

Continence Basics and Preparation for Certification Test

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Objectives

- ❖ Review highlights of continence content for WOC certification examination
- ❖ Define urinary and fecal incontinence and related bowel elimination and lower urinary tract symptoms
- ❖ Discuss assessment of UI and FI, including the perineal skin
- ❖ Outline options for managing FI and UI, as well as bowel elimination symptoms and LUTS



❖ Faculty Disclosures: none



Urinary Incontinence

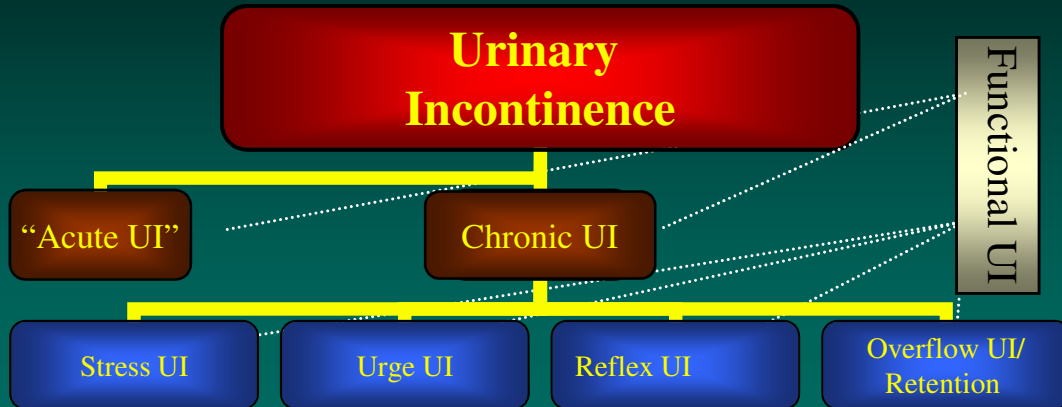


- ❖ **Definition:** complaint of any involuntary leakage of urine¹
 - Clinicians focus on sufficient urine loss to be defined as a problem by person or care provider

1. Abrams P et al. American Journal of Obstetrics & Gynecology 2002; 187:116.



UI: complaint of any involuntary leakage¹



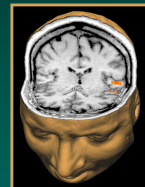
1. Abrams P et al. American Journal of Obstetrics & Gynecology 2002; 187:116.



Pathophysiology: Acute/Transient UI

❖ Associated factors

- Delirium
- UTI
- Medications (diuretics, α -adrenergic blockers, ACE inhibitors)
- Polyuria (DM, DI, excessive fluid intake)
- Immobility
- Stool impaction/ severe constipation



Ermer-Seltun J. Acute or transient urinary incontinence. IN: Doughty DB. Urinary & Fecal Incontinence, 3rd ed. St.Louis: Elsevier/ Mosby, 2006, p. 55-76.



Assessment: Key Elements

❖ History:

- Onset & Duration of UI:

“Acute” vs. Chronic

❖ Lower Urinary Tract Symptoms (LUTS)

- Subjective indicators of health problem that lead patient, partner or provider to seek help (or not)
 - ◆ Storage LUTS
 - ◆ Voiding LUTS
 - ◆ Post Void LUTS



Storage LUTS



- **Daytime Voiding Frequency:** report of voiding too frequently
 - ◆ Reference range: 8 per 24 hour period or every 2 hours or *less* often while awake
- **Nocturia:** interruption of sleep owing to desire to urinate
 - ◆ Reference range: 0-2 episodes considered normal range; ≥ 3 episodes considered clinically relevant
- **UI:** involuntary urine loss
 - Stress (physical exertion)
 - Urge (urgency)
 - Mixed

Abrams P et al. American Journal of Obstetrics & Gynecology 2002; 187:116.



Storage LUTS



❖ Physiologic desire to urinate

- Few words in English found to articulate normal desire to urinate
- Usually described as tingling, pressure, sometimes described as 'uncomfortable'
- Localized to suprapubic area, urethral meatus or urethral course as it nears skin
- Tends to emerge and fade into consciousness based on psychological, social, cultural factors

DeWachter S et al. Neurourology and Urodynamics 2012; 31(3): 370-4.



Storage LUTS



❖ Differentiate physiologic desire, urgency and pain-induced desire to urinate

- **Urgency**: (classic urgency) sudden and strong desire to urinate that is not easily postponed or deferred¹
- **Nociceptive urgency**: burning, cramping pain or pressure that provokes urgency as defensive mechanism to relieve discomfort

Abrams P et al. American Journal of Obstetrics & Gynecology 2002; 187:116.



Voiding and Post Void LUTS



Voiding LUTS

- Slow stream (weak stream or poor FOS)
- Intermittent stream (starts & stops >1 time)
- Hesitancy (difficulty initiating stream)
- Terminal dribble (prolonged end to micturition, when the flow has slowed to a trickle/dribble)

Postvoid LUTS

- Postvoid dribbling (involuntary loss of urine immediately person has finished passing urine, for men when leaving the toilet)
- Incomplete emptying

Abrams P et al. American Journal of Obstetrics & Gynecology 2002; 187:116.



Assessment: Key Elements

❖ **Review of Systems (highlights only)**

- **Urologic**: UTI, stones, tumors, etc.
- **GYN**: OB history, menstrual status, prolapse
- **Male Reproductive**: prostate problems, stricture
- **GI**: bowel elimination patterns, fecal continence
- **Neurological**: CNS disorders, disc disease, neurogenic bladder triad (bowel, bladder, sexual dysfunction)



Assessment: Current Medications



- Diuretics: increase urine volume
- Sedatives/ hypnotics/ opioid analgesics/ anxiolytics: detrusor relaxation and diminished awareness of bladder fullness
- Antidepressants/ antipsychotics/ drugs for parkinsonism: anticholinergic effect
- Calcium channel blocker: reduce detrusor contraction strength
- α -Adrenergic agonists (decongestants): increase risk of urinary retention with obstruction, improve SUI
- ACE Inhibitors ("prils"): cough may exacerbate SUI



Assessment: Key Elements



❖ Physical Examination

- **General:** mobility, dexterity, cognition, motivation & goals of therapy
- **Environmental Assessment:** access to toilet, lighting, need for assistive devices, appropriateness of clothing, may time toileting access¹



Assessment: Key Elements

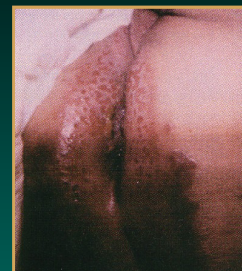
Percuss abdomen for urine in bladder

Bladder above umbilicus: $\geq 500\text{ml}$
Any percussive dullness: $\geq 150\text{ ml}$



Inspect perineal skin for MASD

- ❖ IAD: erythema \pm erosion (denudation) of skin when exposed to urine stool
- ❖ Follows skin folds and not bony prominences
- ❖ Full thickness wound, necrotic tissue = PU



Gray M et al. Journal of Wound, Ostomy and Continence Nursing 2011; 38(3): 233.



Assessment: Key Elements

❖ Pelvic examination: woman

- Urogenital atrophy
- Vaginal wall prolapse



Pelvic Organ Prolapse: ACOG Grading System

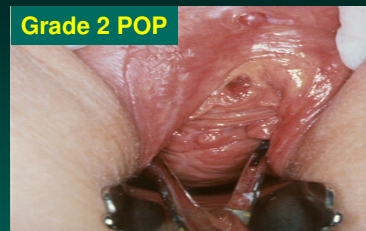
Grade 1 POP



Grade 3 POP



Grade 2 POP



Grade 4 POP



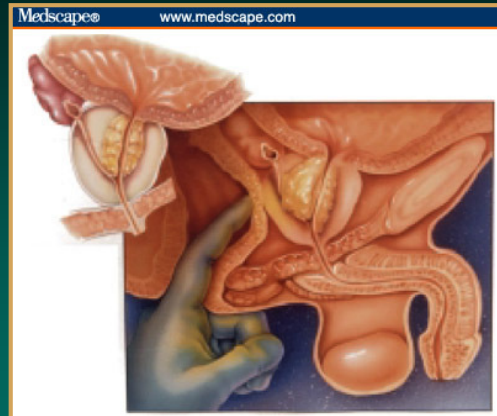


Assessment: Key Elements

Digital Rectal Examination (DRE)

Evidence of prostate CA

Crude assessment of size,
does not evaluate
magnitude of obstruction



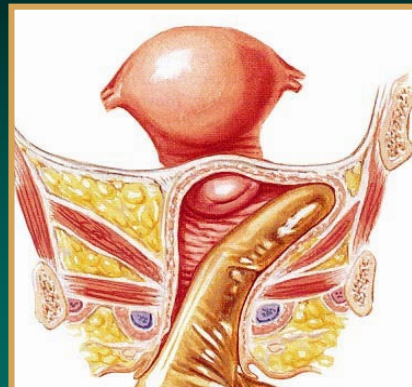
URL: <http://img.medscape.com/fullsize/migrated/editorial/clinupdates/2002/2010/2010.fig5.jpg>



Urinary Incontinence

❖ Assess Pelvic Floor Muscle Strength

- **Absent:** no pressure, no displacement of finger
- **Weak :** slight pressure on finger, lasts < 1 second, base of finger slightly elevated
- **Strong:** circumferential pressure, duration > 3 seconds, fingers elevated and move toward posterior vault





Assessment: Routine Studies



❖ Urinalysis

◆ Dipstick:

- UTI (nitrites & leukocytes)
- Diabetes mellitus (glucose)
- Diabetes insipidus/ water intoxication (specific gravity)
- LUT tumor (blood, RBC)

◆ Microscopic examination

- UTI (WBC & bacteria)
- LUT (red blood cells)



More Complex Voiding Diary

- ❖ Diary must balance simplicity details needed for clinically relevant assessment

Time	Drinks What kind? How much?	Urine How many times? How much? (circle one)	ACCIDENTS		
			Accidental leaks (circle one)	Did you feel a strong urge to go? (circle one)	What were you doing at the time? Sneezing, exercising, having sex, lifting, etc.
7-8 p.m.		○ ○ ○ ○	○ ○ ○ ○	Yes No	
8-9 p.m.		○ ○ ○ ○	○ ○ ○ ○	Yes No	
9-10 p.m.		○ ○ ○ ○	○ ○ ○ ○	Yes No	
10-11 p.m.		○ ○ ○ ○	○ ○ ○ ○	Yes No	
11-12 p.m. (midnight)		○ ○ ○ ○	○ ○ ○ ○	Yes No	
12-1 a.m.		○ ○ ○ ○	○ ○ ○ ○	Yes No	
1-2 a.m.		○ ○ ○ ○	○ ○ ○ ○	Yes No	
2-3 a.m.		○ ○ ○ ○	○ ○ ○ ○	Yes No	
3-4 a.m.		○ ○ ○ ○	○ ○ ○ ○	Yes No	
4-5 a.m.		○ ○ ○ ○	○ ○ ○ ○	Yes No	
5-6 a.m.		○ ○ ○ ○	○ ○ ○ ○	Yes No	

I used _____ pads, I used _____ diapers today (write number).

Questions to ask my health care team: _____

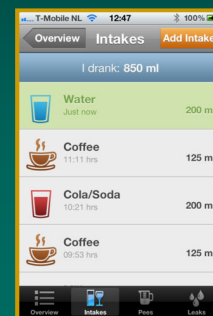
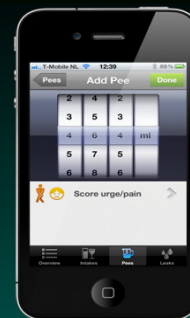
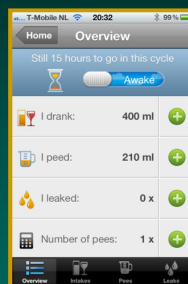
URL for diary:
http://www.powderroom.ca/en/resources/patient_materials/



Electronic Voiding Diary: Is there an app for that?

- ❖ Electronic diaries have been used for drug trials, typically based on PDA technological base with limited success
- ❖ At least one smart phone applications available (iP Voiding Diary by Synappz Medical Apps

<http://itunes.apple.com/us/app/ip-voiding-diary/id482034478?mt=8>



Assessment: Additional Studies

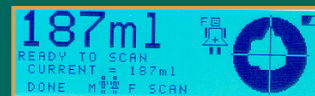
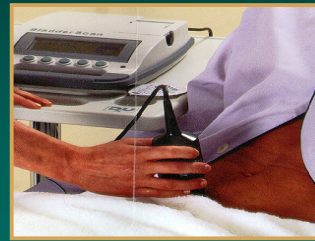
- ❖ Post void residual volume:
 - Catheterization
 - ◆ Obtain as close to urination as possible
 - ◆ Inexpensive but invasive & carries 1%-2% risk of UTI
 - ◆ Cut point for further inquiry: 150-250ml





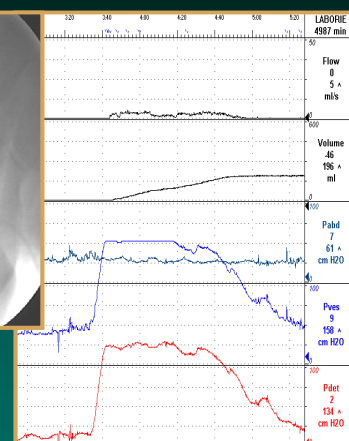
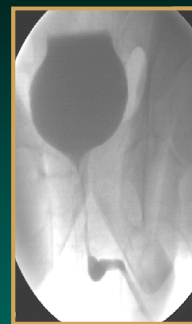
Assessment: Additional Studies

- ❖ Ultrasonic PVR:
- ❖ More expensive but noninvasive with no risk of UTI
- ❖ Reasonable accuracy as compared to cath
- ❖ Equipment easy to learn and use



Diagnostic Tests

- ❖ Urodynamic Testing
 - Highly selected patients
 - Characterizes UI type
 - Determines cause of urinary retention
 - Value limited in moderate to severe cognitive impairment





Management Options

❖ Behavioral

- Fluid & lifestyle alterations
- Pelvic floor muscle training

❖ Pharmacologic

- Antimuscarinics
- Other agents

❖ Surgical management

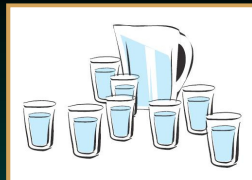


Healthy Bladder Habits

- ❖ What healthy bladder habits can be reasonably recommended?
 - Fluid and Dietary Strategies
 - Voiding Habits
 - Constipation Prevention/ Management
 - Weight Control
 - Smoking cessation
 - Pelvic Floor Muscle Exercises



Healthy Bladder Habits?



❖ Fluid Intake

- Avoid extremes (consumption of high volumes of fluid or fluid restriction)
- US Food & Science Board RDA for fluids: 30ml/kg/24 hr or ½ oz/lb/day (ambulatory person, moderate climate)
 - ♦ Approximately 1.5-2.2 liters in adult women, 1.5-2.3 in adult men; 1.2-2.3 in adults > 70 years of age
 - ♦ Children aged 1 to 3 years 1.0 to 1.5 liters
 - ♦ Children 4 to 8 years 1.2 to 1.9 liters

1. IOM/ US Food & Science Board: Dietary Reference Intake for Water & Sodium.
URL: http://www.iom.edu/Global/News%20Announcements/~/_media/442A08B899F44DF9AAD083D86164C75B.ashx



Healthy Bladder Habits: Fluids

- ❖ Existing evidence suggests that
 - ↑ fluid intake to RDA ranges diminishes the risk of recurring UTI¹
 - ↓ fluid intake to RDA among persons who routinely consume higher volumes reduces daytime voiding frequency, nocturia and UI frequency^{1,2}
 - ↑ fluid intake, (especially water intake) to RDA ranges reduces the risk of urothelial cancers^{1,3}

1. Gray M, Krissovic M. Journal of Wound, Ostomy & Continence Nursing 2003; 30: 126.
2. Swithinbank L, Hashim H, Abrams P. Journal of Urology 2005; 174(1): 187.
3. Michaud DS et al. New England Journal of Medicine 1999; 340: 1399.



Healthy Bladder Habits: Bladder Irritants



- ❖ Strongest evidence associates caffeine intake $\geq 450\text{mg/ day}$ with increased risk for urgency and urge incontinence in adult women¹
- ❖ Expert opinion associates other bladder irritants with symptom exacerbations in persons with overactive Bladder and Urinary Incontinence²
- ❖ Evidence about caffeine reduction and its impact on UI frequency or severity is especially sparse³
- ❖ Sparse evidence suggests that reducing caffeine intake *may* reduce LUTS: urgency and voiding frequency⁴

1. Jura YH et al. Journal of Urology 2011; 185(5): 1775.

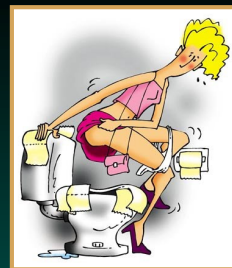
2. Wyman JF, Burgio KL, Newman DK. International Journal Clinical Practice 2009; 63(8): 1177.

3. Gray M. Journal of Wound, Ostomy and Continence Nursing 2001; 28(2): 66.

4. Bryant CM, Dowell CJ, Fairbrother G. British Journal of Nursing 2002; 11(8): 560.



Voiding Habits



- ❖ Void on a regular basis
 - (≤ 8 / 24 hours or ≥ 2 hours while awake)
 - Attend to the desire to void
 - Lack of job control associated with higher likelihood of LUTS in employed Chinese women (i.e.: toilet access at work)¹
 - Position matters: hovering behaviors have been associated with pelvic floor muscle contraction, interrupted stream and incomplete bladder emptying^{2,3}

1. Liao YM et al. Neurourology & Urodynamics 2008; 27(1): 52.

2. Palmer MH. Nursing Outlook 1994; 43(2): 95.

3. Wang K, Palmer MH. Journal of Advanced Nursing 2010; 66(8): 1874.



Healthy Bladder Habits: Prevention/Management Constipation

- ❖ Constipation has been associated with urinary incontinence, vesicoureteral reflux, and urinary tract infections in children^{1,2}
- ❖ Successful resolution of constipation has been associated with resolution of UI, UTI and low grade reflux in children
- ❖ Expert opinion suggests that constipation/ impaction and rectal distension impair healthy bladder function; however, urodynamic studies of 20 children with LUTS with or without constipation revealed variable results of rectal distension; stimulating bladder emptying in some while impairing emptying in others

1. Loening-Baucke V. Pediatrics 1997; 100(2): 228.

2. Koff SA, Wagner TT, Jayanthi VR. Journal of Urology 1998; 160(3 Pt2): 1019.



Healthy Bladder Habits: Prevent or Manage Constipation



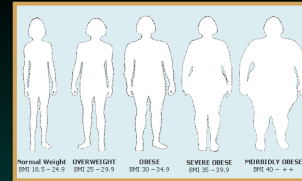
- ❖ Fluid
- ❖ Fiber
- ❖ Recreational exercise
- ❖ Stool softeners, laxatives
 - Multiple “recipes” available online¹
 - 1 cup unprocessed wheat bran, 1 cup applesauce and ½ cup prune juice and refrigerate.
 - Take 2 Tablespoons q day with water or juice, allow 1 week for bowel movements to become soft and regular
 - Increase by 1-2 Tablespoon per week, up to 8 Tablespoons



1. URL: <http://www.waisman.wisc.edu/~rowley/sb-kids/recipes.html>



Healthy Bladder Habits: Weight Control



- ❖ Epidemiologic evidence strongly suggests that obesity is an independent risk factor for urinary incontinence^{1,2}
 - 20%-70% increase in urinary incontinence risk with every 5 unit increase in Body Mass Index (BMI)
 - Incidence of urinary incontinence over 5-10 year period rose 30% to 60%
 - Risk of stress urinary incontinence may be greater than urge incontinence or overactive bladder
 - Even moderate weight loss has been shown to reduce frequency and severity of incontinence

1. Subak LL et al. Journal of Urology 2009; 182 (Supp): S2.

2. Townsend MK et al. American Journal of OB/GYN 2007; 110 (2 Part 1): 346.



Healthy Bladder Habits: Smoking Cessation



- ❖ Abundant evidence links smoking and bladder cancer risk^{1,2}
 - Smokers have 2-3 time risk for bladder cancer when compared to non-smokers
 - Risk influenced by smoking duration, number of cigarettes smoked per day, total exposure (pack-years)
- ❖ Smoking associated with greater likelihood of lower urinary tract symptoms in population based sample of 3143 men³
- ❖ Smoking found to ↑ risk for urgency in 1059 older women and men⁴

1. Baris D et al. Journal of National Cancer Institute 2009; 101(22): 1553.

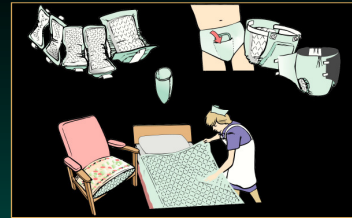
2. Pelucchi C et al. Nature Clinical Practice: Urology 2006; 3(6): 327.

3. Koskimaki J et al. Journal of Urology 1998; 159: 1580.

4. Nuotio M et al. European Urology 2001; 40(2): 206.



Managing UI



- ❖ Containment Devices: vital role in transient management such as acute or critical care setting; they do *not* a substitute for a reasonable assessment and individualized treatment plan
 - ◆ Feminine hygiene pads or household products not designed for urine containment and perform poorly
 - ◆ Disposable versus reusable
 - ◆ Fit device to volume (severity) of incontinence & presence or absence of fecal incontinence



Incontinence Management: Absorbent Products

- ❖ Underpad for Bed or Chair:
Blue pads
 - Inexpensive
 - Protect bed linen, but, offer inadequate absorbency for major UI accidents; surface not designed to reduce friction
 - Do not prevent wet back (fluid return)

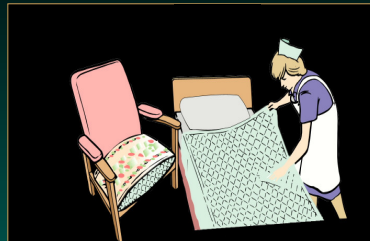




Incontinence Management: Absorbent Products

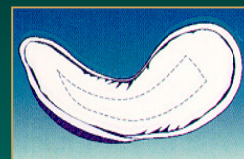
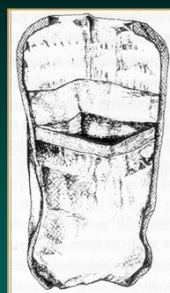
❖ Optimal Underpad

- Absorbent core that absorbs moisture and effluent throughout entire surface
- Surface has low friction coefficient to minimize mechanical skin damage with movement
- Core and cover-stock prevent wet-back or fluid return



Managing UI

- ❖ Inserts (liners, shields)
- ❖ Plastic backed pads in underclothing
- ❖ Adhesive strip or held in place via close fitting underwear or stretch mesh
- ❖ Mild to moderate UI, poor for double incontinence





Managing UI Under F315

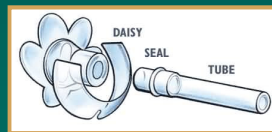
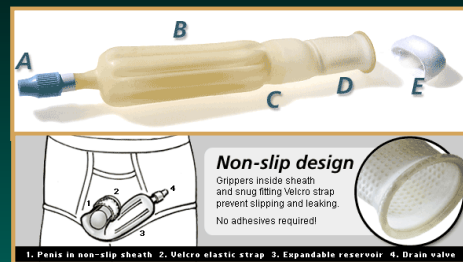
❖ Containment briefs

- Moderate to heavy UI
- Best suited for double (urinary & fecal) incontinence



External Containment Devices

- ❖ No adequate device for women
- ❖ Collection device fits around all or part of penile shaft
- ❖ Attach to leg bag or other reservoir
- ❖ Leg straps can be a problem





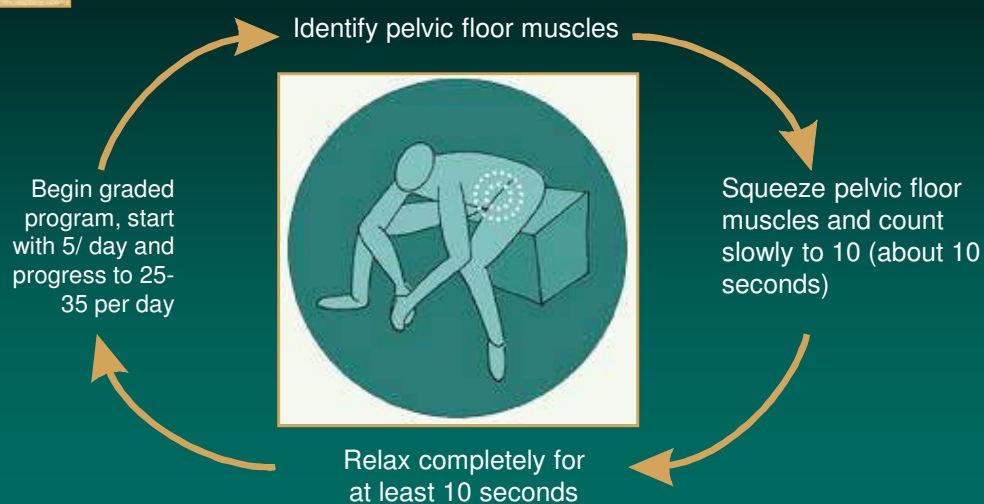
Managing UI

❖ Pelvic Floor Muscle Rehabilitation: 3 essential elements

- ◆ Biofeedback to identify, contract and relax the pelvic floor muscle
- ◆ Muscle training
- ◆ Neuromuscular reeducation: teach the knack, urge suppression, PFM relaxation for voiding efficiency, etc.



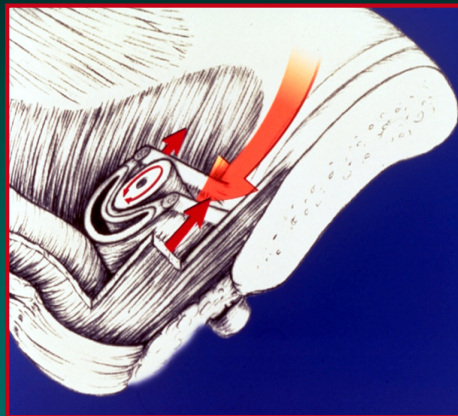
PFM: Muscle Training





PFM Neuromuscular Reeducation: The Knack

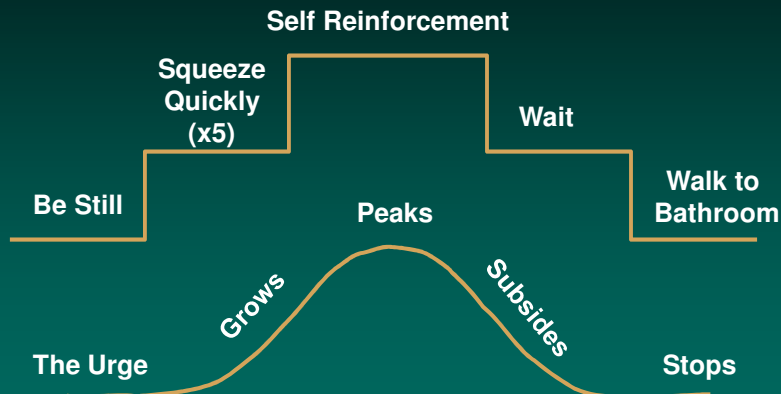
- ❖ **Knack:** a learned skill of contracting the striated muscles of the urethra and levator ani at the moment of expected leakage
- ❖ Used to prevent or reduce stress UI episodes



Miller JM et al. JAGS 1998; 46(&): 870.



PFM Neuromuscular Reeducation: Urge Suppression

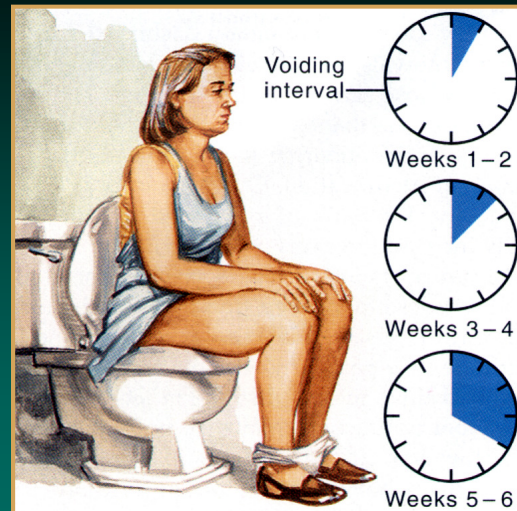


Newman D. Urinary Incontinence Sourcebook. Lowell House; 1997



Managing UI: Scheduled Toileting, Prompted Toileting

- Patient education
- Scheduled voiding regimen
- Urge control strategies
- Self-monitoring
- Reinforcement



Wilson PD et al. International Consultation on Incontinence. 2002;10c:572-624.



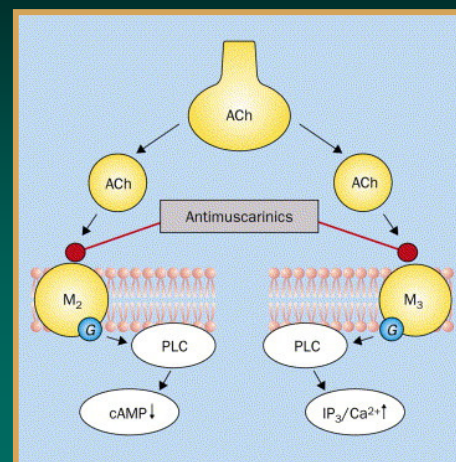
Antimuscarinics: Multiple Drugs in This Category

❖ Popular Antimuscarinics

- Oxybutynin (M_2 & M_3)
- Tolterodine (M_2 & M_3)
- Fesoterodine (M_2 & M_3)
- Trospium (M_2 & M_3)
- Solifenacin (M_2 & M_3)
- Darifenacin (M_3)

❖ Older antimuscarinics

- Propantheline
- Hyoscyamine





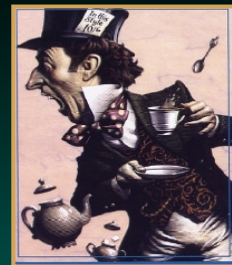
Managing OAB/ Urge UI: Current Class of Antimuscarinic Drugs

- ❖ **Tolterodine tartrate**
 - Detrol IR (2 mg)
 - Detrol LA (4 mg)
- ❖ **Fesoterodine fumarate**
 - Toviaz (4,8 mg)
- ❖ **Oxybutynin chloride**
 - Ditropan IR (5-15 mg)
 - Ditropan XL (5-15 mg)
 - Oxytrol (TD patch) (1 twice weekly)
 - Gelnique (TD gel) (1 pkg daily)
- ❖ **Trospium chloride**
 - Sanctura IR (20 mg)
 - Sanctura XR (60 mg)
- ❖ **Solifenacin succinate**
 - VESIcare (5, 10 mg)
- ❖ **Darifenacin HCl**
 - Enablex (7.5, 15 mg)



Antimuscarinics: Adverse Side Effects

- ❖ Dry mouth
- ❖ Flushing
- ❖ Heat intolerance
- ❖ GI effects (constipation)
- ❖ Drowsiness
- ❖ Short term memory impairment, behavioral changes in children, nightmares



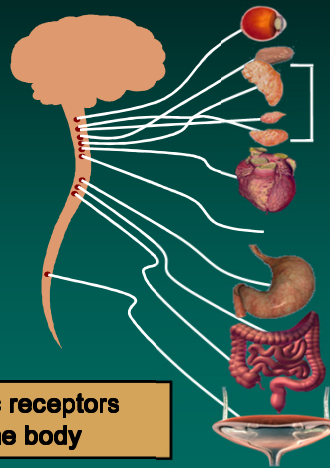
**Red as a beet
Dry as a bone
Blind as a bat
Mad as a hatter
Hot as a hare**



Why all the side effects?

BRAIN

- Dizziness
- Somnolence
- Impaired Memory & Cognition



Iris/Ciliary Body = Blurred Vision

Lacrimal Gland = Dry Eyes

Salivary Glands = Dry Mouth

Heart = Tachycardia (torsade de pointes)

Stomach = Dyspepsia

Colon = Constipation

Detrusor = urinary retention

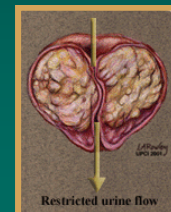
Answer: Muscarinic receptors found throughout the body

Adapted from Abrams P, Wein AJ. The Overactive Bladder: Widespread and Treatable Condition. Erik Sparre Medical AB; 1998.



What about the male patient with OAB & BPH?

- ❖ Traditionally concerns related to combination therapy focused on risk of creating acute urinary retention in men with BPH and BOO
- ❖ Significant and growing body of research supports combination therapy is feasible (safe) and more effective than monotherapy; studies below used tolterodine ± tamsulosin
- ❖ Single limitation: men with decompensated detrusor function
 - Kaplan et al. JAMA 2006; 296(19): 2319-28.
 - Abrams P et al. J Urol. 2006;175(3):999-1004.
 - Lee JY et al. BJU International. 2004; 94:817.
 - Lee KS et al. Journal of Urology. 2005; 174(4 Pt 1):1334-8.
 - Athanasopoulos A et al. J Urol. 2003; 169:2253-6.





What about use of antimuscarinics in older persons and frail elders?

- ❖ Anticholinergics associated with ↑ risk for cognitive impairment and impaired performance of MMSE^{1,2}
 - Existing evidence suggests no apparent adverse cognitive SE with short-term use in the reasonably healthy older person^{3,4}
 - Epidemiologic studies suggest that long-term use (>4 years) in community dwelling elders is associated with impaired verbal fluency in women; reduced memory and executive function in men; and ↑ likelihood of dementia in both genders

1. Wagg A. *Drugs Aging* 2012; 29(7): 539-48.
2. Low LF et al. *International Journal of Geriatric Psychiatry* 2009; 24: 578-84.
3. Kay GG et al. *Clinical Drug Investigation* 2012; 32(11): 707-14.
4. Aaron LE et al. *Current Medical Research & Opinion* 2012; 28(8): 1369-79.
5. Carriere I et al. *Journal of the American Geriatrics Society* 2011; 169(14): 1317-24.



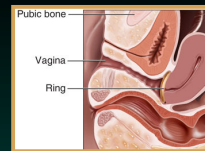
Is prolonged administration of antimuscarinics in frail elders safe?

- ❖ Oxybutynin specifically mentioned as “unsuitable for the elderly” in latest version of the Beers’ criteria¹
- ❖ Cholinesterase reuptake inhibitors (CEI) widely used for treatment of Alzheimer’s disease (AD); however, concomitant use of CEI and antimuscarinics associated with decline in functional status in nursing home residents newly diagnosed with AD²
- ❖ Although mixed, existing evidence suggests avoiding antimuscarinics in frail elderly or use of the drug with extreme caution

1. Fick DM et al. *Archives of Internal Medicine* 2009; 169(14): 2716-24.
2. Skin K et al. *Journal of the American Geriatrics Society* 2008; 56: 847-53.
3. Wagg A. *Drugs and Aging* 2012; 29(7): 529-48.



Antimuscarinics and OAB: Local HRT vs Antimuscarinics



- ❖ RCT compared voiding frequency in 59 women allocated to oxybutynin IR 5 mg twice daily or ultra-low dose estradiol ring
 - Drug group mean ↓ of 3.0 voids/ day; estradiol ring ↓ voids 4.5 day (p=NS)
 - Both has statistically significant improvements in UDI and IIQ
 - No statistically significant difference between groups

Nelken RS et al. Menopause 2011 18(9): 962-6.



β -3 agonists: New drug class for OAB



- ❖ Mirabegron (Myrbetriq) sole agent approved for use in USA as of Spring 2013¹; single German based Phase III trials for solabegron published in 2012²
 - Granted IND by US FDA for OAB June 2012
 - Dosage: 25-50 mg once daily in US; dosage up to 100 mg approved by EMEA
 - Swallow whole, do not crush or chew
 - Metabolized primarily via CYP2D6 pathway
 - Some prolongation compared to placebo on QTcI interval at 4-5 hours post-dose was 3.7 msec (upper boundary of 95% CI was 5.1msec)

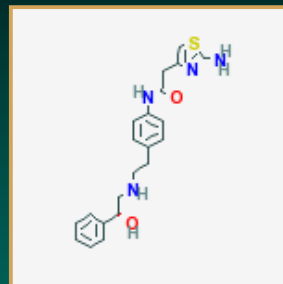
1. Mirabegron Prescribing insert: http://www.myrbetriqhcp.com/Content/pdfs/Myrbetriq_WPI.pdf

2. Ohlstein EH, von Keitz A, Michel MC. European Urology 2012; 62(5): 832-40.



Mirabegron: Reported SE During Phase III Trials

- ❖ Hypertension: 7.5% - 11.3%*
- ❖ Dry mouth: < 3%
- ❖ UTI: 2.7%-3.7%
- ❖ Headache: 2.0%-2.7%
- ❖ Nasopharyngitis: 2.5%-3.4%

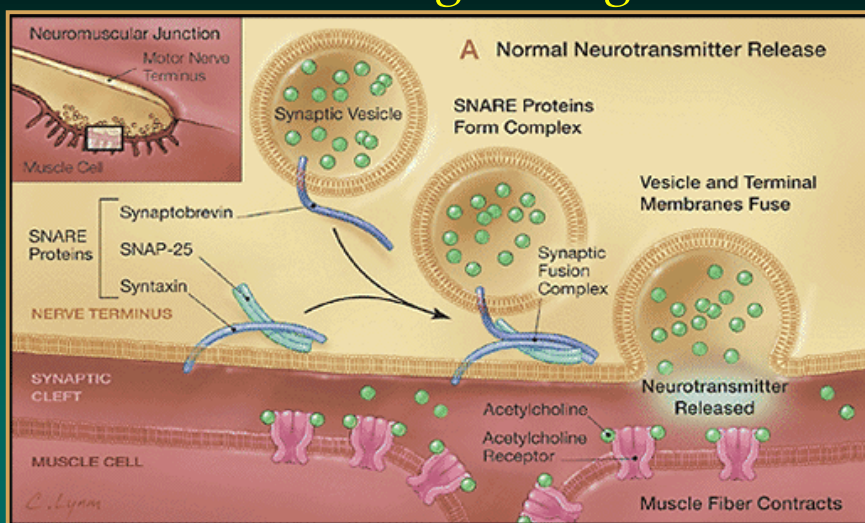


1. Nitti V et al. European Urology 2011; 10(2): 278.
2. Khullar V et al. Euro Urol 2011; 19(2): 278-9.

* Mean maximum ↑ in systolic/diastolic blood pressure 3.5 and 1.5 mmHg over placebo



OAB: Pharmacologic Target 3

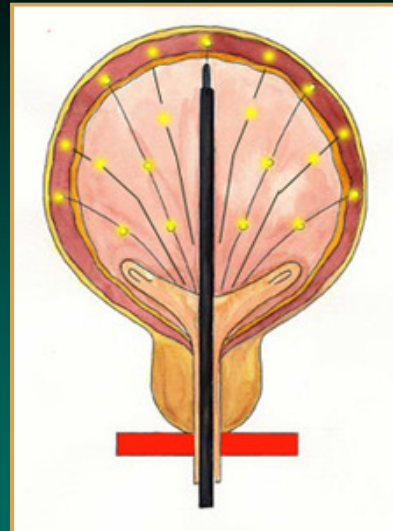
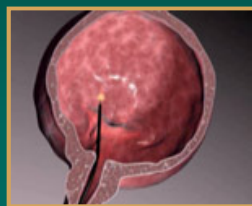


Naumann R. http://ntiapiapacific.org/chapter_hyperhidrosis.asp. Accessed January 30, 2011.



Botulinum Toxin A

- ❖ Injected into bladder under endoscopic guidance at multiple sites
- ❖ Usual dose 200-300 IU



Kessler TM European Urology 2007; 52(6): 1793.



Pivotal Trial for Botulinum Toxin A: Adverse Side Effects (Treatment Cycle 1)

❖ UTI	56% - 64%
❖ Urinary Retention	20% - 32%
❖ Hematuria	6% - 8%
❖ Dysuria	2% - 6%
❖ Constipation	1% - 6%

Cruz F et al. European Urology 2011; 60(4): 742-50.



Neuromodulation for Urge UI/OAB: Posterior Tibial Nerve Stimulation

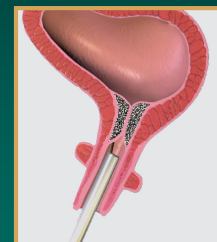
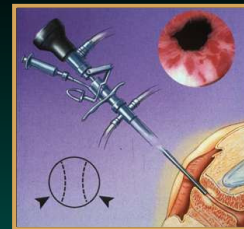
❖ How is the electrical simulation delivered?

- Acupuncture needle placed adjacent to the posterior tibial nerve at the ankle
- Stimulation for 30 minutes; maximum tolerable voltage encouraged while remaining below pain threshold
- Weekly sessions for 12 weeks recommended



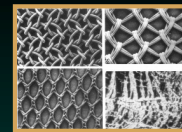
Surgical Management: Stress UI

- ❖ Suburethral injections
 - GAX collagen
 - Silicone beads
 - Autologous fat
- ❖ Injected under endoscopic guidance; outpatient procedure
- ❖ Durability limited

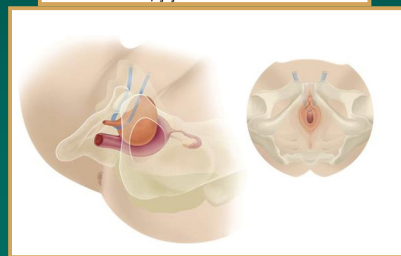
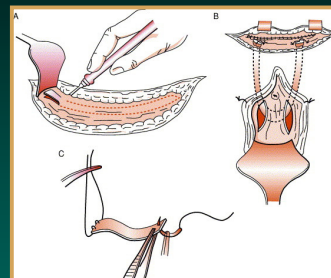




Surgical Management: Stress UI



- ❖ Suburethral slings¹
 - Fascial (↓ popularity)
- ❖ Synthetic materials²
 - Tension-free vaginal tape (TVT): passes under the mid-urethra, then under pubic bone bilaterally to exit skin over the pubic bone
 - Transobturator tape (TOT): passes under the mid-urethra, then through the obturator membrane bilaterally to exits the skin of the groin through needle incisions
 - Minimally invasive, outpatient procedures; currently predominate



Maher CM et al. Int. Urogynecology Journal 2011; 22: 1445-7.

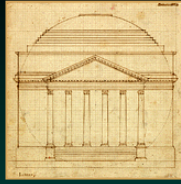


Managing Urge UI: Surgery

- ❖ Interstim Device
- ❖ Surgically implanted device
- ❖ Lead implanted into S3 sacral foramen to stimulate sacral nerve root
- ❖ Screening with percutaneous device recommended



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FECAL INCONTINENCE AND BOWEL ELIMINATION DISORDERS



Defecation Disorders and FI: A Brief Overview

❖ Definitions

- **Diarrhea**: broad term usually applied to frequent passage of liquid stools, most critical element appears to be consistency and not frequency¹
- **Constipation**: change in normal fecal elimination characterized by decreased frequency, passage of hard/dry stools, often with straining²
- **Obstructive defecation disorders**: difficulty passing stool and constipation in the presence or obstructed rectal vault outlet²

1. Lebak et al. Clinical Nursing Research 2003; 12: 174.

2. Waldrop J and Doughty DB. Urinary & Fecal Incontinence: Nursing Management, 2nd ed. 2000.



Defecation Disorders and FI: A Brief Overview

❖ Definitions

- **Irritable bowel syndrome**: chronic, recurrent characterized by abdominal pain, bloating and distension, characterized by constipation predominance, diarrhea predominance or a cyclical pattern of constipation followed by diarrhea as so forth
- **Fecal Incontinence**: involuntary passage of solid or liquid stool, some include involuntary passage of gas from the bowels



Epidemiology: Fecal Incontinence

- ❖ Community dwelling elder adults: \cong 11%-15%¹ (estimate range excludes flatus incontinence only)
 - Adults with Spina bifida: 34%²
 - Adult women with pelvic organ prolapse: 28%³

1. MacMillan AK et al. Diseases of the Colon & Rectum 2004; 47: 1341.

2. Verhoef M. Spinal Cord 2005; 43(6): 331.

3. Boreham MK et al. American J Obstetrics & Gyn 2005; 192: 1637.



Factors Critical to Fecal Continence

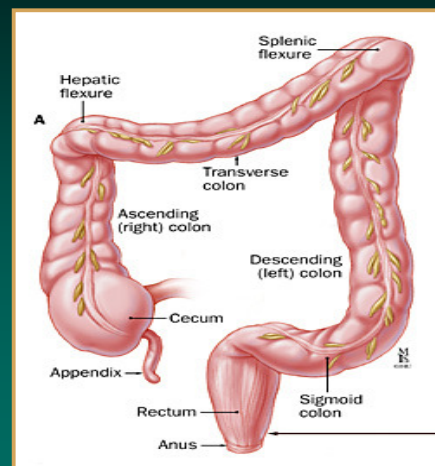
- ❖ Normal Peristalsis
- ❖ Sensory awareness of presence of stool in rectal vault and perception of stool consistency (solid, liquid, gaseous)
- ❖ Adequate capacity and compliance of rectal vault
- ❖ Normal sphincter (and PFM) function



Defecation Physiology

❖ Colon

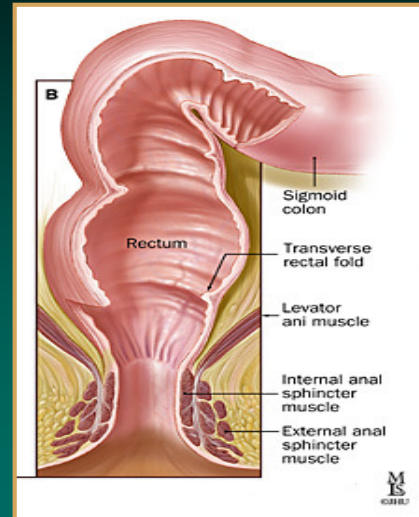
- 1.2-1.5 meters; 8 sections
- Cecum & ileocecal valve, efflux from small to large; prevents reflux
- Ascending, transverse (major role in storage & mixing contents)
- Descending & sigmoid: primarily conduits for delivery to rectum





Defecation Physiology

- ❖ **Rectum:** 15cm; receives content from sigmoid (S shaped) distal loop
- ❖ **Anal canal:** 3cm, dentate line separates liquid, solid, gaseous
- ❖ **Anal sphincters:** internal (smooth mm) and external (skeletal mm)



Defecation Physiology

- ❖ **Formation of stool**
 - Combination of motility, absorption and excretion or retention of contents in fecal stream
 - Colon absorbs 1-2 liters/day, up to 5 or 6 with dehydration, affected by diet and intrinsic factors
 - Motility in colon can be very rapid, rectocolonic reflex moves bolus into rectum over a period of seconds to minutes and triggers urge to defecate, usually following a meal; this reflex can be postponed by contraction of external anal sphincter and PFM



Fecal Incontinence

❖ Causative Factors








- High volume liquid stool overwhelming continence mechanisms
- Neurologic lesions compromising critical elements of fecal continence
- Trauma affecting PF, anal sphincter mechanism or afferent pathways (most common cause is obstetric)
- Acute or chronic rectal vault inflammation compromising capacity and possibly compliance of bowel wall



Fecal Incontinence: Assessment

❖ Bowel elimination habits

- Frequency
- Volume
- Stool consistent (recommend use of Bristol Stool Chart)
- Continent and involuntary stools
- Past/present use of laxatives suppositories

Bristol Stool Chart	
Type 1	 Separate hard lumps, like nuts (hard to pass)
Type 2	 Sausage-shaped but lumpy
Type 3	 Like a sausage but with cracks on its surface
Type 4	 Like a sausage or snake, smooth and soft
Type 5	 Soft blobs with clear-cut edges (passed easily)
Type 6	 Fluffy pieces with ragged edges, a mushy stool
Type 7	 Watery, no solid pieces. Entirely Liquid



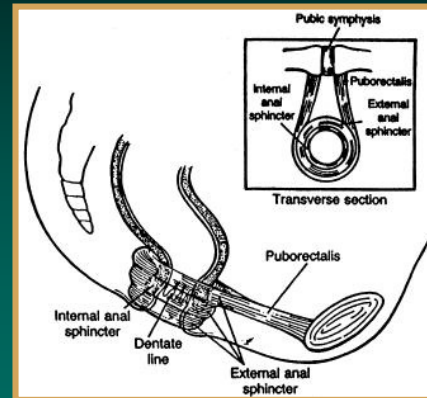
Fecal Incontinence: Assessment

❖ Anorectal Examination

- Sensory awareness
- PM/ anal sphincter tone, ability to identify contract and relax anal sphincter
- Presence of stool in vault

❖ Abdominal examination

- Dilated bowel loops



Fecal Incontinence: Assessment



❖ Additional Testing

- Motility studies for constipation refractory to first line interventions
- Anorectal ultrasound for sphincter “mapping”
- Anorectal manometry for evaluation of anal sphincter tone and internal (smooth mm) sphincter
- Defecography for problems with eliminating soft stool



Bowel Management

❖ Initial Interventions

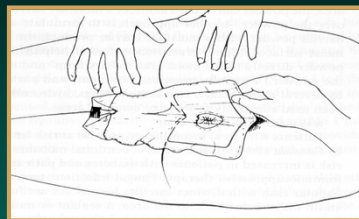
- Eliminate impaction and normalize stool consistency to soft and formed (cleansing enema; laxative use)
- Diarrhea: identify & correct causative factors, administer bulking and antimotility agents
- Constipation: fluid + fiber + recreational activities/exercise; administer stool softener-stimulant combination
- Modulate defecation behavior: respond promptly to signal to defecate, correct positioning, breathing techniques



Fecal Incontinence: Containment Devices

❖ Anal Pouch

- Uses pouching technology to contain stool
- Appropriate for liquid stool
- Adherence, stool seepage, undermining are ongoing challenges





Bowel Management

❖ 'Rectal Catheter' or Nasal Trumpet

- Use larger indwelling urethral catheter or nasal trumpet for containment of stool
- Case series & studies generally positive; safety & efficacy not documented
- "Off-label" use of products



Grogan T, Kramer D. JWOCN 2002; 29(4): 193.



Bowel Management

❖ Flexi-Seal Fecal Management System

- Containment system for liquid or semi-liquid stool
- Silicone components; retention via inflatable retention balloon; inflated with 45ml saline, collection bag holds about 1 liter
- Intended for ≤ 29 days of use
- Seepage of small amount fecal effluent around tube expected





Bowel Management

❖ Zassi Bowel Management System

- Retention balloon designed to promote insertion and retention
- Collapsible segment to preserve sphincter closure
- Large bore drainage tubing connects to 3 liter drainage bag
- Ports for irrigating drainage tubing, inflating retention cuff and liquifying solid stool



Bowel Management Systems

❖ Dignicare

- Retention balloon
- Internal irrigation device
- Ball valve device
- Similar indications to other systems



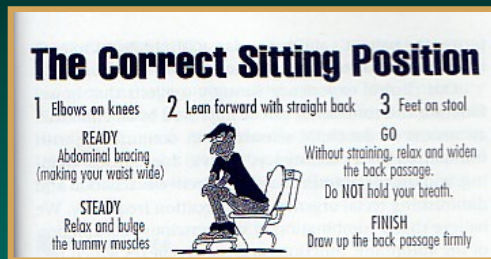


Bowel Management

❖ Promote effective bowel elimination

- Pay attention to gastroenteric reflex
- Establish regular schedule
- Remember normal variability (once a day is *not* golden rule)
- Use mild stimulant such as caffeine as needed
- Counsel regarding position/posture¹

1, Sloats K, Bartlett L, Ho Y-K. Journal of Wound, Ostomy & Continence Nursing 2009; 36(6): 651.



Bowel Management

❖ Stimulated Defecation

- Indications: patient unable to sense rectal filling and/or control anal sphincter
- Goal: regular, scheduled defecation to prevent spontaneous (unscheduled) ones
- Interventions
 - ♦ Establish schedule
 - ♦ Use peristaltic stimulate to deliver stool to rectum (digital stimulation, suppository, mini-enema, tap water enema with retention balloon)



FI: Management

- ❖ PFM dysfunction or mildly diminished sensory awareness may respond to pelvic PFMT/ PMR¹ (weak evidence only)
- ❖ Biofeedback directed PFMT/ PMR may benefit patient with functional obstructive defecation¹ disorder (weak evidence only)
- ❖ Electrical stimulation of anal sphincter/ PFM may benefit women with obstetric related trauma² (weak evidence only)

1. Norton C et al. Biofeedback or sphincter exercises for FI in adults Cochrane Review, last update 2003.

2. Hosker G et al. E. stim for FI in adults Cochrane Review, last update 2002.



FI: Management

❖ Surgical Options

- Segmental resection for patient with chronic inertia
- ACE procedure (frequent need for revision, about 50% experience significant improvement)¹
- Colostomy

1. Lees NP et al. Colorectal Disease 2004; 6(5): 352.



Examination Resources:

❖ Online Resources

- WOCNCB examination outline/ handbook/ application; URL:
http://www.wocncb.org/pdf/WOCNCB_handbook.pdf
- Provides content and items per major topic
 - ◆ General Principles of Assessment (FI & UI): 38 items
 - ◆ Differentiate and manage UI types: 28 items
 - ◆ Types of Bowel dysfunction: 8 items



WOCNCB: Study Resources

❖ Textbooks

- Doughty DB. (ed). Urinary and Fecal Incontinence. 3rd edition, St Louis: Mosby-Elsevier, 2006. (Core Text for CWOCN and CCCN)
- Gray M, Moore KN. Urologic Nursing: Adult and Pediatric Disorders. St. Louis: Mosby-Elsevier, 2009. (Detailed review of UI as well as comprehensive urologic nursing text)



WOCNCB: Study Resources Indwelling Catheter Management/ CAUTI

- Willson M, Wilde M, Webb M, Thompson D, Parker D, Harwood J, Callan L, Gray M. Nursing interventions to reduce the risk of catheter associated urinary tract infection. Part 2: Staff education, monitoring and care techniques. *Journal of Wound, Ostomy, & Continence Nursing* 2009; 36(2):137-54.
- Parker D, Callan L, Harwood J, Thompson D, Wilde M, Gray M. Nursing Interventions to Reduce the Risk of Catheter Associated Urinary Tract Infection. Part 1: Catheter Selection. *Journal of Wound, Ostomy, & Continence Nursing* 2009; 36(1): 23-33.
- Diana Parker; Laurie Callan; Judith Harwood; Donna Thompson; Marilyn-Lu Webb; Mary Wilde; Margaret Willson; Clinical Practice Continence Subcommittee. Catheter-Associated Urinary Tract Infections: Fact Sheet.
- Gray M. Securing the indwelling catheter. *American Journal of Nursing* 2008; 108(12):44-50.



WOCNCB: Study Resources: Bowel/ Fecal Management Systems

- ❖ Bordes J, Goutorbe P, Asencio, Y, Meaudre, E, Dantzer E. A non-surgical device for faecal diversion in the management of perineal burns. *Burns* 2008; 34(6):840-4.
- ❖ Echols J, Friedman BC, Mullins RF, Hassan Z, Shaver JR, Brandigi C, Wilson J, Cox L. Clinical utility and economic impact of introducing a bowel management system. *Journal of Wound, Ostomy and Continence Nursing* 2007; 34(6):664-70.