

# Geriatric Incontinence: Where Do We Stand in 2016?

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# Disclosures

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- Current funding:
  - NIH: UI; osteoporosis; falls; Pepper
  - Foundation grants to re-engineer and improve geriatric care
- Other financial relationships: None
- Conflicts of interest: None

# Former State of the Art

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“The last scene of all,  
that ends this strange eventful history,  
Is second childishness, and mere oblivion:  
Sans teeth, sans eyes, sans taste,  
(sans bladder control)”

— “As You Like It”, Scene 7  
William Shakespeare

Much  
Has  
Changed!

# Case

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An 88 yo F with Parkinson's disease suffered a hip frx → confusion, Rx with haloperidol. Incontinence developed.

Exam: In wheelchair, Parkinsonian, with CHF, impaction, bladder distention, atrophic vaginitis

# Two Months Later...

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**She was back home,**

- Mentally-intact
- Fully mobile
- Continent

***How?***

# Will Traditional Paradigm Suffice?

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## UI Cause

↑ Detrusor (DO)

↓ Detrusor (DU)

↓ Outlet (SI)

↑ Outlet (obstruction)

## Treatment

Bladder relaxant

(Bethanechol)

$\alpha$  adrenergic; surgery

$\alpha$  adrenergic blocker

# Geriatric UI: What We Know (1)

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- It is common, morbid (med, psych), costly
- It is *never* normal, regardless of age, mental status, mobility, or setting
- Its causes appear to differ from UI in younger people, and involve not only the LUT but aging, function, and comorbidity
- It is *multifactorial* at **every** level -- organism, LUT, and even if a single LUT dx



# Continence Requires

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Mentation

Mobility

Motivation

Manual Dexterity

Urinary Tract Function

# CNS Changes in *Continent* Elders

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## Compared with younger adults

- ↓ activation of the R insula
- ↓ activation of anterior cingulate gyrus
- ↑ deactivation of medial pre-frontal cortex

## Impact

- ↓ ability to sense bladder filling
- ↓ ability to suppress bladder contractions

# LUT Changes in *Continent* Elders

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## Increased

- Detrusor Overactivity
- Nocturnal urine output
- BPH
- PVR (< 100 ml)
- Bacteriuria

## Decreased

- Bladder contractility
- Bladder sensation
- Sphincter strength (F)

## Unchanged

- Bladder capacity
- Bladder compliance

# LUT Dx in *Continent* Elderly

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<b>Condition</b>	<b>%</b>
Detrusor Overactivity	48
Obstruction (men)	53
Underactive Detrusor	13
<b>Normal</b>	<b>18</b>

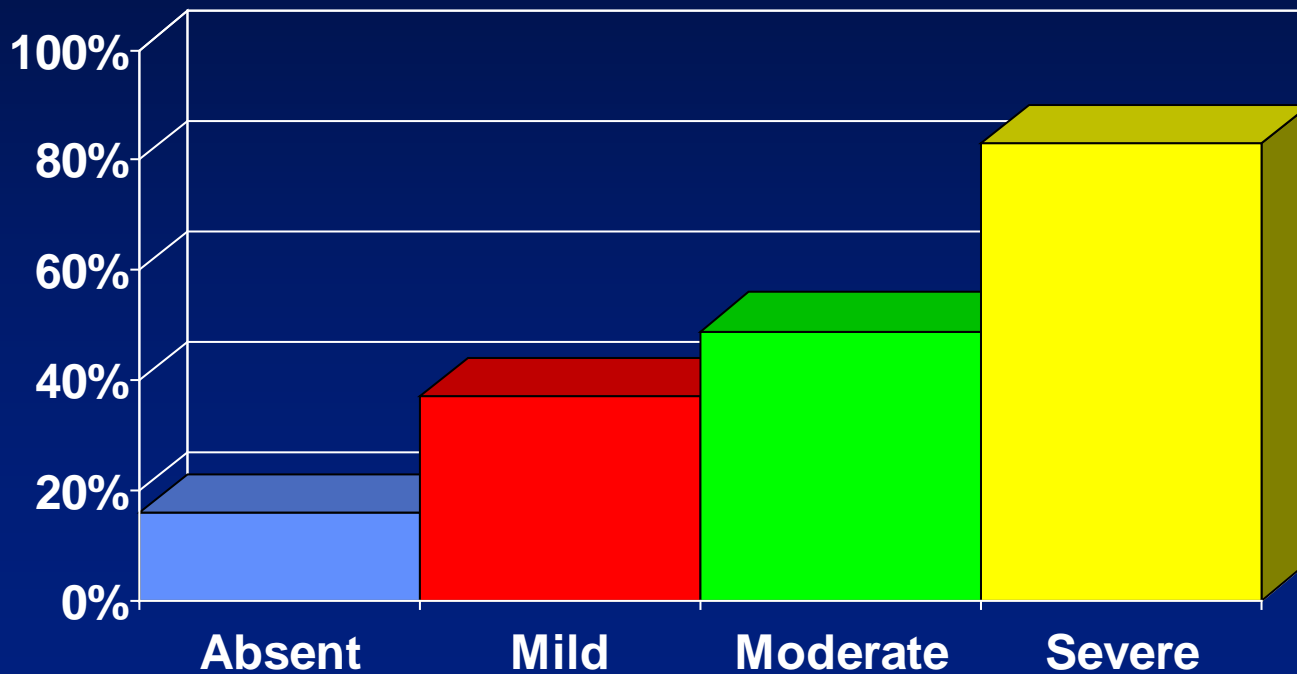
# Thus

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***Geriatric*** continence results  
***not*** from ***normal*** lower  
urinary tract (LUT) function  
but ***despite abnormal***  
LUT function!

# UI vs. Dementia in NH Residents

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Resnick, *NEJM* '89

# UI vs. Dementia

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<b>Dementia</b>	<b>Self- Transfer</b>	<b>Bed- Bound</b>
Absent/Mild	24%	42%
Moderate	41%	86%
Severe	59%	100%

# *Independent, Non-LUT* Risk Factors for UI in SNF

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**Dependent Transfers**

**Antidepressant Use**

**Parkinson's Disease**

**Dependent Dressing**

**Ca<sup>2+</sup> channel blocker**

**Antipsychotic Rx**

**Dementia**

**Past Stroke**

**Diabetes Mellitus**

**Diuretic Use (Loop)**



# Implications for UI in NH

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- *Outside the LUT* → Dx/Rx beyond LUT
- Multifactorial → No “magic bullet”
- Multidimensional → Function is important
- Dementia 7<sup>th</sup>/10 → No longer tenable to ascribe UI to Alz Dis

Most of the identified factors are Rxable!

# Principles of Geriatric UI

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Aging ***predisposes*** to UI

Drugs and diseases ***precipitate*** it

Thus, treatable causes ***outside*** LUT  
are more likely

May not need to Rx LUT abnormality

# LUT Causes in SNF/Implications

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DO	61%	➔	DO underlies < 2/3 of UI
DHIC	32%	➔	DO exists as 2 types; 1 mimics SI, BOO, UD
DH	29%		
BOO/SI	31%	➔	Outlet problem in 1/3 and no assoc w/ ↓cogn
UD	6%		
Normal	2%	➔	“Functional” UI is rare
Det+Outlet	45%	➔	>1 LUT cause is common

# Multifactorial *Within* the LUT-1

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- ~ 50% have >1 concurrent LUT problem:
  - DO
  - Impaired contractility
  - BOO
  - SUI
- Moreover...

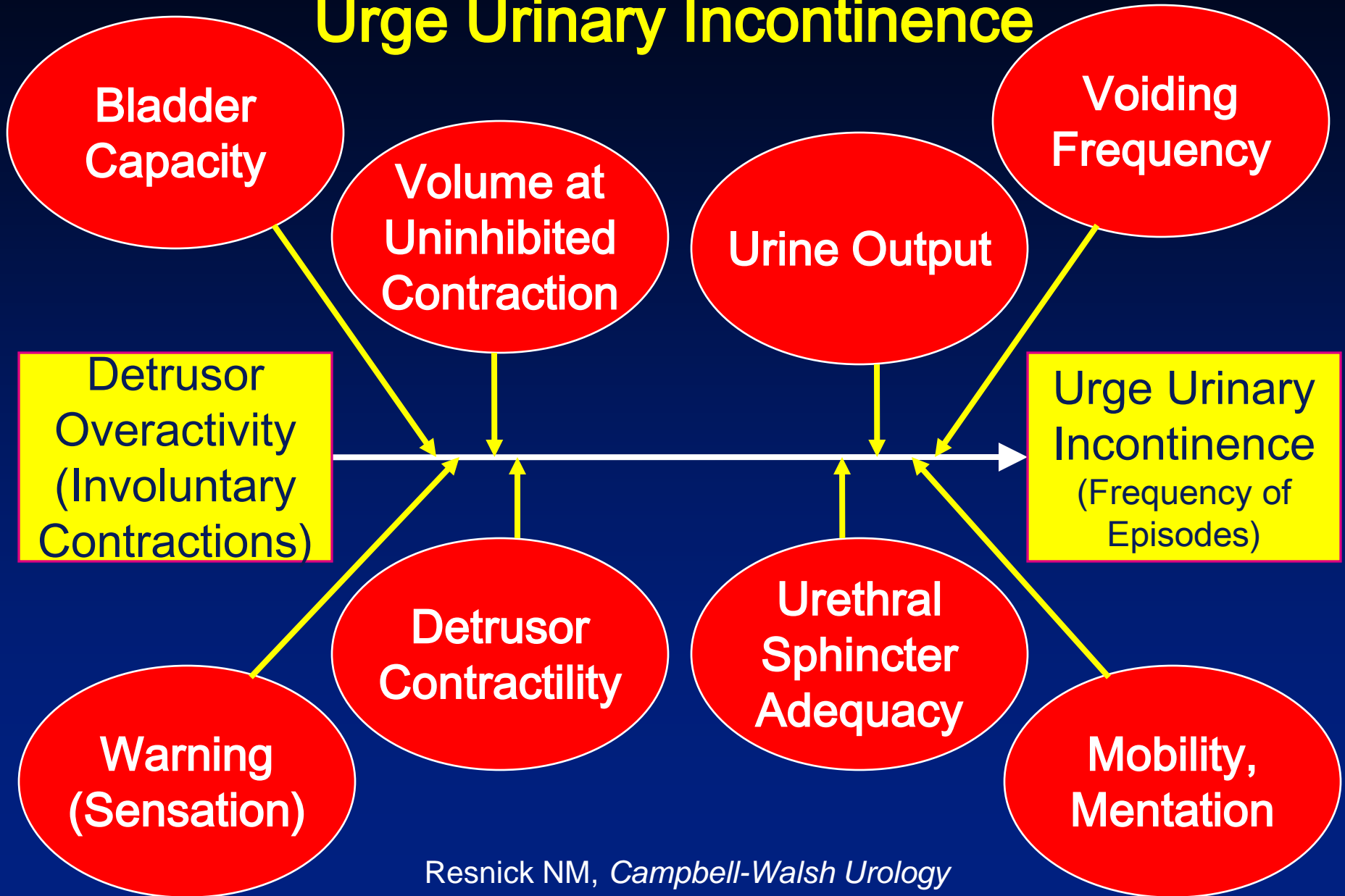
# Multifactorial in LUT *even w/1 Dx*

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- Multifactorial even for a **single** LUT dx. Ex: DO: both odds of urge UI and UI severity  $\propto$  with<sup>1,2</sup>
  - Volume at which DO occurs
  - Rate of detrusor pressure rise
  - Presence/amount of warning before DO
  - Sphincter (strength, coordination, striated mm to BN)
  - Ability to suppress DO and to oppose UI w/sphincter
- Risk of UI increases 10-fold depending on these<sup>1</sup>

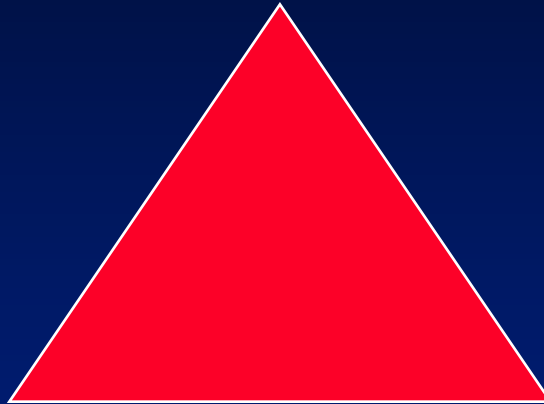
<sup>1</sup>Rosenberg LJ et al J Urol 2005; <sup>2</sup>Miller KL et al J Urol 2002

# Potential Determinants of Urge Urinary Incontinence



**Disease  
Severity**

**Compensatory  
Mechanisms**



**Symptomatic**

**Asymptomatic**

# Syndromes



# Geriatric Syndromes

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- Conditions reflecting the superimposition of new insult(s) on pre-existing vulnerability
- Because the cause/extent of the pre-existing vulnerability is so variable, as are the insults, so too is the pathophysiology of a syndrome
- “Causes” are thus multiple, variable, and may have less to do with the “usual organ” impugned
- Challenges the classic disease-based paradigm

# Clash of Paradigms

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## Young

Single abnormality

Relevant organ

“The” *cause*

Rx → ↓ diz sx

## Elderly

Multiple abnormalities

Multiple organs

Multiple *contributors*

Rx → ↓ diz sx + *other syndrome sx too*

# Implications

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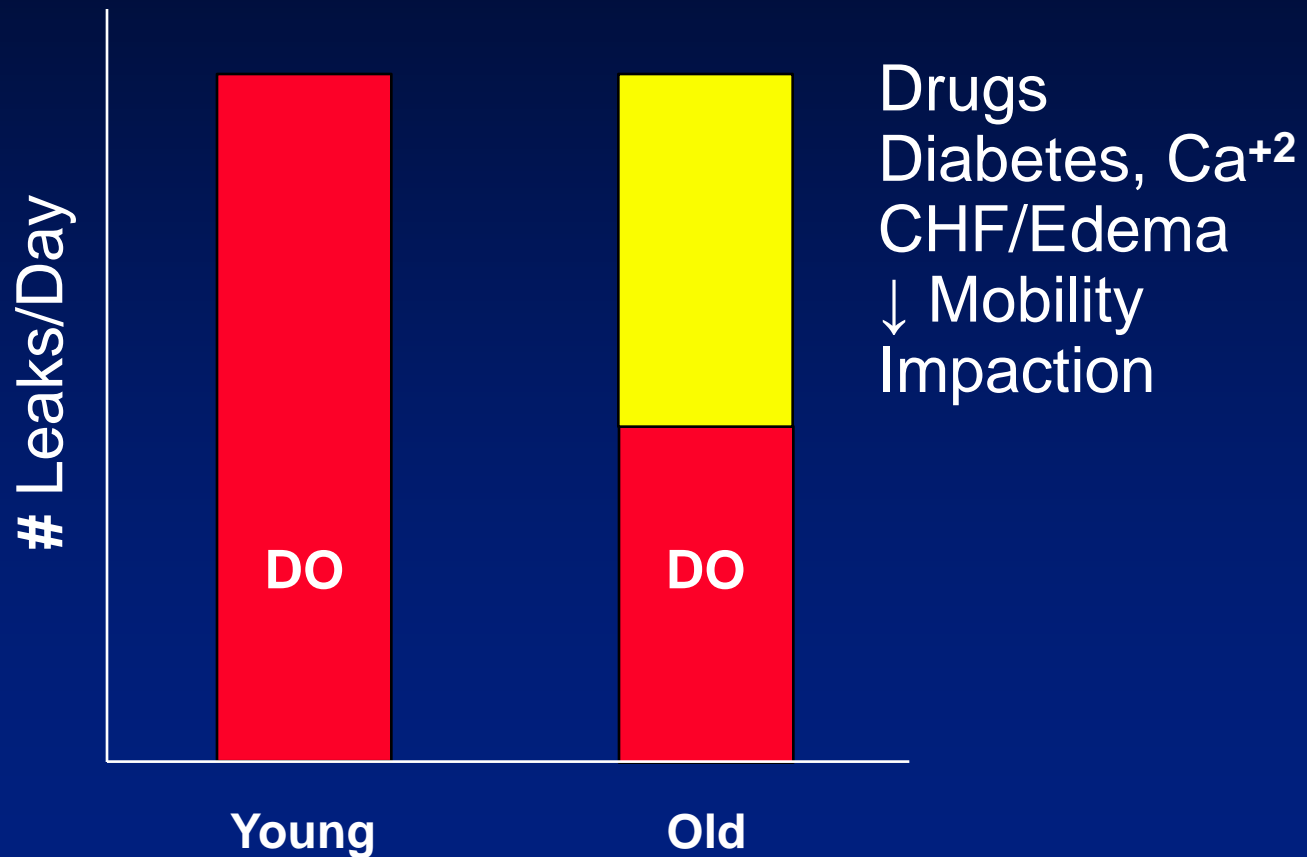
No silver bullet for geriatric UI

***But***

There is a silver lining ...

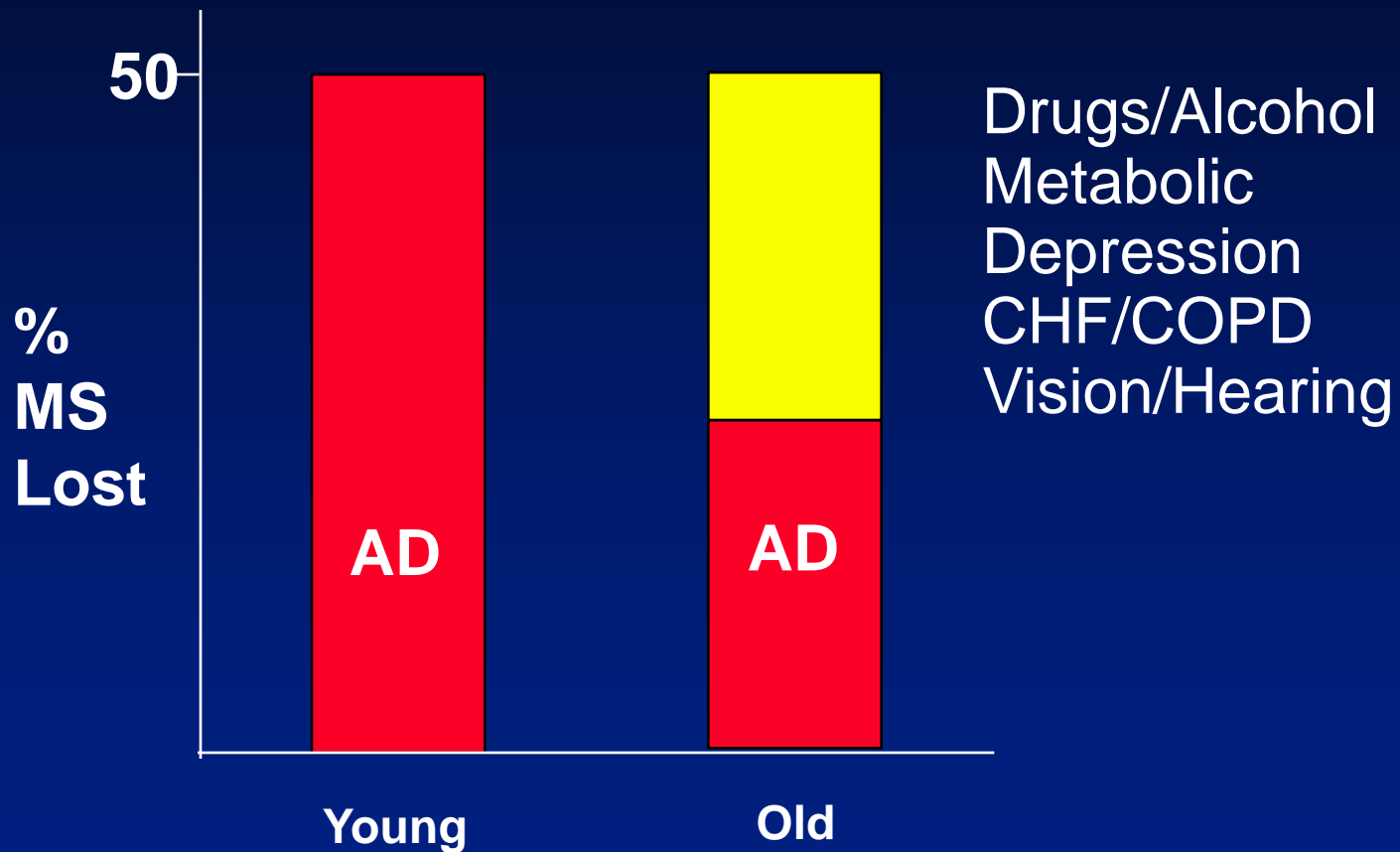
# Incontinence vs. Age

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# Memory Impairment vs. Age

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# Reasons UI Rx May Have Failed

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- Assumed just *one* cause, *inside* the LUT
- *Wrong LUT diagnosis* because existence of the most common geriatric bladder problem was unknown and it mimics SI, BOO, and UD
- *Wrong LUT treatment* → *worsened* the problem
- *Wrong drug doses* used, esp. if DHIC present
- Neglected *multiple* causes *outside* the bladder
- In incontinent demented patients, *assumed* that since dementia *could not be treated* neither could the incontinence

So What if UI Rx  
Incorporates  
These Principles?

# Oxybutynin IR in Elderly

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- RCT: ~100 older chronic UUI patients w/DO
- Stepwise Approach:
  - First, treated causes of UI *outside* the LUT
  - Confirmed DO= $1^0$  LUT cause; excluded other dx
  - Dose titration to success, side effects, PVR
- Results:
  - 63% **continent** vs. 17% on placebo
    - 75% for DO; 50% for DHIC
- Conclusion: Elderly can respond well to Rx



# What We Know (2)

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- Geriatric UI is usually a complex **syndrome** rather than a single disease/disorder
- Geriatric UI is usually treatable, and often curable, usually without requiring surgery
- Yet most pts. neither seek nor receive care
- Eval'n/Rx: stepwise, multi-faceted, focused first on reversible causes beyond LUT
- ***IF*** LUT Rx required, consider individualized benefits/risks with shared decision making

# What We Don't Know: Selected

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- Relevant experimental models?
- Brain's role in geriatric UI?
- Burden spectrum; reasons for under-report?
- Optimal evaluations, and for which patients?
- Best Rx for *individual*, and likely response?
- Prevention strategies and durability?
- How to ↑implement'n (pts, MDs, public hlth)

# Elephant in the Room

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- Detrusor overactivity. If we knew its cause(s) and could abolish it:
  - Most elderly would be continent regardless of comorbidity/functional impairment
  - Rx of other UI causes would be enhanced
  - Even if continence not achievable in an individual, “social continence” could be

# Mammoth in the Room

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?Results of studies ***stratified*** by?

- Age
- Cognition
- Function
- Comorbidity

Still, we have made progress!

# Case

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An 88 yo F with Parkinson's disease suffered a hip frx → confusion, Rx with haloperidol. Incontinence developed.

O/E: In wheelchair, Parkinsonian, with CHF, impaction, bladder distention, atrophic vaginitis

# Case - 2

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Decompressed bladder

Disimpacted

Diuresed

Discontinued haloperidol

Added estrogen, Sinemet<sup>®</sup>

# Case - 3

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Parkinson's remits

CHF resolves

Bowels regularize

Mobility improves

UI lessens

# Case - 4

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Precipitant UI

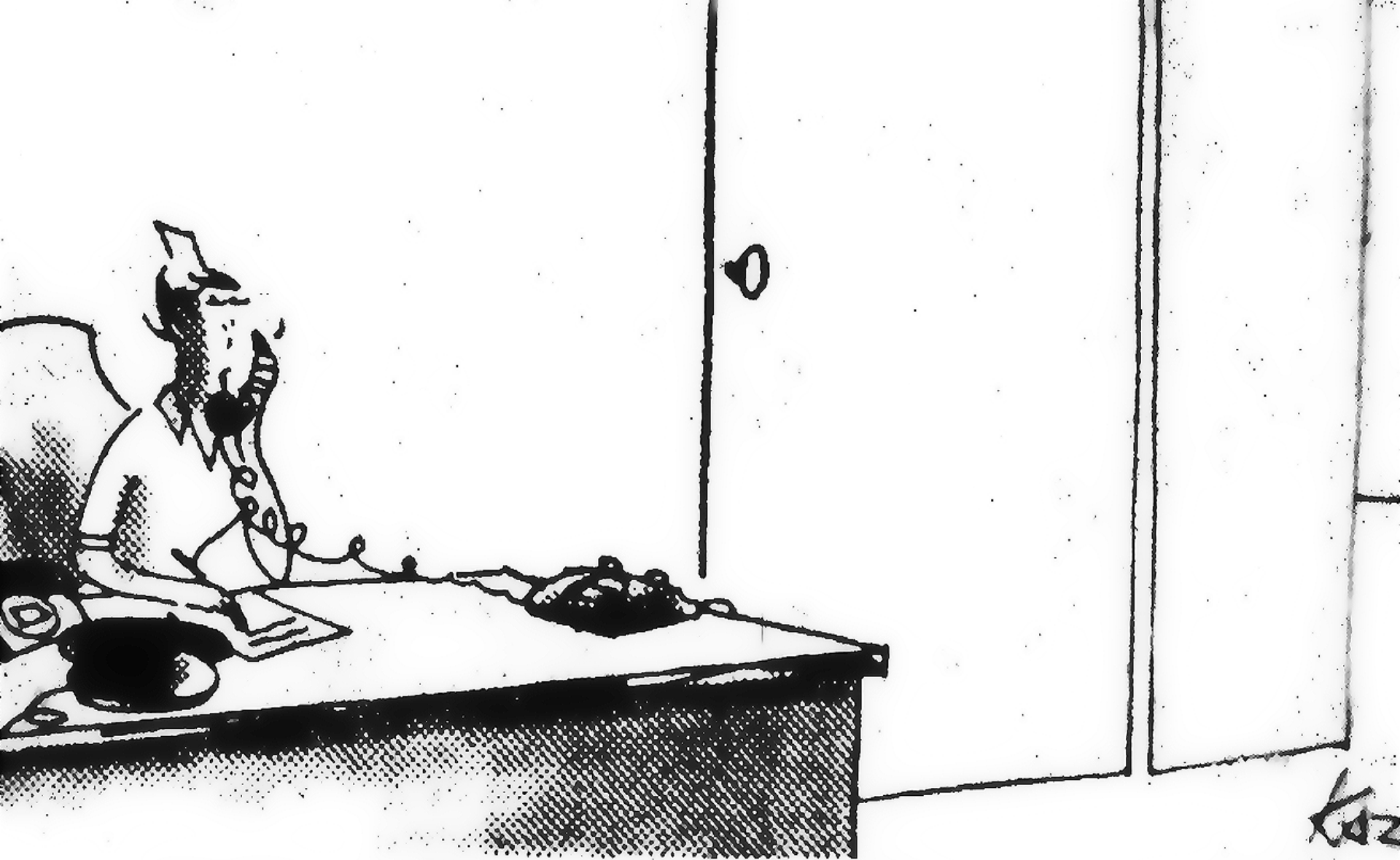
Nocturia x 3 w/o polyuria

No stress symptoms

Stress test negative

PVR = 75 ml





**Urology Department. Can you hold?**

# Two Months Later...

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**She was back home,**

- Mentally-intact
- Fully mobile
- Continent

“Perhaps the greatest obstacle to progress is the belief that no progress is possible.”

-- Francis Bacon