Urinary Incontinence in Older Adults

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Prevalence of UI in Community-Dwelling Women by Age
(N=27,936; Norway)
Prevalence of UI in American Men by Age (N=21,590)

Diokno et al., 2007
Prevalence of UI in American Women and Men
Age 65+ by Frequency
(National Health and Nutrition Examination Survey)

Anger et al., 2006
Urinary Incontinence: Unwanted leakage of urine

- **Types**
  - **Urgency** – urine loss on the way to toilet following urgency
  - **Overactive bladder**
    - Urgency - intense/sudden desire to void
    - Frequency - >8 voids/24 hours
    - Nocturia - awakening (2 or more) at night to void
  - **Stress** - urine leakage with activity such as coughing or laughing
Prevalence of UI Types in American Women (37 studies)

Prevention of Urinary and Fecal Incontinence in Adults, December 2007; Evidence Report/Technology Assessment, Number 161
## Pooled prevalence of UI in Community Women by Type

<table>
<thead>
<tr>
<th>Age group</th>
<th>Stress</th>
<th>Urge</th>
<th>Mixed</th>
</tr>
</thead>
<tbody>
<tr>
<td>19-44 years</td>
<td>12.8%</td>
<td>4.9%</td>
<td>7.1%</td>
</tr>
<tr>
<td>45-64 years</td>
<td>21.8%</td>
<td>10.2%</td>
<td>12.7%</td>
</tr>
<tr>
<td>65 and older</td>
<td>16.1%</td>
<td>12.2%</td>
<td>16.8%</td>
</tr>
</tbody>
</table>

Adapted from Shamliyan et al 2007
Pooled prevalence of UI in Community Men by Type

<table>
<thead>
<tr>
<th>Age Group</th>
<th>Stress UI</th>
<th>Urge UI</th>
<th>Mixed UI</th>
</tr>
</thead>
<tbody>
<tr>
<td>19-44 years</td>
<td>.74%</td>
<td>3.09%</td>
<td>.70%</td>
</tr>
<tr>
<td>45-64 years</td>
<td>3.78%</td>
<td>7.75%</td>
<td>1.53%</td>
</tr>
<tr>
<td>65 and over</td>
<td>2.67%</td>
<td>11.70%</td>
<td>6.13%</td>
</tr>
<tr>
<td>80 and over</td>
<td>---</td>
<td>18.18%</td>
<td>9.4%</td>
</tr>
</tbody>
</table>

Adapted from Shamliyan et al 2007
US Prevalence of Overactive Bladder by Age and Gender

Overall Prevalence of UI in the Nursing Home Population (Men & Women)
United States

- Palmer 1991: 44%
- Borrie 1992: 62%
- Peet 1995: 23%
- Brandeis 1997: 49%
- Aggazotti 2000: 55%
- Adelmann 2004: 77%
- Nelson 2005: 1992%
- Jumadilova 2005: 1993%
- Boyington 2007: 74%
Urinary Incontinence in the Elderly

- In older adults, especially those who are frail, UI is considered to be a geriatric syndrome, because many of its risk factors are not directly related to the genitourinary tract.
- Geriatric syndromes have been defined as:
  - multifactorial health conditions that occur when the accumulated effects of impairments in multiple systems render an older person vulnerable to situational challenges.
- Large numbers of different baseline as well as precipitating risk factors may interact with each other in influencing the ability of an older individual to remain continent in the face of common daily challenges.

Continence in the Elderly

Risk factors

- Memory (impaired?)
- Motivation
- Medical conditions (neurologic conditions)
- Manual dexterity ↓

Environment

Mobility
Poor upper and lower extremity strength
Incontinence and Frailty

- Systematic review that included epidemiological studies from an variety of developed countries (Shamliyan et al 2007)
- Findings:
  - prevalence of UI, FI, and combined incontinence increased with age and functional dependency
  - cognitive impairment, limitations in daily activities, and prolonged institutionalization in NH were associated with a higher risk of incontinence
  - among community dwelling adults, stroke, diabetes, obesity, poor general health, and comorbidities were associated with UI and FI
Incontinence is not part of the normal aging process
- That said, there is an increase in prevalence of continence issues with increasing age.

Incidence and prevalence of OAB symptoms (frequency, urgency, urgency incontinence, and nocturia) increase with increasing age (Koelbl 2009)
- Links to dysfunction of prefrontal/limbic system and lesions in the frontal region of the brain (Griffiths & Tadic 2008; Zhang, Yu & Wang 2010).
- In men, also associated with urethral obstruction (Krissovich 2006).

Urinary incontinence may be a marker of frailty in older persons (Dubeau et al 2009; Eustace et al 2007; Holroyd-Leduc, 2004).
How does frailty make UI worse

- Decreased mobility
  - Difficulty reaching the toilet (mobility, environment)
  - Constipation
  - Poor fluid intake
  - Decreased strength of PFM?

- Difficulty with manual dexterity

- Polypharmacy
  - anticholinergic burden
  - sedation
UI and Cognitive impairment

- Delirium is often multifactorial in etiology (Reuben et al., 2009; Whytock, 2006)
  - Urinary tract infection and medications
    common causes

- Delirium interferes with awareness of surrounding and ability to care for oneself.
  - One of the factors to be considered in older adults with acute onset urinary incontinence
  - A previously functionally independent community dwelling older adult might become suddenly dependent
UI and Cognitive impairment

- Dementia affects many domains of cognition
- Interferes with ability to carry out normal ADLs - including toileting.
- Dementias are neurological conditions that can impair cortical inhibition of the bladder and lead to neurogenic detrusor overactivity

(Dubeau et. al., 2009; Eustace et. al. 2007; Krissovich, 2006)
Second Cause of Institutionalization in the Elderly
Does UI predict NH placement?

- Studies are inconclusive.
- N= 5986 HMO members, aged 65 years and older (US)
  - adjusted risk of admission to a nursing facility
    2.0 times greater for incontinent women and 3.2 times greater for incontinent men (Thom et al 1997)
- N= 4,646 PACE participants 55 years and older (US)
  - Bowel incontinence independent predictor of institutionalization, but not UI (Freidman et al 2005).
Does UI predict NH placement?

- **N= 6,506 community dwelling aged 70 and older (US)**
  - Overall UI not to be a strong independent risk factor for NH placement
  - However, in subgroups with higher levels of caregiver burden (baseline ADL dependence, visual impairment, high BMI, previous smoking history) it was (Holroyd-Leduc et al 2004).

- **Systematic review of US studies of predictors of NH admission for people with dementia N=39,526**
  - Incontinence NOT a consistent predictor of NH admission
  - Caregiver stress the most significant predictor (Gaugler et al 2009)
Does UI predict NH placement?

- UI alone does not predict NH placement for frail older adults, but may be one factor that adds to caregiver burden and stress.
The effect of urinary incontinence on the emotional health of spouses, in general, and spousal caregivers, in particular has been relatively neglected.

Fultz N.H. (2005), The impact of own and spouse’s urinary incontinence on depressive symptoms, Social Science and Medicine, 60, 2537-2548.

Informal Caregiving: Limited Research

• Large number of informal caregivers providing care to prevent and/or manage incontinence (an estimated 10 and 7 million respectively)
  – Limited research examining the impact of incontinence on caregiver burden
  – Most studies focused on urinary incontinence alone or in combination with fecal incontinence
    • Little research examining the impact of only fecal incontinence
  – The majority of care recipients had dementia
  – Methodologies varied
Impact of UI on Other Measures of Caregivers Impact/Burden: U.S. Studies

- UI management rated as third most troublesome caregiving task (behind a lack of time for their own needs and managing care recipient emotional/behavioral problems)
- 30% of caregivers did not feel prepared to deal with UI

Impact of Urinary Incontinence on Caregiver Burden: U.S. Studies

- Examined caregiver burden in persons caring for cognitively impaired care recipients with UI; caregivers reported that UI
  - Was sometimes a burden
  - Frequently had a negative impact on them
- Some/great deal of strain reported
  - UI-related odor – 56%
  - Toileting – 55%
  - Changing pad/clothing – 53%
  - UI-related costs (pads/briefs) – 53%
  - Wet clothing – 50%
  - Changing bed linen – 44%

Engberg et al., 2002
Impact of UI on Indirect Measures of Caregivers Burden: U.S. Studies

- Caregivers of early stroke survivors rated managing UI as the second most common problem and the most distressing problem

Impact of UI on Other Measures of Caregivers Impact/Burden: U.S. Studies

-Associated with increased adjusted caregiving hours/week relative to caring for persons who were continent
-When the incontinence was severe enough to require pad/garments, the hours were even higher
-In the U.S., national financial annual costs of more than $6 billion for incontinence-related informal care has been estimated

Falls and UI

- Among community dwelling older adults, storage LUTS have been associated with increased fall risk.

(Voaklander et al 2006; Takazawa & Arisawa, 2005; Tromp et al 1998; Tromp et al 2001)
Type of UI may be a factor – community studies

- N=6,049 older women, UUI weekly or more was associated with falls risk (OR = 1.26) and fractures, SUI was not (Brown et al 2000)

- Among frail older women, those with mixed UI 3.05 times more likely to fall, SUI and UUI alone not associated with falls (Takazawa et al, 2005)
Chiarelli et al (2009) conducted a systematic review to examine the association of UI and falls in community elders.

- 9 studies, data from N=15,679 pooled
  - UUI – OR for falls 1.94
  - SUI – OR for falls 1.11
  - Mixed UI – OR for falls 1.92
OAB symptoms and falls

- Urinary urgency and UUI both fall risk factors in a Finish study of 1016 adults 70 years and older. (Luukinen 1996)
- NOBLE survey (n= 397 cases and 522 controls), those with OAB increased risk of injury related to a fall (OR = 2.26). (Wagner 2002)
- N= 405 Taiwanese community seniors, urinary frequency or UUI were factors that predicted falls (Hui-Chi 2004)
- Nocturia episodes at least twice nightly significantly ↑ risk of falls (OR = 1.84), risk increased in those reporting more than three episodes (OR = 2.15) (Stewart et al 1992)
The current status:

- Despite the link between LUTS and falls in community dwelling older adults, few intervention studies to reduce falls have included urinary symptoms.

- Both the NICE Guidelines (UK) (2004) and AGS/BGS (2011) revised falls guidelines suggest including continence assessment as a part of falls risk assessment, there is not enough research from which to develop evidence based interventions.
Research gap: Is balance and gait affected by LUTS?

- Earlier explanations of the association between falls and UI tended to be simplistic (e.g. slipping on urine)
- Literature has been emerging that supports a much more complex relationship
  - Wolf (2000) suggested that divided attention may play a role in falls risk in someone focused on trying to urgently reach the bathroom
  - Lemack et al (2000) reported worsening of gait and balance disturbances in PD patients when urinary symptoms also present - involvement of spinal and higher level cognitive functions?
  - Smith et al (2008) reported changes in balance in mid-life women with comparing empty with full bladder states
Addressing the research gap

- Pilot studies examining gait and balance changes related to bladder symptoms among competent community based older adults with OAB now under way at several centres
- Data relating to frail older adults is lacking, but may be an important avenue to pursue in future falls prevention studies
Continence Assessment of Community Frail Older Adults

Interdisciplinary Assessment:

- Functional assessment (mobility, manual dexterity, activities of daily living)
- Cognitive assessment
- Home environment assessment
- Medication review
- Bladder diary
  - Caregiver can assist if needed
Assessment

- Those experiencing or at risk for falls should have a Falls Assessment which includes assessment of continence and other urinary symptoms (NICE, 2004; Panel on Prevention of Falls in Older Persons, 2011)

- Little evidence this occurs

- Access to continence services may be limited in some jurisdictions
Assessment and Interventions

Recommended in the International Consultation on Incontinence algorithm on assessment and management of incontinence in frail elders (Dubeau et al., 2009)
Active case finding for UI should be done in all older persons (Grade A).

Screening for frailty is possible (Grade A) and encouraged (Grade C).

The basic assessment of UI should focus on identification of potentially treatable conditions and factors that may cause or worsen UI, contribute to its burden, and impact management decisions (Grades A-C).

Factors in Management of UI in Adults

- Behavioral treatment
  - Availability and willingness of caregivers
- Drug treatment
  - Age-related differences in drug handling
  - Drug-drug, drug-disease interactions
  - Adverse effects, especially cognitive
  - Country-specific guidelines, formularies
- Surgery
  - Nihilism and small number of studies
- Estimating costs and benefit
  - Importance of “intangibles,” reimbursement
Two Broad Categories of Behavioral Strategies

- **Patient Dependent**
  - Pelvic muscle exercises, bladder training, fluid management
  - Requires ability to learn and retain new skills

- **Caregiver Dependent**
  - Scheduled voiding, timed voiding, and prompted voiding
  - Requires someone to assist the resident

Johnson, T 2002, JAMDA
Problems that Can Impact Continence Status

- Not able to:
  - Identify the urge to void
  - Remember how to respond to the urge
  - Remember where the toilet is located
  - To sit on the toilet
  - To communicate the need for assistance
  - To understand verbal reminders for toileting

Jirovec 1986
Interventions

- **Alter environment** – remove obstacle course!
- **Equipment**
  - Mobility and bathroom equipment
  - Commode by bedside
  - Easy off clothing
- **Timed toileting/prompted voiding initially**, possibly followed by bladder training
  - Potential burden on caregiver?
- **Containment products**
- **Fluid management** – may need prompting
Interventions

- Pelvic floor muscle exercises?
  - Some evidence that older community based women can benefit from PFME (e.g. Perrin et al 2005)
  - Studies in the physically/cognitively frail are not available
    • Those with cognitive impairment may not be able to undertake this
    • Further research with physically frail individuals is needed
Summary

- Incontinence is an issue that is often experienced by older community dwelling - and may be more problematic in those with cognitive or physical frailty
- Incontinence and other LUTS are linked to cognitive impairment and falls
- Assessment and management of UI in frail community dwelling older adults can be improved