Urinary Incontinence in the Elderly: Interactions with Frailty and Multi-Morbidity
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• Consultant Rand Corporation

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• None
Objectives:

1. To compare and contrast associations of frailty and multi-morbidity with urinary incontinence (UI)
2. To provide the most current knowledge linking frailty and multi-morbidity with UI
3. To identify knowledge-gaps and research opportunities related to the intersection of frailty and multi-morbidity with UI
UI: A Geriatric Syndrome

Inouye, Studenski, Tinneti, and Kuchel, JAGS 2007
UI Risk Factors: Frailty and Multi-morbidity

- Urinary Incontinence
- Functional dependence
- Impaired Cognition
- Impaired Mobility
- Frailty
- Multi-morbidity

Inouye SK et al. JAGS 2007
Frailty
Frailty: Phenotype Definition

- Weight loss
- Strength loss
  - Grip strength
  - Rising from a chair
- Decreased gait speed
- Low physical activity
- Pt-reported exhaustion

Frailty phenotype = ≥ 3 criteria
Pre-frail = 1 or 2 criteria

Frailty and UI: Prevalence and Impact

- **Frailty** = 10-14% of older adults\(^1,2\)
  - Increases with age
  - Varies by gender, race/ethnicity
  - Hospitalization, injurious falls, long-term care, mortality

- **UI** = 44% of older adults\(^3\)
  - Increases with age
  - Varies by gender, race/ethnicity
  - Falls, long-term care, ± mortality
  - Varies by level of care
  - Top 10 prevalent condition\(^4\)

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\(^1\) Collard RM et al, JAGS 2012
\(^2\) Shamliyan et al, Aging Res Rev 2013
\(^3\) CDC and Prevention, National Center for Health Statistics
\(^4\) Clerencia-Sierra, PLOS One, 2015
Frailty Associations with UI

• Clinical cohort
  • Older women seeking care for pelvic floor disorders, 16% (25/150)\(^1\)

• Population-based studies
  • Women with daily UI increased odds (OR 3.3) for functional difficulty\(^2\)
  • Incident UI associated with markers of frailty and functional decline\(^3\)

• Clinical trials for UI treatment
  • Vulnerable Elders – Fesoterodine\(^4\)
  • Ongoing trials

\(^1\)Erekson EA et al, Int Urogyn J 2014
\(^2\)Erekson EA et al, FMPRS 2015
\(^3\)Miles et al, J Gerontol Med Sci A 2001
\(^4\)DuBeau et al, J Urol 2014
Frailty Components: Overlap with Mobility

- Urgency UI vs Stress UI\textsuperscript{1}
  - Associated with decreased gait speed & balance
- Bladder function and gait speed\textsuperscript{2}
  - 36 continent women
  - Mean age 50 years
  - Strong desire to void vs post void
    - Slower gait speed
    - Decreased stride length

\textsuperscript{1}\textit{Fritel, BJOG 2013}
\textsuperscript{2}\textit{Booth, Neurourol Urodyn 2013}
Multi-Morbidity
Multi-morbidity: Definitions and Impact

- Presence of at least 2 medical conditions\(^1\)
  - “Most common chronic condition”\(^2\)
- Interactions
  - Conditions and treatments
  - Functional limitations
  - Life expectancy
- Patient-centered rather than disease-oriented care

\(^1\)AGS Expert Panel on Care of Older Adults with Multimorbidity, JAGS 2012
\(^2\)Tinetti, Fried, Boyd, JAMA 2012
Multi-morbidity: Prevalence Rates

- **Multi-morbidity** = 25% all adults
  - 62% ages 65-74; 82% ages ≥85 years
  - Varies by gender, race/ethnicity
  - Incident rate 4x higher in adults <65 years of age

- Associated with higher rates of:
  - Death
  - Disability
  - Adverse effects
  - Institutionalization
  - Impaired quality of life

1. Weiss et al, JAMA 2007
2. St Sauvier et al, BMJ Open 2015
Metabolic disease
- Diabetes – 6 vs 15%
- Obesity – 60-70% in severe obesity

Musculoskeletal
- Arthritis – 24 vs 47%
- Osteoporosis – unclear results

Neurologic
- Dementia – OR 2.34; 95% CI 1.6–3.3
- Parkinson’s – 60% have LUTS

Cardiovascular
- HTN – 25 vs 44%
- Hyperlipidemia – 0.97 (95% CI, 0.81-1.16)
- Arrhythmias – drug interactions
- CAD – 3 vs 9%
- Stroke – UI poor prognostic factor
- CHF – 34-43% have severe OAB

Psychiatric
- Depression – 12 vs 36%
- Anxiety – 2 vs 12%
- Schizophrenia - ↑ rates with antipsychotics

Respiratory
- COPD - OR 1.56; 95% CI 1.2–2.1

Gastrointestinal
- Hepatitis - unknown

Cancer – ↑ prostate, GU, GI, Gyn
Substance abuse – ketamine, opioids, etoh
CKD – UI ↑ diuretic avoidance
HIV – 25.2%

Autism Spectrum Disorder - ↑ rates

Coyne, EpiLUTS 2009
Multi-morbidity and UI: Impact

• Negative impairments in health-related QOL\textsuperscript{1,2}
  • Adjustment for multi-morbidity

\textsuperscript{1}Kwang et al, Gender Medicine 2012
\textsuperscript{2}Ragins et al, J Urol 2008

Fig A: Mean physical component MOS-36 summary scores for incontinence frequency by Charlson level.
Fig B: Mean mental component MOS-36 summary scores for incontinence frequency by Charlson level.
Adjusted for age, body mass index, income and race\textsuperscript{2}
Multi-morbidity and UI: Quality of Care

- Medical Comorbidity Count
- Geriatric Comorbidity Count

N=644
Dashed lines=bootstrapped 95% confidence intervals.
X = unadjusted mean values; β = beta-coefficient of the medical comorbidity count on left and geriatric comorbidity count on right.

- Medical comorbidity count associated with better overall quality of care, but geriatric comorbidity count associated with poorer quality of care in this linear regression controlling for both comorbidity counts, age, sex, site, visits, and random effect of provider.

Min et al, JAGS 2014
Participants with co-morbid conditions/multimorbidity and frailty:

- Excluded from evidenced-based reviews\(^1\)
- Not defined well in UI clinical trials
  - Assessment varies
  - Difficult to discern treatment effects
- Excluded from UI clinical practice guideline recommendations:
  - AHRQ
  - ACP
  - AUA
  - AAFP
- Included in International Consultation on Incontinence (ICI) Publications\(^3\)

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\(^1\)Boyd et al, PLOS One 2012
\(^2\)Uhlig et al, JGIM 2014
\(^3\)Wagg et al, Neurourol Urodyn 2015
Multi-morbidity & Frailty with UI: Gaps & Opportunities

- Integration in existing data analysis
  - Additive effects or synergistic?
  - Additional studies needed
- Assessment in ongoing and future clinical trials
  - Inclusion of functional status measures
  - Planned sub-group analysis
- Integration in clinical care
  - Identification and treatment
  - Quality measures
- Dissemination in clinical practice guidelines (CPGs)
  - Existing examples of CPGs - other chronic conditions
Figure Legend:
Ratings of States of Functional Debility Relative to Death by Hospitalized Patients With Serious Illnesses. Distribution of patient ratings of each queried health state on a 5-point Likert scale.