Special Considerations for the Evaluation & Management of Urinary Incontinence in the Geriatric Woman

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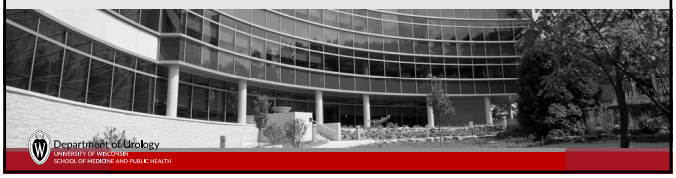
November 20, 2019



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Objectives

- Understand the demographic burden of urinary incontinence in the US
  - Review 2014 CDC report on Prevalence of Incontinence in Older Americans
- Understand the multifactorial nature of urinary incontinence in the geriatric female population
- Understand the evaluation and management of Urge and Stress incontinence in the elderly woman

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THE DEMOGRAPHIC BURDEN

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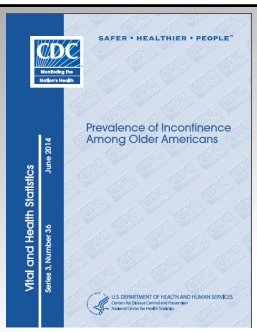

First report to look at incidence of incontinence by place of residence:

1) Community dwelling older adults
2) Residential care facilities
3) Nursing home residents
4) hospice/home health

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Data Sources

- National Health and Nutrition Examination Survey (NHANES)
  - *non-instituationalized persons*
- National Survey of Residential Care Facilities (NSRCF)
  - *residents of care residential care facilities*
- National Home and Hospice Care Survey (NHHCS)
  - *home health and hospice*
- Long Term Care Minimum Data Set (MDS)
  - *nursing home patients*

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Table 1. Continence and incontinence definitions by data source

Data source	Year(s)	Population	Bladder incontinence	
			Continent	Incontinent
National Health and Nutrition Examination Survey	2007–2010	Noninstitutionalized persons	Person who answered "never" to the question about frequency of urinary leakage.	Person who answered "less than once a month," "a few times a month," "a few times a week," or "every day and/or night" to the question about frequency of urinary leakage.
National Survey of Residential Care Facilities	2010	Residents of residential care facilities	Resident reported as having an ostomy, an indwelling catheter, or similar device or with no episode of urinary incontinence during 7 days prior to the interview.	Resident reported as not having an ostomy, an indwelling catheter, or similar device and with an episode of urinary incontinence during 7 days prior to the interview.
National Home and Hospice Care Survey	2007	Home health and hospice care patients	Patient reported as having a urinary catheter or with no difficulty controlling his or her bladder.	Patient reported as not having a urinary catheter and with difficulty controlling his or her bladder.
Long Term Care Minimum Data Set	2009	Nursing home residents	Resident reported as having an indwelling catheter or in complete control of urinary bladder function during 14 days prior to the assessment.	Resident reported as not having an indwelling catheter and not in complete control of urinary bladder function during 14 days prior to the assessment.

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NHANES

National Health and Nutrition Examination Survey

- 2625 face-to-face respondents
- Unique in that it combines interviews and physical exams
- Years 2007-2010 were combined
- All self-reported
- Bladder incontinence defined using the bladder Incontinence Severity Index

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Incontinence Severity Index

Frequency of incontinence episodes ✖ **Amount of Urine Lost per Episode**

- Frequency
  - 0 = never
  - 1 = less than once /month
  - 2= a few times a month
  - 3= a few times/week
  - 4 = every day and/or night
- Amount of urine lost per episode
  - 1= drops
  - 2 = small splashes
  - 3 = more

Introduced in 1993—validated against pad weight and correlated with impact.

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Incontinence Severity Index

- ISI values 0 – 12 are sub-divided into 5 categories
  - 0 = None
  - 1-2 = Slight incontinence
  - 3-6 = Moderate incontinence
  - 8-9 = Severe
  - 12 = Very Severe incontinence

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ISI Severe Incontinence

3 x 3 = 9

(a few times a week) x (More than small splashes)

4 x 2 =8

(every day and/ or night) x (small splashes)

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Sandvik et al, A Severity Index for Epidemiological Surveys of Female Urinary Incontinence: Comparison with 48 hour Pad-Weighing Tests, Neurourology & Urodynamics 19:137-145 (2000)

Incontinence Severity Index

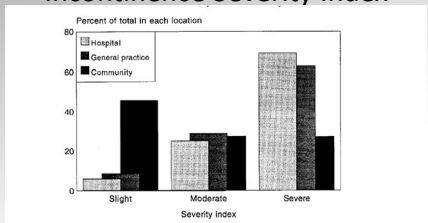

Fig. 1. Distribution of severity of incontinence in the community, in general practice, and at the outpatient clinic, according to the three-level severity index.

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Sandvik et al, A Severity Index for Epidemiological Surveys of Female Urinary Incontinence: Comparison with 48 hour Pad-Weighing Tests, Neurourology & Urodynamics 19:137-145 (2000)

Incontinence Severity Index

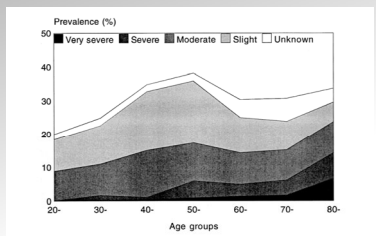

Fig. 3. Prevalence of female UI when different thresholds for severity are considered. Unknown refers to incontinent women who have not answered the questions about frequency and/or amount of leakage.

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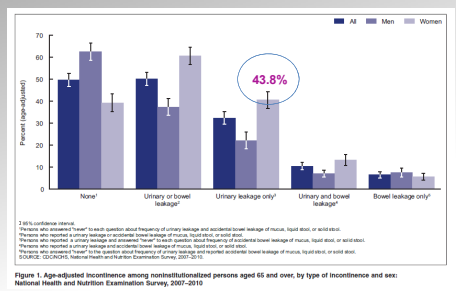

Figure 1. Age-adjusted incontinence among noninstitutionalized persons aged 65 and over, by type of incontinence and sex: National Health and Nutrition Examination Survey, 2007–2010

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SUMMARY OF CDC REPORT

SURVEY		
NHANES *(community)*		
NSRCF *(residential care)*		
NHHCS *(home health/hosp*	40.2%	bladder (catheters
MDS *(nursing home)*	residents 70.3% long term residents	sodes at multiple daily episodes (catheters excluded)

- **If only Moderate, Severe, and Very Severe are considered**
  - 24% men and women
- **If only Severe and Very Severe are considered**
  - 8% men and women

Irrespective of residence type, >70% of all home health/hospice care recipients either require a catheter or have incontinence

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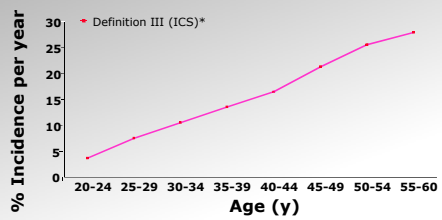
Cumulative Incidence of Incontinence in Women According to Age



*Per International Continence Society; requires objective demonstrability and presence of hygienic or social problem for uncontrolled loss of urine to be acknowledged as UI.

Elving LB et al. *Scand J Urol Nephrol.* 1989;125(suppl):37-43.

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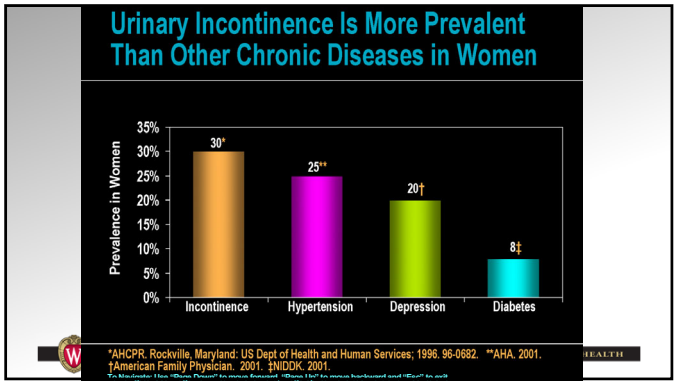
Urinary Incontinence Is More Prevalent Than Other Chronic Diseases in Women
Prevalence in Women
35%
30%
25%
20%
15%
10%
5%
0%
30*
25**
20†
8‡
Incontinence
Hypertension
Depression
Diabetes
*AHCPR. Rockville, Maryland: US Dept of Health and Human Services; 1996. 96-0682. **AHA. 2001.
†American Family Physician. 2001. ‡NIDDK. 2001.

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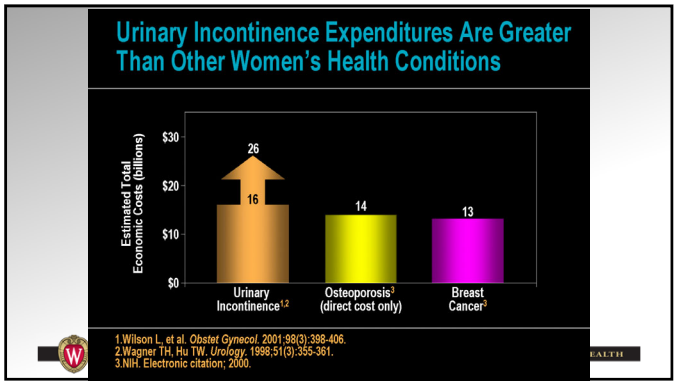
Urinary Incontinence Expenditures Are Greater Than Other Women's Health Conditions
Estimated Total Economic Costs (billions)
$30
$20
$10
$0
26
16
14
13
Urinary Incontinence[1,2]
Osteoporosis[3] (direct cost only)
Breast Cancer[3]
1.Wilson L, et al. Obstet Gynecol. 2001;98(3):398-406.
2.Wagner TH, Hu TW. Urology. 1998;51(3):355-361.
3.NIH. Electronic citation; 2000.

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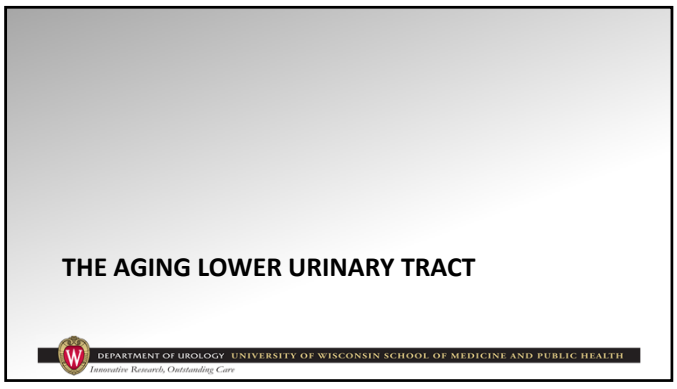
THE AGING LOWER URINARY TRACT
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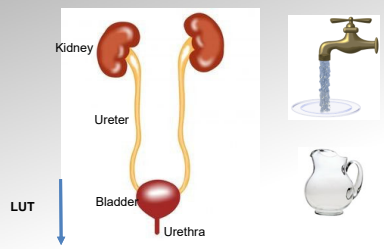
The Urinary Tract



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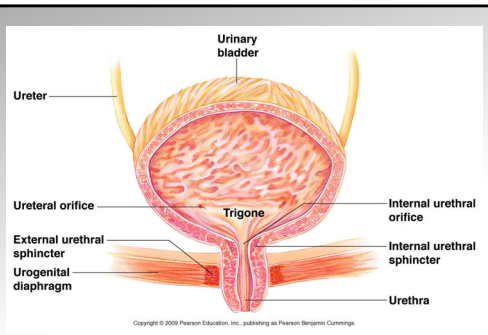

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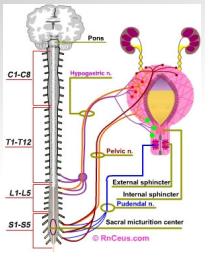
Normal Bladder Function

- Normally urination doesn't require much thought.
- It's a combination of both voluntary (conscious) and involuntary (automatic) muscle actions that coordinate to hold and release urine



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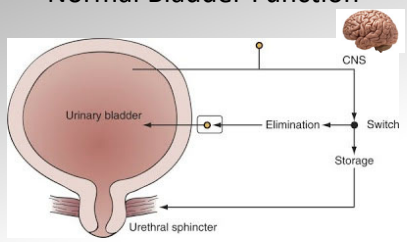
Normal Bladder Function



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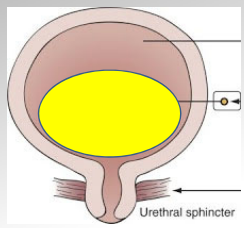
Normal Bladder Function



- Over several hours the bladder fills with urine and the bladder muscle is relaxed and stretches.
- The sphincter stays tightly closed
- When the bladder reaches 8-10 oz, the nerves along the bladder send a message to the brain. This is an urge.

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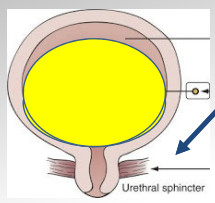
Normal Bladder Function



- If it's not a convenient time to go the bathroom, you consciously tighten your sphincter.
- This signals the bladder to relax.
- It can then continue to fill and stretch

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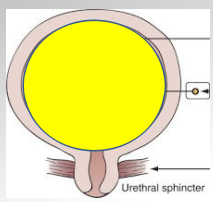
Normal Bladder Function



- When you decide it's a good time to urinate, your brain flips the switch from STORAGE MODE to EMPTY MODE.
- You consciously relax your sphincter and the bladder muscle then contracts to squeeze out urine.

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Geriatric LUT Physiology

- Widening of spaces between detrusor smooth muscle cells
- Within the smooth muscle sarcolemma:
  - Elongation of the dense band components
  - Depletion of caveolae (small invaginations in the sarcolemma involved in transport and signaling)
- Cell junction changes have been noted
- Age related changes to the urethra

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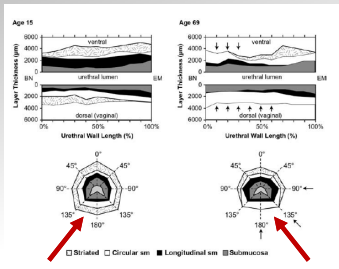
Geriatric LUT Physiology

- Age related changes to the urethra
- Pronounced change in striated smooth muscle
- Decreased urethral closure pressure



DuBeau, J Urol, 2006:(175), S11-S15

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Geriatric Bladder Function

- Involuntary or uninhibited detrusor contractions = urgency/urge incontinence
- Impaired contractility = incomplete bladder emptying or elevated post-void residuals
- Impaired urethral coaptation—stress urinary incontinence
- DHIC—detrusor hyperactivity with impaired contractility

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Geriatric Genitourinary Function

Increased	Decreased
• Post-void Residual (PVR) • Detrusor overactivity • Urine output later in the day • Extravascular fluid shifts to legs upon arising • Intravascular fluid shift from legs upon reclining	• Ability to postpone voiding • Total bladder capacity • Detrusor contractility • Immune function • Anti-diuretic hormone (ADH) production • Ability to concentrate urine because of apoptosis of long nephrons • Vaginal and urethral epithelial thickness

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EVALUATION OF URINARY INCONTINENCE IN OLDER WOMEN

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Under-Reported

- Most patients do not mention the problem to their doctor, some wait up to 3 years
  - Self-manage
  - 59% of patients do not seek help because they believe no effective treatment is available
  - 73% of patients who seek treatment are currently not on medication
- Most patients do not mention the problem to their friends
- Most people think incontinence is part of normal aging

Millsom et al. BJU Int. 2001; 87:760-766

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Incontinence History

- Targeted to identify:
  - Type
  - Severity
  - Duration
  - Burden / Goals of Care
  - Potentially Modifiable Contributing Factors
- *More useful than Physical Exam for initial assessment*

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ICIQ-UI Short Form

- How often do you leak urine?
- How much urine do you usually leak?
- Overall, how much does leaking urine interfere with your everyday life?
- When does urine leak? (self diagnosis items that discern urge incontinence from stress incontinence)

https://iciq.net/

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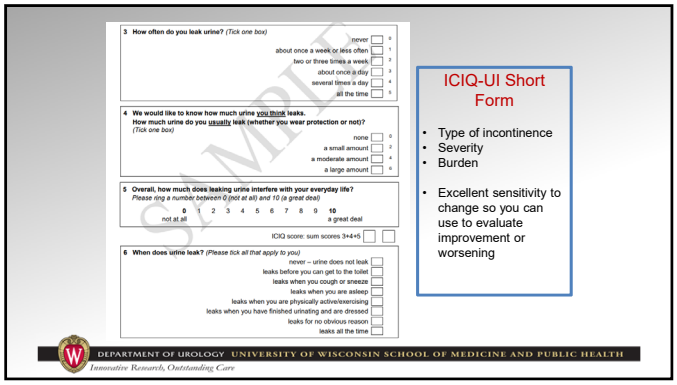

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Examination

- Assessment of mobility and cognitive function
- Pelvic examination
  - Evaluate for atrophy, prolapse beyond the introitus, prior surgery
- Assessment of post-void residual urine
- Cough stress test
- Urinalysis
  - hematuria, pyuria, bacteriuria, glucosuria

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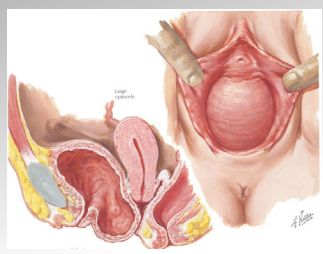
Physical Exam Findings: Prolapse



- Relaxation of the vaginal walls
- Varied symptoms
- May impact body image
- Sex still safe!

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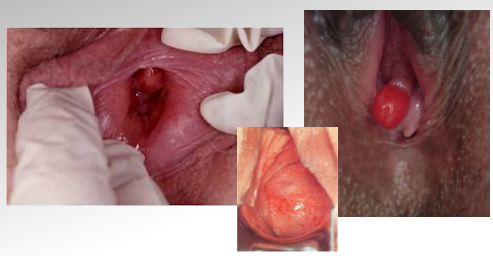
Physical Exam Findings: Atrophy



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Age and Genitourinary Function

- Lower urinary tract (LUT) dysfunction in elderly women is *almost always multifactorial*
  - Mobility
  - Manual dexterity
  - Environment and access to toilets
  - Mentation
  - Medical conditions
  - Medications

DuBeau, J Urol, 2006:(175), S11-S15

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Non-Urologic Factors Related to Urinary Incontinence

Comorbid Disease
Diabetes
Congestive Heart Failure
Degenerative joint disease
Sleep apnea
Severe constipation

Medications
α-Adrenergics (blockers & agonists)
Cholinergics (blockers & agonists)
ACE-I
Calcium channel blockers
Diuretics
Opiates
Anticholinergics (antidepressants, antipsychotics)

Neurological/Psychiatric
Stroke
Parkinson's Disease
Normal pressure hydrocephalus
Dementia
Depresssion

Function & Environment
Impaired Cognition
Impaired Mobility
Inaccessible toilets
Lack of caregivers

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Acute Incontinence

- Delirium
- Infection
- Atrophic urethritis/vaginitis
- Pharmaceuticals
- Psychological (depression)
- Endocrine (hypercalcemia, hyperglycemia)
- Restricted mobility
- Stool Impaction

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Incontinence in Older Women

Patricia S. Goode, MSN, MD
Kathryn L. Burgio, PhD
Holly E. Richter, PhD, MD
Alayne D. Markland, DO, MSc

PATIENT'S STORY

Urinary incontinence is a common geriatric syndrome that affects at least 1 in 3 older women and can greatly diminish quality of life. Incontinence has been associated with increased social isolation, falls, fractures, and admission to long-term care facilities. Often unreported and thus untreated,

Goode et al, JAMA. 2010;303(21):2172-2181

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Box 1. Risk Factors and Evidence for Urinary Incontinence in Women

Age
Prevalence increases with age to approximately 50 years, stabilizes until the age of approximately 65 years, and then again increases with age[2,3]

Race and Ethnicity
Lower prevalence of stress incontinence in African American and Asian groups compared with whites[4]

Childbirth
Increased risk with vaginal delivery, maternal age, and fetal weight[4]; parity is a significant risk factor for incontinence in younger women, but the association with incontinence appears to be diminished or absent in middle-aged and older women, perhaps because other factors become more prominent[4]

Oral Hormone Therapy
Increased the risk of incontinence and worsened existing incontinence in randomized controlled trials using 0.625 mg of conjugated estrogens alone or plus 2.5 mg of medroxyprogesterone acetate daily with effect evident by 4 months and sustained for 4 years[10,11]

Obesity and Body Mass Index
Each 5-unit increase in body mass index increases the risk of daily incontinence by approximately 60%[12-14]; improvements in continence are associated with even small reductions in weight[15]

Cognitive Impairment
Consistent relationship to presence and increased severity of dementia in acute care and nursing home settings; weaker association in community dwellers[16,17]

Mobility Impairment
Consistent findings using several measures of mobility: history of falls, arthritis, needing assistance to walk, inability to walk, chair/stand time, and walking speed[4]

Diabetes
Risk of incontinence increases when diabetes has been present for at least 1 year[18]

Hysterectomy
Conflicting evidence; epidemiological studies provide support; clinical series find no difference in the short term[19-21]

Menopause
Conflicting evidence; natural menopause may have a neutral or protective effect vs surgical menopause, which is a risk factor[21,22]

Less Severe/Less Frequent Urinary Incontinence
Having urinary incontinence in the past year increased the risk of developing monthly or more frequent leakage over a 3-year period in older women[19,23]

Goode et al, JAMA. 2010;303(21):2172-2181

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Modifiable Contributing Factors for Urinary Incontinence

Condition	Mechanism	Treatment Implications
Urinary Tract Infection	Cystitis causes urgency & frequency	Asymptomatic bacteriuria is more common in elderly patients and does not need treatment. (DuBeau CE, et al Incontinence in the Frail Elderly. In: Abrams P, Cardozo L, Khoury S, Wein A eds. 4th International Consultation on Incontinence, 2009) However consider treatment of bacteriuria when incontinence is new onset or with acute worsening
Constipation	Postulated physical irritation of the bladder from rectal distention	Appropriate management with increased fluid intake, increased dietary fruit and fiber, stool softeners, and laxatives as needed (Lembo A, Camilleri M. Chronic constipation. *N Engl J Med*. 2003;349 (14):1360-1368.)
Diabetes mellitus	Glycosuria causes polyuria Diabetic neuropathic bladder	Improved BS control decreases osmotic diuresis.

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Modifiable Contributing Factors for Urinary Incontinence

Condition	Mechanism	Treatment Implications
Mobility Impairment	Slowed mobility from any cause can precipitate urgency incontinence; pain with movement from DJD or other conditions can cause postponement of voiding with resultant incontinence	Physical therapy, assistive devices, or other interventions to improve mobility Improved pain management and education concerning regular toileting
Sleep apnea	Nocturnal diuresis due to production of atrial natriuretic peptide	Treatment decreases nocturnal diuresis and decreases nocturia and nocturnal enuresis (Fitzgerald MP et al, *Am J Obstet Gynecol*. 2006;194(5):1399-1403.)
Obesity	Pressure on the bladder form central obesity as well as stress on the pelvic floor muscles	In a randomized controlled trial, an average weight loss of 17 lb over 6 months reduced incontinence episodes by 47% (Subak LL et al *N Engl J Med*. 2009; 360(5):481-490.)

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Modifiable Contributing Factors for Urinary Incontinence

Condition	Mechanism	Treatment Implications
Caffeine	Mild diuretic and bladder irritant	Eliminating and reducing caffeine can improve incontinence (Bryant CM, et al *Br J Nurs*. 2002;11(8):560-565.)
Diuretics	Increased diuresis	Evaluate necessity. Loop diuretics moved to late in the afternoon to decrease day time frequency and diuresis before bed
ACE-I	Cough can precipitate stress incontinence	Consider alternative medications
Anticholinergics, sedatives, hypnotics	May cause incomplete bladder emptying and constipation. Also may cause cognitive impairment	Discontinue or reduce dose when possible.

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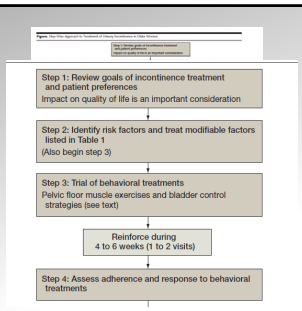

Goode et al, JAMA. 2010;303(21):2172-2181

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Table 1. NCMS Continence Awareness Programs

Program	Description
Bladder and Bowel Health website www.bladderbowel.gov.au	Information and advice on the prevention and management of bladder control and bowel problems for consumers, carers, health professionals, service providers and researchers. It also contains information about the Continence Aids Assistance Scheme.
Continence Outcomes Measures (COMS) Dissemination Project	Development and delivery of a translation program of continence outcomes measures to national and international clinicians. Further work is being proposed to conduct field trials to establish the validity, reliability and suitability of the continence outcome measures in Australian treatment settings and then to translate these for use by health care professionals. The reports are: • Measuring Incontinence in Australia 2006 • Continence Outcomes Measurement Suite together with Review of Patient Satisfaction Measures 2006 • Framework for Economic and Cost Evaluation for Continence Conditions 2006 • Measuring Patient Satisfaction with Incontinence Treatment 2006 • Refining Continence Measurement Tools 2006 • Incontinence and Patient Satisfaction Tools and Instructions
National Men's Continence Awareness Project	Raise the awareness of the causes of poor bladder and bowel health, specifically targeting men.
Pharmacy Continence Care Project	Delivery of a training package to educate pharmacists and pharmacy assistants to enable them to better inform clients about continence care and management.
Daily Living Self Management Resources	Offers strategies for people with incontinence to help with their work life, family life and social life. • Live Better - for people with urinary incontinence

Incontinence. Committee 21, Abrams et al editors, 4th ed, 2009, p. 1649

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OVERACTIVE BLADDER (OAB)

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OAB Symptoms

Urgency

- Sudden, strong desire to urinate

Frequency

- 8+ visits to the toilet per 24 hours
- 2+ visits to the toilet during sleeping hours (nocturia)

Urge Incontinence

- Sudden & involuntary loss of urine

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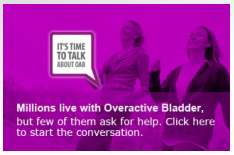
Overactive Bladder Triggers

- Hearing or touching running water
- Seeing a bathroom
- Placing your feet on the floor when you first get out of bed
- Putting your key in the door when you get home
- Anxiety or stressful situations
- Exposure to cold

www.urologyhealth.org



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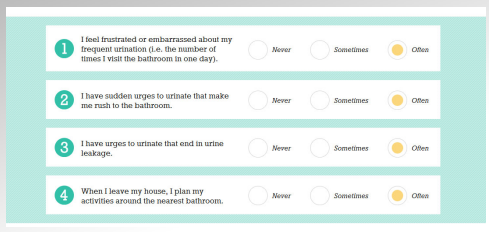
OAB Symptom Quiz



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OAB is a bladder problem

Overactive bladder, half full but contracting, causing urinary leakage

- Leakage of larger volumes with overwhelming urgency – due to bladder contractions
- When I gotta go, I gotta go!

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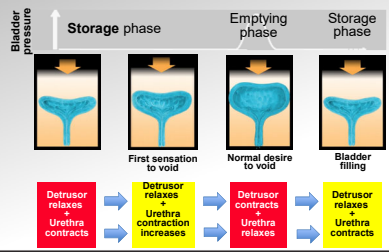
52

Normal Lower Urinary Tract (LUT) Function: Reciprocal Activities



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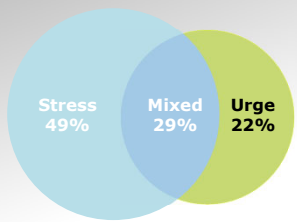
53

Stress Urinary Incontinence Is the Most Common Type in Women



Adapted from: Hampel C et al. *Urology*. 1997;50(suppl 6A):4-14.

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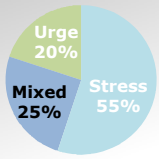
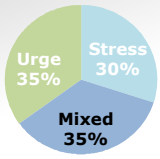
Prevalence of UI in Women

Stress is the most common type in women <60 years old



Women >60 years old



Adapted from: Thom D. *J Am Geriatr Soc.* 1998;46(4):473-480.

55

NOBLE Study

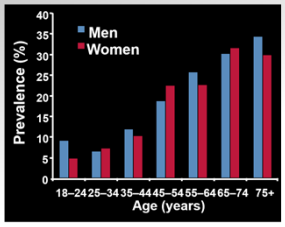
- National Overactive Bladder Evaluation
- Published 2002
- Questionnaire based study
  - OAB instruments, SF-36, Depression index, sleep instrument
- 5,204 US citizen sample
- To evaluate the prevalence and burden of OAB in the United States

Stewart W et al. *World J Urol.* 2003;20:327-336

56

Prevalence of OAB in the US

- **Men 16% and Women 16.9%**
- **Prevalence of OAB increases with age**



Adapted from Stewart W et al. *World J Urol.* 2003;20:327-336.

57

NOBLE Results

- Prevalence between men & women was roughly equal
- Severity of symptoms worse for women, with women having more OAB-wet and men more OAB-dry
- OAB *with and without* UI was associated with clinically and significantly:
  - lower SF-36 quality of life scores
  - higher CES-D depression scores
  - poorer quality of sleep

58

TREATMENT

59

AUA Guidelines on OAB, 2019

Diagnosis and Treatment of Non-Neurogenic Overactive Bladder (OAB) in Adults: an AUA/SUFU Guideline (2019)

AUA/SUFU Guideline: Published 2012; Amended 2014, 2019
Endorsed by the American Urogynecologic Society (AUGS)

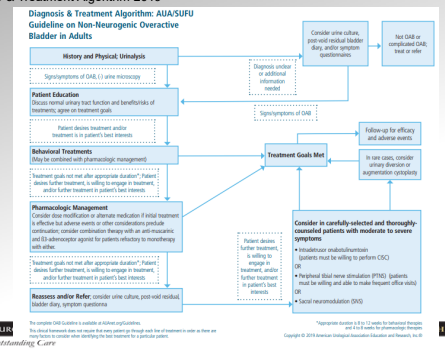
Panel Members

E. Ann Gormley, Deborah J. Lightner, Kathryn L. Burgio, Toby C. Chai, J. Quentin Clemens, Daniel J. Culkin, Anurag Kumar Das, Harris Emilio Foster, Jr., Harriette Miles Scarpero, Christopher D. Tessier, Sandip Prasan Vasavada

The Practice Guidelines Committee would like to acknowledge the contributions of Dr. Alexander Gomelsky to the 2019 Guideline Amendment.

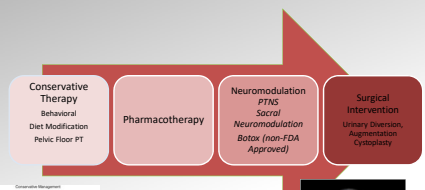
60

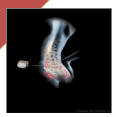
AUA/SUFU OAB Diagnosis & Treatment Algorithm 2019
www.auanet.org



61

Treatment Algorithm for OAB





62

Conservative Therapy

- Lifestyle changes
  - Caffeine reduction
  - Fluid management
- Prevent constipation
- Maintain a healthy weight
- Re-train the bladder--Mind Over Bladder
  - Work with a pelvic floor physical therapist
  - There are home programs as well
- Pelvic Floor Physical Therapy
  - Strengthening, urge suppression
- Bladder diary—app or paper:
  - 24 hour record of volume in, out, leakage episodes, triggers

63

Voiding Diary

3-Day Voiding Diary

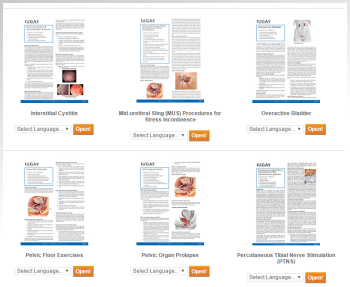
Time of day circle bedtime and wake up times below; also fill in events at right in the time slots when they occurred	Fluid intake write down amount of liquid you drank - in oz - from one toileting event to next	Toilet urinations write down oz urinated into urinary hat sitting inside toilet seat each time you urinate	Amount of urine drained via a catheter if using a catheter, record amount in oz, ml, or cc; indicate if this was c atheter [C] residual [R]	Leaks place check mark in column if you leaked urine before making it to toilet	Pad changes at each toileting event write "D" if pad is dry or if wet, write down amount: small, mod., large
7 am					
8 am					
9 am					
10 am					
11 am					
noon					

www.sufuorg.com

64

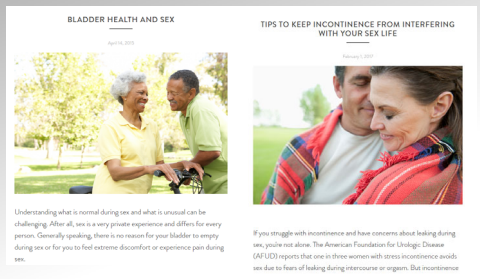
Education: www.iuga.org

- Website not user-friendly
- Download patient info for free
- Multiple languages



65

www.nafc.org



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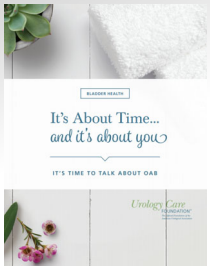
www.urologyhealth.org (AUA)



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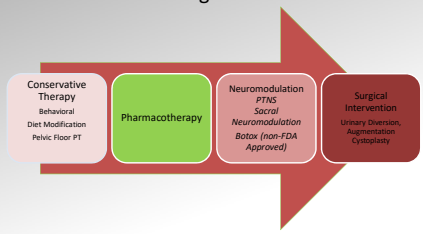
Treatment Algorithm for OAB



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Anticholinergics

- Oxybutynin Chloride – Immediate Release
- Oxybutynin Chloride XL (Ditropan XL)
- Transdermal Oxybutynin Patch (Oxytrol)
- Oxybutinin Chloride Gel (Gelnique)
- Tolterodine – Immediate Release
- Tolterodine LA (Detrol LA)
- Fesoterodine fumarate (Toviaz)
- Trospium (Sanctura)
- Trospium Chloride XR (Sanctura XR)
- Solifenacin (Vesicare)
- Darifenacin (Enablex)

Introduced 2009
OTC since 2013

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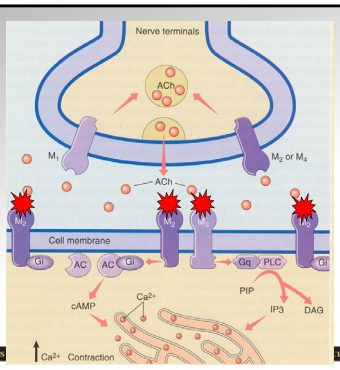
Anticholinergics: Mechanism of Action

- Detrusor (bladder) muscle rich in cholinergic/muscarinic receptors
- Medications block muscarinic receptors in detrusor — stabilize bladder muscle
- ? Influence suburothelial receptors as well
  - Mediate urgency
- Multiple muscarinic subtypes have been identified

70

Comparative Receptor Presence in Detrusor Wall



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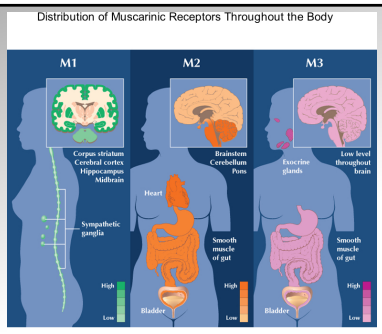


72

Efficacy

- Efficacy–demonstrated in randomized controlled trials for:
  - Oxybutynin
  - Tolterodine
  - Trospium
  - Darifenacin
  - Solifenacin
  - Fesoteridine
- Given Grade A recommendations by the International Continence Society

73

Antimuscarinic Class Side Effects

- Dry mouth
- Constipation
- Blurred vision
- Headache

74

Oxybutynin

- Some selectivity for M3 and M1 receptors
- Other bladder activity
  - Direct smooth muscle relaxation
  - Local anesthesia
- Active metabolite: N-Desethyloxybutynin (N-DEO)
  - Potent antimuscarinic
  - Responsible for significant side effects
- Used for decades
- Side effects limit use
- May cause cognitive dysfunction

75

Long-term Evaluation of Oxybutynin IR for OAB

- Prospective randomized trial to compare oxybutynin 2.5 mg bid or 5 mg qhs
- Titrate doses up
- 53% overall reported improvement or cure
- 2/3 stopped medication within 4 months

Salvatore et al. *Eur J Obstet Gynecol Reprod Biol* 2005;119:237–241.

76

Oxybutynin Extended Release

- Oxybutynin placed in slow-release vehicle
- Release of all medication takes 24 hours
- More released in distal GI tract with less metabolism
- Better efficacy, fewer side effects
- Available in 3 doses: 5, 10,15 mg
  - Can be titrated
- Approved at doses up to 30 mg
  - Usually for patients with neurogenic overactivity

77

Tolterodine (Detrol)

- First drug developed to specifically treat OAB
  - Greater selectivity for bladder
- Low potential to cross blood-brain barrier
  - Thought to have fewer cognitive side effects
- Extended-release form found to have increased efficacy with fewer side effects

78

Trospium (Sanctura)

- Nonselective quaternary amine
  - More highly charged and hydrophilic
  - **Should not cross blood brain barrier**
- Minimal metabolism—most drug renally excreted unchanged
  - Does not interact with drugs metabolized by cytochrome P450 system
- Available in Europe for 10 years
- Available in once/day dosing; must be taken on an empty stomach

79

Solifenacin (Vesicare)

- M3 selective antimuscarinic
- Available in 2 doses: 5 and 10 mg
  - Can be titrated
- Long half-life = 50 hours

80

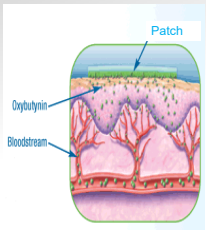
Darifenacin (Enablex)

- Relatively M3 selective
- Low affinity for M1 receptor
  - Much of CNS cholinergic activity involves M1 receptors
  - Few CNS side effects
  - No QT interval prolongation
- Available in 2 doses: 7.5 and 15 mg
  - Can titrate

81

Oxybutinin Transdermal System (Oxytrol)

- Apply every fourth day
- Avoids first-pass metabolism, therefore lower N-DEO metabolite
- Fewer systemic side effects
  - Dry mouth and constipation = placebo
  - 17% incidence of skin reactions
    - Contact dermatitis
    - Erythema resolves
    - Pruritus –moisturizer and rotate location



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Oxytrol

$30.09 for a one month supply at HealthWarehouse.com

83

Oxybutinin Topical Chloride Gel (Gelnique)

- Once daily gel formulation
- Similar systemic side effect profile to patch
- Less local skin reaction

84

Fesoterodine (Toviaz)

- Pro-drug, rapidly metabolized to 5-HMT, the major active metabolite of tolterodine
- Available as 4mg and 8mg once daily doses

85

Anticholinergic Side Effects

Agent	Chemical Structure	Dry Mouth	Constipation	Cognition	Sleep
Oxybutinin (IR)	Tertiary amine	93%	50%	Yes	Yes
Tolterodine (LA)	Tertiary amine	24.3%	6.1%	Minimal effects on EEG, case reports of night terrors, hallucinations	Yes
Darifenacin	Tertiary amine	20-31%	19-24%	None reported	None reported
Solifenacin	Tertiary amine	14-21%	7%	None reported	None reported
Trospium chloride	Quaternary amine	22%	9.5%	No, minimal effects on quantitative EEG	None reported

Staskin DR, Drugs Aging 2005: 22(12): 1013-1028

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Table 1. Incidence Rates of Adverse Events.

Drug	Dry Mouth (%)	Constipation(%)
Fesoterodine		
4mg	19	4
8mg	35	6
Darifenacin		
7.5mg	20	15
15mg	35	21
Solifenacin		
5mg	11	5
10mg	28	13
Trospium		
20mg BID	20	10
XR 60mg	11	9
Tolterodine		
ER 4mg	23	6
Oxybutynin		
IR 5-20mg/day	71	13
XL 10mg	29	7
Gel	8	1

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Anticholinergic Discontinuation

- Database Study from UK (1991-2005)
  - 49,419 epsiodes of anticholinergic therapy
  - Overall discontinuation rate
  - Drug specific discontinuation rate

Gopal et al, Obstet Gynecol 2008; 112:1311-8

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Anticholinergic Discontinuation

- Median time to discontinuation = 4.76 months (all drugs)
- 50% of women prescribed anticholinergics discontinue the medication at 6 months
  - 75% by 1 year
- Rates of discontinuation increase with duration of use

Gopal et al, Obstet Gynecol 2008; 112:1311-8

89

Anticholinergics (Ach) & Cognitive Impairment

- Acute impairment in:
  - Working memory
  - Attention
  - Psychomotor speed
- Global cognitive impairment
- Elderly patients are more susceptible due to age-related changes of pharmacokinetics.
- Cholinesterase inhibitors may precipitate incontinence and pharmacologically directly oppose the action of Ach
  (Boudreau et al, JAGS 59:2069-2076)

90

Cumulative Use of Strong Anticholinergics and Incident Dementia
A Prospective Cohort Study

Shelly L. Gray, PharmD, MS[1]; Melissa L. Anderson, MS[2]; Sascha Dublin, MD, PhD[2,3]; Joseph T. Hanlon, PharmD, MS[4]; Rebecca Hubbard, PhD[2,3,5]; Rod Walker, MS[2]; Onchee Yu, MS[2]; Paul K. Crane, MD, MPH[6]; Eric B. Larson, MD, MPH[2,7]

[+] Author Affiliations

JAMA Intern Med. 2015;175(3):401-407. doi:10.1001/jamainternmed.2014.7663. Text Size: A A A

- Cognitive effects thought to be reversible upon discontinuation.
- Longitudinal study followed patients from 1994-2004.
- 10 year cumulative dose-response relationship was observed for dementia (0.9 vs. 1.54) and Alzheimer disease

91

Original Investigation

Association Between Anticholinergic Medication Use and Cognition, Brain Metabolism, and Brain Atrophy in Cognitively Normal Older Adults

Shannon L. Risacher, PhD; Brenna C. McDonald, PsyD, MBA; Eileen F. Tallman, BS; John D. West, MS; Martin R. Farlow, MD; Fredrick W. Unverzagt, PhD; Sujuan Gao, PhD; Malaz Boustani, MD, MPH; Paul K. Crane, MD, MPH; Ronald C. Petersen, MD, PhD; Clifford R. Jack Jr, MD; William J. Jagust, MD; Paul S. Aisen, MD; Michael W. Weiner, MD; Andrew J. Saykin, PsyD; for the Alzheimer's Disease Neuroimaging Initiative

- Longitudinal study of 2 cohorts of cognitively normal adults.
- Use of anticholinergics was assessed

JAMA Neurol Published online 4/18/16

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Original Investigation

Association Between Anticholinergic Medication Use and Cognition, Brain Metabolism, and Brain Atrophy in Cognitively Normal Older Adults

Shannon L. Risacher, PhD; Brenna C. McDonald, PsyD, MBA; Eileen F. Tallman, BS; John D. West, MS; Martin R. Farlow, MD; Fredrick W. Unverzagt, PhD; Sujuan Gao, PhD; Malaz Boustani, MD, MPH; Paul K. Crane, MD, MPH; Ronald C. Petersen, MD, PhD; Clifford R. Jack Jr, MD; William J. Jagust, MD; Paul S. Aisen, MD; Michael W. Weiner, MD; Andrew J. Saykin, PsyD; for the Alzheimer's Disease Neuroimaging Initiative

- Use of medications with medium or high anticholinergic activity was associated with poorer memory, executive function, brain hypometabolism, brain atrophy, and increased risk of clinical conversion to cognitive impairment.
- Study concludes--"Use of medication with significant anticholinergic activity should likely be discouraged in older adults if alternative therapies are available."

JAMA Neurol Published online 4/18/16

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NEW TARGET:
BETA 3 RECEPTOR AGONISTS

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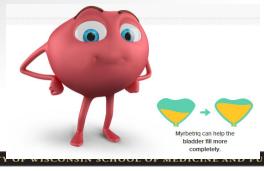
Beta 3 Receptor Agonist (Mirabegron)

- Novel Target for OAB
- Introduced October 22, 2012
- Brand name = Myrbetriq



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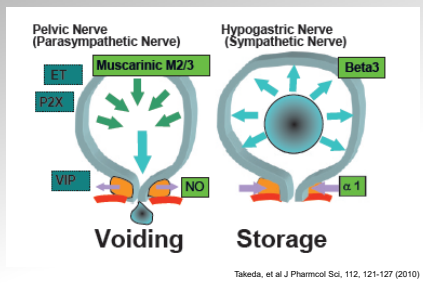
How it Works



Takeda, et al J Pharmcol Sci, 112, 121-127 (2010)

96

U.S. Phase III Trial

- Nitti et al, *Results of a Randomized Phase III Trial of Mirabegron in Patients with OAB*, J Urol , Accepted Manuscript 2012

	Placebo	50mg	100mg
Mean decrease in incontinence episodes/24h	-1.13	-1.47	-1.63
Mean decrease in micturition/24 h	-1.05	-1.66	-1.75

- *Magnitude of improvement is similar to that of anticholinergic medication*

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European-Australian Phase III Trial

- Compared placebo, 50mg, 100mg, & tolterodine ER 4mg
- 1,978 patients randomized
  - 549 men & 1,429 women
- Primary endpoints
  - Assess safety and tolerability
  - Compare efficacy and safety with once daily tolterodine

Khullar et al, Abstract Annual Congress of EUA, 2011, Vienna

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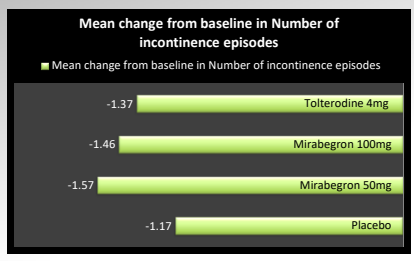
European-Australian Phase III Trial



Khullar et al, Abstract Annual Congress of EUA, 2011, Vienna

99

European-Australian Phase III Trial

Adverse Events (%)	Placebo (n=494)	50mg (n=493)	100mg (n=496)	Detrol (n=495)
Hypertension	7.7	6.9	6.4	8.1
Nasopharyngitis	1.6	2.8	2.8	2.8
Dry Mouth	2.6	2.8	2.8	10.1
Headache	2.8	3.7	1.8	3.6
Influenza	1.6	2.2	2.0	1.4
UTI	1.4	1.4	1.8	2.0
Constipation	1.4	1.6	1.6	2.0

100

Prescribing Issues

- Beta receptors
  - B1 Heart muscle contraction
  - B2 Smooth muscle relaxation
  - B3 Enhance lipolysis, Promotes relaxation of detrusor muscle in the bladder

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Prescribing Issues

- Small increase in BP
  - At 50mg dose in healthy volunteers, the maximum increase in SBP/DBP = 4.0/1.6 mmHg greater than placebo
  - Dose dependent
  - Reversible upon discontinuation

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Prescribing Issues

- Inhibitor of CYP2D6
- Can increase systemic exposure to:
  - Metoprolol
  - Desipramine
- Use caution when prescribed with:
  - Thioridazine
  - Flecainide
  - Propafenone

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Age and Ageing 2014; **43**: 666–675
doi: 10.1093/ageing/afu017
Published electronically 6 March 2014

The efficacy and tolerability of the β3-adrenoceptor agonist mirabegron for the treatment of symptoms of overactive bladder in older patients

ADRIAN WAGG[1], LINDA CARDOZO[2], VICTOR W. NITTI[3], DAVID CASTRO-DIAZ[4], STEPHEN AUERBACH[5], MARY BETH BLAUWET[6], EHAD SIDDIQUI[7]

[1]Department of Geriatric Medicine, University of Alberta, Alberta, Canada
[2]Department of Urogynaecology, Kings College London, London, UK
[3]Department of Urology, NYU Langone Medical Center, New York City, NY, USA
[4]Department of Urology, University Hospital of the Canary Islands, Santa Cruz de Tenerife, Tenerife, Spain
[5]Department of Urology, Hoag Memorial Presbyterian Hospital, Newport Beach, Long Beach, CA, USA
[6]Department of Biostatistics, Astellas Pharma Global Development, Inc., Northbrook, IL, USA
[7]Astellas Pharma Europe Ltd, Chertsey, Surrey, UK and Department of Urology, Ealing Hospital, London, UK

Address correspondence to: A. Wagg. Tel: +1 780 492 5338; Fax: +1 780 492 2784. Email: adrian.wagg@ualberta.ca

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A. Wagg *et al.*

Key points

- Mirabegron (25 mg and 50 mg once-daily) reduced the frequency of incontinence episodes and micturitions in older patients over 12 weeks.
- Mirabegron was well tolerated, regardless of age, over 12-week and 1-year study periods.
- The incidence of TEAEs was similar with mirabegron and placebo in the pooled 12-week analysis.
- The incidence of dry mouth was as much as sixfold higher with tolterodine than mirabegron in patients aged 65 years or older.

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Role in Therapy of OAB

- Patients who cannot tolerate anti-muscarinic side effects
- Patients with cognitive impairment
- *Patients who failed anti-muscarinics?*

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NEUROMODULATION ELECTRICAL & CHEMICAL

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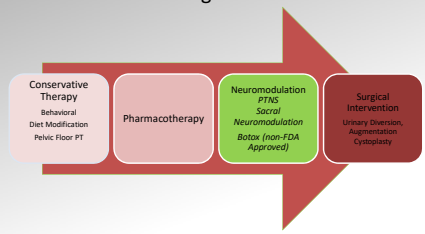
Treatment Algorithm for OAB



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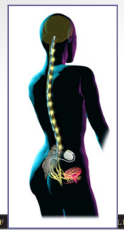
Sacral Neuromodulation (Interstim)

- FDA approved in 1997 for refractory:
  - Urgency/frequency
  - Urge incontinence
  - Idiopathic urinary retention



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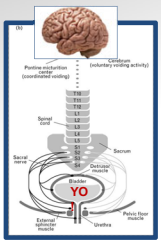
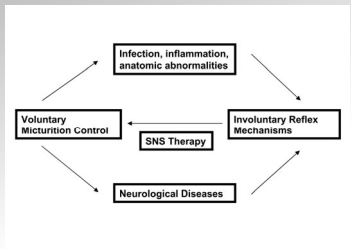
Sacral Neuromodulation

- Neuromodulation of sacral nerves
- Mechanism not fully understood
- Theory:
  - Alters the nerve signals going from the bladder back to the spinal cord ultimately leading to less frequent bladder contractions



110

Sacral Neuromodulation



111

Interstim--Medtronic

- https://www.medtronic.com/us-en/patients/treatments-therapies/bladder-control.html

112

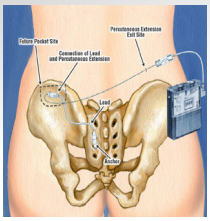
InterStim Test Stimulation Procedure

Simple outpatient procedure
Done under local anesthetic

113

Staged Implant Procedure

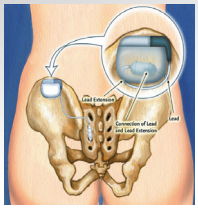
- In the OR, the permanent lead is implanted and connected to a percutaneous extension for the home test stimulation.



114

Implant Procedure

- Patients with a successful test stimulation go on to implantation of neurostimulator.



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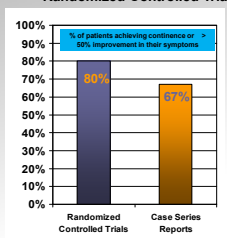
Current Literature: Systematic Review: Urge Incontinence

Randomized Controlled Trials vs. Case Series Reports

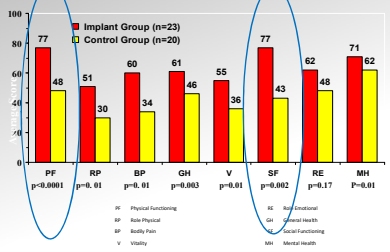


- In an independent investigation of 1,827 implants from 34 clinical trials, InterStim Therapy was shown to be an effective treatment option for the treatment of urinary urge incontinence[1]

Brazelli, M. et al. Journal of Urology, 2006

116

Urgency-Frequency 6 Month SF-36 Scores



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Implantation: Ranking of Adverse Events in first 12 Months Post-implant

Pain at neurostimulator site	15.3%
New pain	9.0%
Suspected lead migration	8.4%
Infection	6.1%
Transient electric shock	5.5%
Pain at lead site	5.4%
Adverse change in bowel function	3.0%

- Note: Additional events occurred – each less than 2.0%

118

Contraindications to Interstim

- Bony sacral abnormality
- *Cognitive impairment*
  - *Can't operate the device*
  - *Can't provide appropriate feedback about stimulation*
- Non-compliant patients
- Patients with functional incontinence
- Patients with known need for future MRI (below neck)

119

Sacral Neuromodulation in Elderly Patients

- 2002 Study by Amundsen evaluated SNS in elderly patients
  - 25 patients > 55 years underwent test implantation
    - 12 responded and were implanted
  - Low morbidity, comparable to younger patients
  - *Lower complete dry rate (17% vs 40%)*

Amundsen CL, Webster GD. *Am J Obstet Gynecol.* Dec 2002;187(6):1462-1465; discussion 1465.

120

Sacral Neuromodulation in Elderly Patients

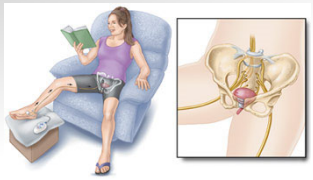
- Prospective evaluation of pre-operative risk factors for failure of neuromodulation found the following associated with failure :
  - *Age > 55 years (cure rate of 37% vs. 65%)*
  - *3 or more chronic conditions*
  - *Neurologic conditions*

Amundsen CL, Romero AA, Jamison MG, Webster GD. *Urology.* Oct 2005;66(4):746-750.

121

Percutaneous Tibial Nerve Stimulation (PTNS)

- Based on translational findings of traditional Chinese acupuncture techniques
- First described by Dr. Ed McGuire in 1983



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PTNS

- Posterior Tibial Nerve
  - Mixed sensory and motor nerve
  - Fibers originating from spinal roots L4-S3
    - Modulate the somatic and autonomic nerves to the pelvic floor muscles, bladder and urinary sphincter.

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PTNS: SUmiT Trial

- Multicenter, double blinded, randomized controlled trial comparing the efficacy of PTNS to sham through 12 weeks of therapy
- 220 patients not on OAB drugs during study

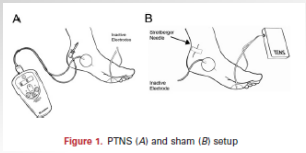

Figure 1. PTNS (*A*) and sham (*B*) setup

Peters et al, J. Urology, 183 (1438-1443, 2010

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PTNS: SUmiT Trial

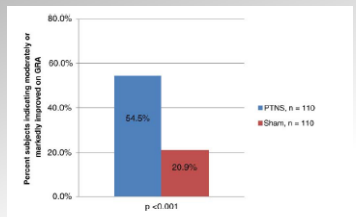

Figure 3. Intent to treat analysis comparing PTNS and sham GRA at week 13 assessment.

125

PTNS: OrBIT Trial

- Phase 1 compared PTNS to tolterodine
  - 79.5% improvement in OAB symptoms PTNS
  - 54.8% improvement for Tolterodine
- Phase 2 evaluated sustained efficacy at 12 months
  - Initial 12 week course
  - Ongoing therapy at tapering intervals
    - Avg of 12 ± 4.9 further treatments over 9 months

MacDiarmid et al, J. Urol 183, 234-240, 2010

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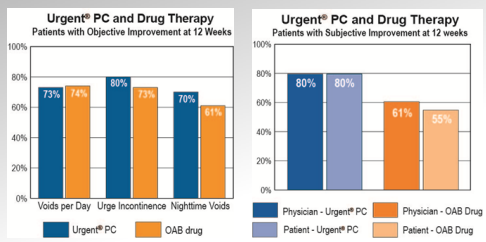
PTNS: OrBIT Trial



MacDiarmid et al, J. Urol 183, 234-240, 2010

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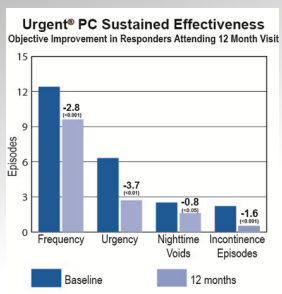
PTNS: OrBIT Trial Results, Long Term



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MacDiarmid et al, J. Urol 183, 234-240, 2010

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PTNS Risks of Treatment

- Transient pain at/near the stimulation site
- Transient mild pain or skin inflammation at or near the stimulation site
- Transient mild bleeding at needle insertion site.

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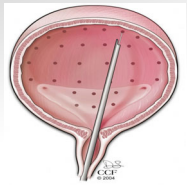
Botulinum Toxin - Botox

- Decreases bladder muscle's ability to contract
  - Inhibits acetylcholine release at presynaptic cholinergic junction
  - Regional decreased muscle contractility and atrophy
- Can be done in the office with local anesthetic or in the OR with sedation
- Reversible in 5-8 months (detrusor)



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Trials of Botox for Idiopathic OAB

- 4 Randomized, placebo controlled
  - Brubaker et al, 2008
  - Dmochowski et al, 2010
  - Flynn et al, 2009
  - Sahai et al, 2007
- 2 Randomized, without placebo control
- 15 Observational studies
  - Without control groups
- *Significant reductions in incontinence episodes and in urgency were reported in all active treatment groups*

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Botox for Refractory Idiopathic OAB

- 28 patients 200 units BoNT-A
- 15 patients placebo injections
- 60% BoNT-A documented improvement (questionnaire)
- Median response duration = 373 days
- **Trial placed on clinical hold**
  - *43% women had post-void residual >200mL requiring CIC*
  - *Mean duration of CIC = 62 days*

Brubaker et al, J. Urol 2008 180(1) 217-222

132

Botox In Older Women

- Limited Data
- 21 patients aged 75-92 were assessed one month after Botox injection (200 units)
  - 16/21 patients (76%) reported greater than 50% improvement in symptoms
  - Frequency decreased from 11-5 voids/day
  - Pad use decreased from 4-1 pad/day
  - No complications reported

White et al, J Urol, 2008; 180(6): 2522-6

133

AUA OAB Guidelines on Botox

- FDA-approved for Idiopathic OAB (1/18/13)
- Symptoms improve
- *Risk of adverse events requiring secondary interventions is substantial (UTI, retention)*
- Patients must be willing to perform self-catheterization for long periods
- Clinician must be able to measure PVR
- Repeat injections are necessary to maintain improvement

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Comparisons of Neuromodulation Therapies

Sacral Neuromodulation:	Botulinum Toxin Injections:
Restores function	Takes away function
Not NOAB	ALL OAB pts
Treats retention	Potential to cause retention
Helps GI conditions	No GI benefit
One Treatment	Need repeat rx
No carry over effect	30% have a permanent x-over effect
Immediate use of BTX if fails	Wait 3-6 months for adjuvant rx
Long term benefit	Temporary
Safety: proven	Safety: proven
Revisions: 25-50% over 2-10y	Frequent retreatment ~6 months
Not MRI compatible	MRI compatible
Simple: not totally office based yet	Simpler: office based (sometimes)
Time Consuming	Less time consuming
FDA Approved	FDA Approved

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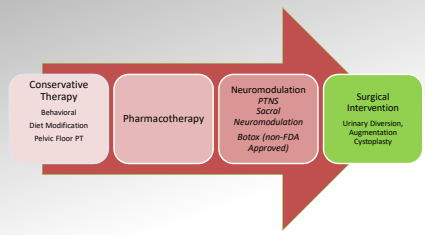
Treatment Algorithm for OAB



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STRESS URINARY INCONTINENCE

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Stress Urinary Incontinence

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Stress Urinary Incontinence

- 1 in 3 women will experience stress urinary incontinence (SUI) in their lifetime.
- It occurs when activity such as laughing or coughing or bending causes urine to leak out.
- The amount of urine that is lost can be a few drops to tablespoons or more.

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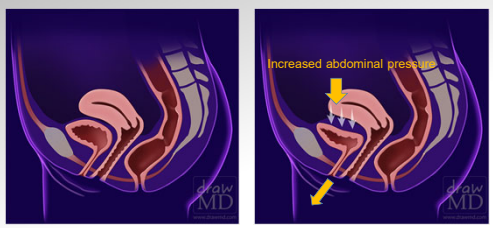
Stress Incontinence is a Urethra Problem

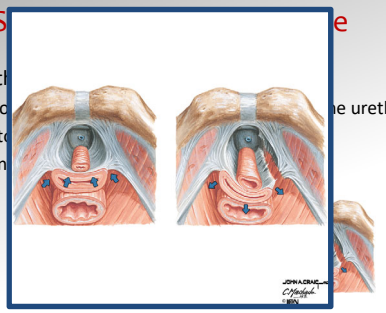
Resting | Coughing



140

S e

- Problem with
  - Weakness o e urethra
  - Urethra is t
  - Urethra is n



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SUI Risk Factors

- Caucasian or Hispanic race
- Overweight or Obesity
- Smoking
- Chronic coughing (asthma, GERD)
- Pregnancy and childbirth
- Nerve injuries to the lower back
- Pelvic Surgery

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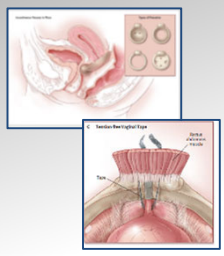
Treatments—Stress Incontinence
Goal: Improve Quality of Life



- Physical therapy:
  - Exercises to help strengthen and control the pelvic floor muscles.
  - Biofeedback.
- Pessary:
  - Treats incontinence and prolapse.
  - Different shapes and sizes.
  - Sized to fit each patient.
- Surgery:
  - Slings and bulking agents.

- American Urological Foundation. A monograph from the AUA Foundation: Stress Urinary Incontinence. http://www.urologyhealth.org/resourcecenter/bladder/bladderBrochures/SUI_Monograph.pdf, 2011.

143

Weight Loss

- Being overweight or obese leads to more chronic pressure on the pelvic floor
- *5-10% reduction in total body weight results in 50-70% reduction in SUI in women*
- This doesn't mean that everyone has to reach their ideal weight, but maintaining a healthy weight can be preventative

Subak et al, NEJM, 2009: 360:481-90

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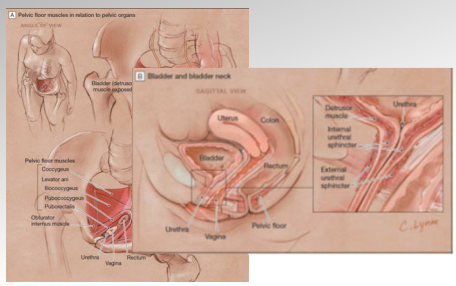
Pelvic Floor Physical Therapy



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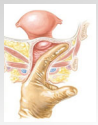
Pelvic Floor Physical Therapy

- Consider working with a specialty-trained Pelvic Floor Physical Therapist
- In appropriately selected women, Pelvic Floor PT reduced SUI by 33%



Pelvic Floor Muscle Re-education 277

0	unable to isolate, or no perceived tightening
1	light contraction; unable to retain examiner's finger
2	light contraction; unable to sustain tightening for 1 second
3	moderate contraction; able to sustain tightening for 3 seconds
4	strong contraction; able to sustain tightening for 5 seconds

FIG. 1. Pelvic floor muscle contraction scale

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Pelvic Floor Physical Therapy: www.apta.org to find PT's near you

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Pelvic Floor Physical Therapy

- Initial evaluation:
  - Extensive history interview
  - examination of the spine and lower extremities
  - biofeedback assessment of the pelvic floor muscles and abdominal muscles
  - an internal pelvic floor assessment
  - education and initiation of a home program of exercises.
- **Support usually improves at 6 weeks**
- **Three months brings even more significant results**

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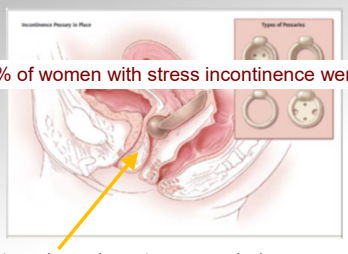
Noblett et al, AJOG 2008, 592.e1-e5

Devices-Pessary



60% of women with stress incontinence were dry

Knob sits under urethra to increase urethral support

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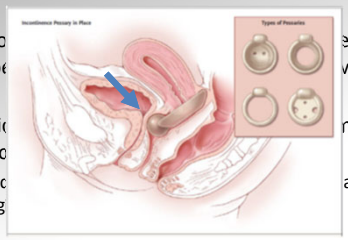
Pessaries



- Even frail c…es because they can be…very 4-6 weeks in clinic
- Contraindic…night be easily lost to follo…
  - Neglected…and vesicovag…

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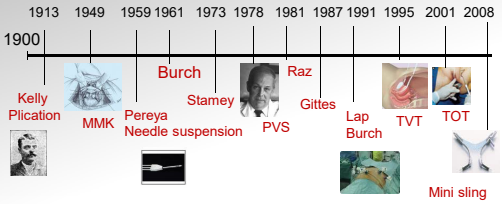
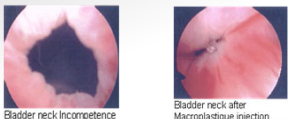
History of Surgery for Stress Urinary Incontinence



151

Surgery for SUI

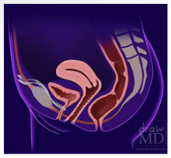
- Urethral bulking agent
  - A synthetic material is injected into the layers of the urethra to "bulk" it up and increase outlet resistance
  - Cure + Improvement rates ≈ 60%
  - Can be done without anesthesia
  - 10-15% chance of de novo urge incontinence
  - Small risk of urinary retention



152

Surgery for SUI

- Slings
  - Most common surgery for SUI
  - Support is placed beneath the bladder neck or urethra to support and close the opening when abdominal stressors increase pelvic floor pressure
    - Woman's own tissue (fascia)
    - Synthetic polypropylene mesh



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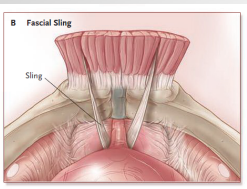
Fascial Slings SUI (Pubovaginal Sling)

- Two incisions
  - Bikini line or outer thigh
  - Vaginal
- Overnight hospitalization
- Patients can resume normal, non-strenuous activities 6 weeks after the procedure.



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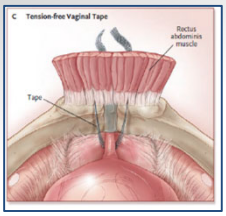
Mesh Slings SUI

- Minimally invasive
- Incisions are very small
- Procedural pain is minimal
- Oupatient surgery
- Designed to reduce recovery time
- Patients can resume normal, non-strenuous activities 4-6 weeks after the procedure.



155

Mesh Slings SUI

- Long term durability, safety, and efficacy up to 17 years
- 2,000 publications in the scientific literature
- The mid-urethral (mesh) sling is associated with less pain, shorter hospitalization, faster return to work, and reduced cost
- Over 3 million have been placed worldwide
- *FDA: "The safety and efficacy of multi-incision slings is well-established in clinical trials that followed patients for up to one year"*
- *Position Statement on Mesh Midurethral Sling for Stress Urinary Incontinence,* AUGS SUFU

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Are older women more likely to receive surgical treatment for stress urinary incontinence since the introduction of the mid-urethral sling? An examination of Hospital Episode Statistics data

W Gibson, A Wagg

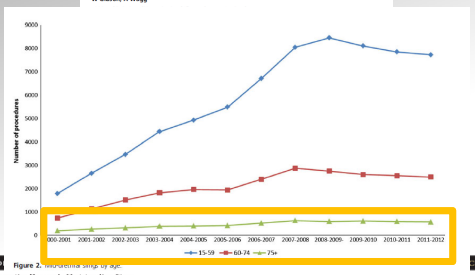

Figure 2.

Gibson & Wagg, BJOG, 2015

157

Mesh Sling Outcomes in Elderly

- In a study evaluating for risk factors for failure of MUS, both age and menopausal status were evaluated
  - <50 (n= 134), 51-60 (n=144), 61-70 (n=68), 71-80+ (n= 52)
  - *Increasing age is an independent RF for failure of both transobturator and retropubic midurethral slings.*
  - Both sling approaches were significantly less efficacious in post-menopausal compared to pre-menopausal women

Rechberger T et al, Int *Urogynecol J Pelvic Floor Dysfunct. Published online: 24 February 2010.*

158

Mesh Sling Outcomes in Elderly

- Sevestre et al reported outcomes after mesh sling at mean 2 year follow-up in 76 women older than 70
  - 67% cure (questionnaires
  - 21% de novo urgency, 5% de novo urge urinary incontinence
  - Cure rate is lower because of the increased risk of post-operative urgency.
- Hellberg et al also found that there was a significantly higher rate of de novo urgency in older women (20.9% vs. 13.8%)

Sevestre et al, Eur Urol 2003:44:128-31
Hellberg et al, Int Urogynecol J 2007; 18:423-9

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TAKE-HOME MESSAGES

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THE DEMOGRAPHIC BURDEN

SURVEY		
NHANES		
NSRCF		
NHHCS	40.2%	Difficulty controlling bladder (catheters
MDS	residents 70.3% long term residents	multiple daily episodes (catheters excluded)

- **If only Moderate, Severe, and Very Severe are considered**
  - 24% men and women
- **If only Severe and Very Severe are considered**
  - 8% men and women

Irrespective of residence type, >70% of all home health/hospice care recipients either require a catheter or have incontinence

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THE FISCAL BURDEN

- Surgery for SUI
- Cost of OAB-UUI

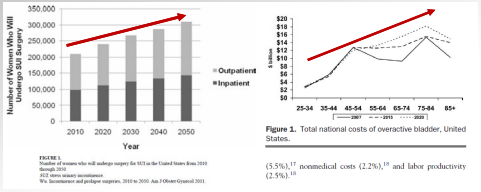

Figure 1. Total national costs of overactive bladder, United States.

(5.5%),[17] nonmedical costs (2.2%),[19] and labor productivity (2.5%).[18]

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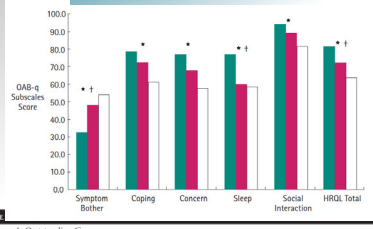
THE PERSONAL BURDEN

The health related QOL impact of incontinence is similar to that observed with other chronic conditions such as OA, COPD, and stroke.



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Take Home Messages

- Lower urinary tract (LUT) dysfunction in elderly women is *almost always multifactorial*
  - Identify risk factors and treat modifiable factors
- Overactive Bladder prevalence increases with age
  - Treatment benefits must be carefully weighed against adverse effects
- Surgical treatment of stress incontinence in elderly patients is less successful with higher rates of de novo urgency and urge incontinence

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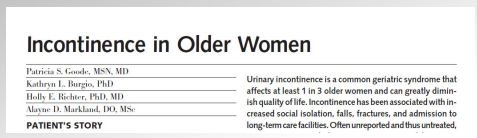
References



Incontinence in Older Women

Patricia S. Goode, MSN, MD
Kathryn L. Burgio, PhD
Holly E. Richter, PhD, MD
Alayne D. Markland, DO, MSc

PATIENT'S STORY

Urinary incontinence is a common geriatric syndrome that affects at least 1 in 3 older women and can greatly diminish quality of life. Incontinence has been associated with increased social isolation, falls, fractures, and admission to long-term care facilities. Often unreported and thus untreated,

Goode et al, JAMA. 2010;303(21):2172-2181

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Online Resources

- Urology Care Foundation www.UrologyHealth.org
- The Simon Foundation for Continence www.SimonFoundation.org
- Society of Urodynamics Female Pelvic Medicine and Urogenital Reconstruction (SUFU) www.sufuorg.com
- American Urogynecologic Society (AUGS) www.VoicesForPFD.org
- National Association for Continence (NAFC) www.NAFC.org

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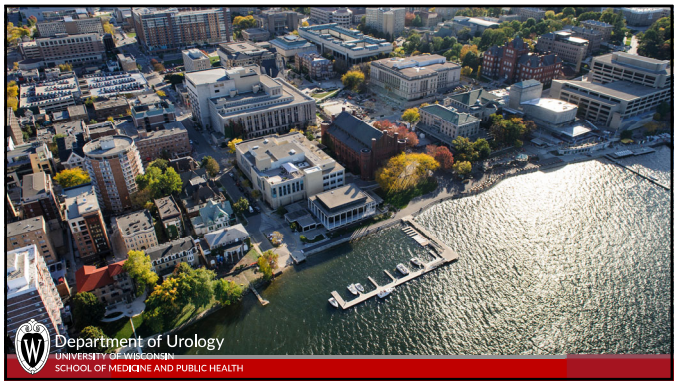

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