  - No hesitancy, intermittency or sensation of incomplete emptying
  - 4-5 pads/day, 1-2 pads/night
  - No dysuria, hematuria or recurrent UTI
  - Soft BM q 1-2 days
  - Drinks 6 cups of water, 2 cups of tea, 1 cup of coffee/day
Mrs. S

**PMHx:**
- Type 2 diabetes
- Hypertension
- Chronic venous insufficiency
- Chronic pain due to osteoarthritis in hands and knees
- Fall x 2 in past year

**Medications:**
- Metformin- 1g po bid
- Amlodipine 10 mg po daily
- Furosemide 20 mg po bid
- Celecoxib 100mg po bid
- Gabapentin 100mg po tid
- Lorazepam 0.5 mg po qhs
## Medications and UI

<table>
<thead>
<tr>
<th>Medications</th>
<th>Effects on Continence</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alpha adrenergic agonists</td>
<td>Increase smooth muscle tone in urethra and prostatic capsule and may precipitate obstruction, urinary retention, and related symptoms</td>
</tr>
<tr>
<td>Alpha adrenergic antagonists</td>
<td>Decrease smooth muscle tone in the urethra and may precipitate stress urinary incontinence in women</td>
</tr>
<tr>
<td>Angiotensin converting enzyme inhibitors</td>
<td>Cause cough that can exacerbate UI</td>
</tr>
<tr>
<td>Anticholinergics</td>
<td>May cause impaired emptying, urinary retention, and constipation that can contribute to UI. May cause cognitive impairment and reduce effective toileting ability.</td>
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<tr>
<td>Calcium channel blockers</td>
<td>May cause impaired emptying, urinary retention, and constipation that can contribute to UI. May cause dependent oedema which can contribute to nocturnal polyuria</td>
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## Medications and UI

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<tr>
<td>Cholinesterase inhibitors</td>
<td>Increase bladder contractility and may precipitate urgency UI</td>
</tr>
<tr>
<td>Diuretics</td>
<td>Cause diuresis and precipitate UI</td>
</tr>
<tr>
<td>Lithium</td>
<td>Polyuria due to diabetes insipidus</td>
</tr>
<tr>
<td>Opioid analgesics</td>
<td>May cause urinary retention, constipation, confusion, and immobility, all of which can contribute to UI</td>
</tr>
<tr>
<td>Psychotropic drugs</td>
<td></td>
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<tr>
<td>Sedatives</td>
<td>May cause confusion and impaired mobility and precipitate UI</td>
</tr>
<tr>
<td>Hypnotics</td>
<td>Anticholinergic effects</td>
</tr>
<tr>
<td>Antipsychotics</td>
<td>Confusion</td>
</tr>
<tr>
<td>Histamine$_1$ receptor antagonists</td>
<td></td>
</tr>
<tr>
<td>Selective serotonin re-uptake inhibitors</td>
<td>Increase cholinergic transmission and may lead to urinary UI</td>
</tr>
<tr>
<td>Others</td>
<td></td>
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<tr>
<td>Gabapentin</td>
<td>Can cause oedema, which can lead to nocturnal polyuria and cause nocturia and night-time UI</td>
</tr>
<tr>
<td>Gliozones</td>
<td></td>
</tr>
<tr>
<td>Non-steroidal anti-inflammatory agents</td>
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Physical exam

- Difficulty getting up from a chair, undresses slowly
- Slow gait (1.0m/s)
- BP 130/70 lying, 100/60 standing (postural dizziness)
- 2+ bilateral pedal edema
- Sacral innervation intact
- Anal wink intact, good anal tone, no stool on DRE
- No vaginal prolapse, moderate atrophy
- Weak pelvic floor muscles
- Positive stress test in the upright position
- Post-void residual urine volume 45 mL
- Mini-mental cognitive exam 26/30
Investigations

• GFR 60
• HbA1C = 9.8%
• Urinalysis negative

***No evidence that urodynamic studies/cystoscopy are necessary unless:
• Red flag symptoms/signs
• Complex neurologic disease
• Men with BPH symptoms
• Women contemplating surgery
What Type of Incontinence?

• Urgency incontinence
• Stress incontinence
• Functional incontinence

Multifactorial Incontinence
Mrs. S. = Multifactorial Incontinence

- **Overactive bladder/urgency incontinence:**
  - Furosemide = urinary urgency and frequency
  - Polyuria due to excessive fluid consumption and caffeinated beverages
  - Poorly controlled DM2 with glucosuria

- **Nocturia:**
  - Fluid redistribution from pedal edema
  - Due to venous insufficiency
  - Due to NSAIDS, calcium channel blockers, Gabapentin
Mrs. S. = Multifactorial Incontinence

• Enuresis
  • Co-administration of Lorazepam and Lasix at night

• Stress incontinence
  • Weak pelvic floor muscles

• Functional incontinence
  • Arthritis, slow gait, orthostatic hypotension
Non-pharmacological treatment
Poll Question #2

• What lifestyle interventions have been shown to be effective in the treatment of urinary incontinence?
  a) Reducing total fluid consumption
  b) Avoiding acidic drinks (ex. orange juice, grapefruit juice)
  c) Avoiding alcoholic beverages
  d) Weight loss
What is the Evidence?

- December 2015
- 11 trials (RCT, quasi-randomized)
- 6000 participants
  - Weight loss interventions - 4 trials
  - Decreasing fluid intake - 3 trials
  - Decreasing caffeine - 3 trials
  - Eliminating soy - 1 trial

Authors’ conclusions

Evidence for the effect of weight loss on urinary incontinence is building and should be a research priority. Generally, there was insufficient evidence to inform practice reliably about whether lifestyle interventions are helpful in the treatment of urinary incontinence.

Other lifestyle interventions

- No observational or RTC data to recommend any lifestyle interventions for prevention of UI

- Physical activity
  - Non-RCT data suggests that moderate exercise may decrease UI/OAB symptoms

- Smoking
  - UI/OAB symptoms may improve with smoking abstinence

- Caffeine
  - Reduction in caffeine intake recommended, but evidence limited (small RCT with n= 14, cross-sectional data based on self-report)

- Constipation
  - Small observational trials show association between chronic straining and UI

Lifestyle interventions- Frail elderly

1. No recommendations are possible regarding lifestyle interventions for UI in the frail elderly (Level 4)

Best evidence- Increased hydration for incontinent frail elderly may decrease UI

Behavioural interventions

• Pelvic floor muscle training (PFMT)
  • Effective as a stand-alone treatment, as part of a multi-component strategy
  • PFMT may be just as effective as drug therapy and that combination of drug therapy + PFMT more effective than either treatment alone
  • Supervised PFMT should be offered as a first-line conservative therapy for women of all ages with UI (Level 1 evidence, Grade A recommendation)

Behavioural interventions

Scheduled voiding regimens:

• **Bladder training (BT)**- should be recommended as a **first-line conservation therapy** for UI in women
  • Start with 1hr intervals and increase by 15-30min intervals until q2-3hr voiding intervals achieved
  • Consider self-monitoring with diary/log
  • Importance of supervising HCP
  • Consider different strategy if no improvement after 3 weeks
  • BT likely as effective as drug therapy

• **Timed voiding**
  • No high quality evidence to support efficacy in cognitively intact women

Back to Ms. S.....
Evidence-based conservative management

- Trial caffeine reduction
- Physical exercise- to increase gait speed and decrease falls risk
- Referral to pelvic floor muscle physiotherapist
- Instruction + self-management tools for bladder training
- Medication review:
  - Taper Lasix, taper Lorazepam
  - Replace NSAID with Acetaminophen
  - Replace Amlodipine with Ramipril (lower dose)
  - Add Gliclizide ER 30mg po daily to optimize DM control
- Pharmacological Rx?
Pharmacological Rx? If so, when?

• For most, consider 6-8 weeks trial of non-pharmacological treatment

• Who to consider starting on pharmacological therapy earlier:
  • Younger patients (more evidence about adverse effects, fewer adverse effects)
  • Few comorbidities
  • Few medications
  • Cognitively intact
  • Severe bother
Drug therapy for urgency urinary incontinence

Two targets:

- Reduce the strength and frequency of bladder contractions during the voiding phase
  - Antimuscarinic agents
  - Botulinum toxin

- Enhance bladder relaxation during the bladder storage phase
  - Beta₃ receptor agonists
Pharmacological Rx

- Antimuscarinics:
  - Oxybutynin (Ditropan)
  - Tolterodine (Detrol)
  - Darifenacin (Enablex)
  - Solifenacin (Vesicare)
  - Fesoterodine (Toviaz)
  - Trospium (Santura)

- Beta-3 agonist:
  - Mirabegron (Myrbetrix)
Anticholinergic Agents for OAB: Potential Crossing of Blood-Brain Barrier

**Tolterodine (Detrol)**
- Low lipophilicity
- Charged
- Relatively bulky (> 400)
- P-gp Substrate

**Trospium (Trosec)**
- Low lipophilicity
- Charged
- Relatively bulky (> 400)

**Darifenacin (Enablex)**
- Low lipophilicity
- Charged
- Relatively bulky (> 400)

**Fesoterodine (Toviaz)**
- Low lipophilicity
- Charged
- Relatively bulky (> 400)

**Oxybutynin (Ditropan)**
- High lipophilicity
- Neutral charge
- Relatively small (≤ 400)

**Solifenacin (Vesicare)**
- Lipophilic
- Charge unknown
- Relatively bulky (> 400)

SYSTEMATIC REVIEW

Appropriateness of oral drugs for long-term treatment of lower urinary tract symptoms in older persons: results of a systematic literature review and international consensus validation process (LUTS-FORTA 2014)

Matthias Oelke¹, Klaus Becher², David Castro-Diaz³, Emmanuel Chartier-Kastler⁴, Mike Kirby⁵,⁶, Adrian Wagg⁷, Martin Wehling⁸
## FORTA Classifications

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## LUTS FORTA Classification: OAB drugs

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- **Class A (absolutely)**
  - Indispensable drug, clear-cut benefit in terms of efficacy/safety ratio proven in elderly patients for a given indication

- **Class B (beneficial)**
  - Drugs with proven or obvious efficacy in the elderly, but limited extent of effect or safety concerns
  - Fesoterodine

- **Class C (careful)**
  - Drugs with questionable efficacy/safety profiles in the elderly, to be avoided or omitted in the presence of too many drugs, lack of benefits or emerging side effects; review/find alternatives
  - Darifenacin
  - Mirabegron
  - Extended-release oxybutynin
  - Solifenacin
  - Tolterodine
  - Trospium

- **Class D (don’t)**
  - Avoid in the elderly, omit first, review/find alternatives
  - Immediate release oxybutynin
  - Propiverine

## LUTS FORTA Classification: Benign prostatic hypertrophy (BPH)

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- Dutasteride
- Finasteride
- Silodosin
- Tamsulosin
- Tadalafil
- Alfuzisin
- Doxazosin
- Terazosin
Poll Question 3:
Would you start Ms. S on drug therapy?

a) Yes, I would start her on Oxybutynin
b) Yes, I would start her on Fesoterodine
c) Yes, I would start her on Mirabegron
d) No, I would not start her on any medications for urinary incontinence
Drug therapy for Ms. S?

• Discussion about incontinence severity, bother and effects on quality of life after non-pharmacological trial period (6-8 weeks)
  • Consider referral to nurse continence advisor- invaluable resource!!!

• Inform her of potential side effects with medications
  • Dry eyes, dry mouth
  • Constipation
  • Urinary retention- do PVR
  • Neurocognitive side effects?
  • COST!

• AVOID oxybutynin!
Urinary incontinence is NOT a normal part of aging!!!

Thank You!