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Geriatrics

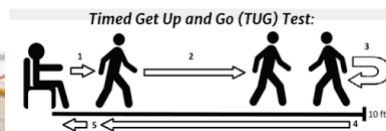
Friday, Sept 14th 1:45-2:30

Deborah J Lightner, MD
Professor of Urology Emerita
Mayo Clinic College of Medicine
Rochester, MN

How Can You Tell If Their 80 Is The New 60...

Frailty: testing in multiple spheres of ADLs

- Impaired physical activities
- Reduced mobility
- Balance
- Motor strength
- Motor processing
- Cognition
- Nutrition
- Endurance



Mini Nutritional Assessment (MNA)

Nestlé Nutrition Institute

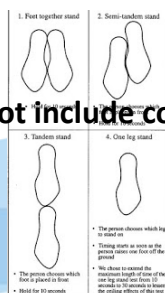
Score: 24

24 = Good nutritional status
18-23 = Mild to moderate malnutrition
14-17 = Severe malnutrition

1. Appetite (0-5)
2. Weight loss (0-5)
3. Mobility (0-5)
4. Psychological state (0-5)
5. Acute illness (0-5)
6. Anorexia (0-5)
7. Polypharmacy (0-5)
8. Alcohol consumption (0-5)
9. Medication (0-5)
10. Comorbidity (0-5)

≠ Disabled

Frailty does not include comorbidities



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Examine the Patient!



- General: ambulation, gait speed, dehydration, LE edema, weight loss, *note it!*
- Outlet obstruction: high-grade prolapse,* prostate, impaction, rectal tone
- Skin: Chemical dermatitis, vaginal atrophy
- Behavioral assessment: Voluntary pelvic floor contraction
- Neurologic deficits: able to give their history, **recall**



So you remember, APT C...



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* \geq Grade 2; To introitus or greater

Assessing The Elderly For Anesthesia

Cardiac Risk Assessment determines need for further assessment:

- Major/Current: severe arrhythmias or valvular disease, uncompensated heart failure, unstable angina
- Risk of MACE (major adverse cardiac events): ACS-NSQIP risk calculator <https://riskcalculator.facs.org/RiskCalculator/>
- Functional capacities: Duke Activity Status Index <https://www.mdcalc.com/duke-activity-status-index-dasi>



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Surgical Risk Calculator

AMERICAN COLLEGE OF SURGEONS
Inspiring Quality. Highest Standards. Better Outcomes.

[Risk Calculator Home Page](#)
[About](#)
[FAQ](#)
[ACS Website](#)
[ACS NSQIP Website](#)

Enter Patient and Surgical Information

1 Procedure

Clear

Begin by entering the procedure name or CPT code. One or more procedures will appear below the procedure box. You will need to click on the desired procedure to properly select it. You may also search using two words (or two partial words) by placing a "+" in between, for example: "cholecystectomy + cholangiography"

Reset All Selections

2 Are there other potential appropriate treatment options?

☐ Other Surgical Options
 ☐ Other Non-operative options
 ☐ None

Please enter as much of the following information as you can to receive the best risk estimates.
A rough estimate will still be generated if you cannot provide all of the information below.

Age Group

Under 65 years

Sex

Female

Functional Status

Independent

Emergency Case

No

ASA Class

Healthy patient

Steroid use for chronic condition

No

Anesthetics within 30 days prior to surgery

No

Systemic Sepsis within 48 hours prior to surgery

None

Ventilator Dependent

No

Disseminated Cancer

No

Diabetes

No

Hypertension requiring medication

No

Congestive Heart Failure in 30 days prior to surgery

No

Dyspnea

No

Current Smoker within 1 Year

No

History of Severe COPD

No

Dialysis

No

Acute Renal Failure

No

BMI Calculation:

Height:

in /

cm

Weight:

lb /

kg

Back

Continue

Step 2 of 4

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Medscape® www.medscape.com		
Scoring the Duke Activity Status Index (in METs)		
Can you.....	Score Only for Answers: "Yes, With No Difficulty."	MET Value
1. Take care of yourself, that is, eating, dressing, bathing, and using the toilet?		0.8
2. Walk indoors, such as around your house?		0.5
3. Walk a block or two on level ground?		0.8
4. Climb a flight of stairs or walk up a hill?		1.6
5. Run a short distance?		2.3
6. Do light work around the house like dusting or washing dishes?		0.8
7. Do moderate work around the house like vacuuming, sweeping floors, carrying in groceries?		1.0
8. Do heavy work around the house like scrubbing floors, or lifting or moving heavy furniture?		2.3
9. Do yard work like raking leaves, weeding or pushing a power mower?		1.3
10. Have sexual relations?		1.5
11. Participate in moderate recreational activities, like golf, bowling, dancing, doubles tennis, or throwing baseball or football?		1.7
12. Participate in strenuous sports like swimming, singles tennis, football, basketball or skiing?		2.1
Total Score _____		
Source: Cardiosource © 2008 by the American College of Cardiology Foundation		

Common Geriatric Problems

- LUTS, especially bothersome is nocturia
- UTIs
- Sexual dysfunction
- Renal Transplantation: increasing ESRD
- Prostate Cancer: affecting screening/treatment Bladder Cancer
- “Incidentalomas” incl renal and adrenal masses, but also labs, PSA screening, cytologies



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LUTS: Describe As Symptom, Not As An Etiology

Storage

- Daytime frequency
- Nocturia
- Urgency
- Incontinence

Voiding

- Hesitancy (not “prostatism” nor “BPH”)
- Straining “
- Stream slow, intermittent “
- Hesitancy “
- Dribbling, esp. terminally “

*In the elderly, the diff dx must include **UAB, nocturnal polyuria, loss of renal concentrating ability** near the top of the differential.*

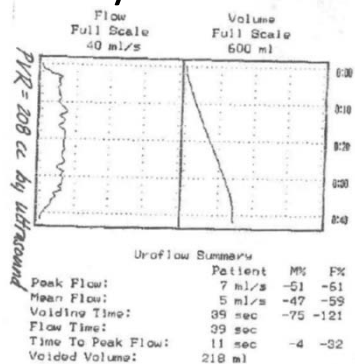


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ARS Q1:

An elderly man with LUTS has a large prostate with this uroflowmetry:

- a) Has BPH
- b) Has LUTS, NOS
- c) Has weak detrusor power
- d) Has BPH and weak detrusor.



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Answer: B

B. Has LUTS, NOS

- The uroflow is a screening study and does not make the diagnosis of either obstruction (from any source) nor a weak detrusor.
- This represents LUTS, but can not further be determined why...could be UAB or BOO or both.



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AUR

- Painful, palpable or percussable, unable...
- Associated: anesthesia, pain, alcohol, travel, constipation, GU instrumentation, UTI, overdistension
- Studies: BUN/Cr, U/A. Don't get a PSA acutely; PFS to differentiate BOO from UAB
- Treatment:
 - Decompress and monitor (how long?): hematuria in 2-16%, post-relief of obstruction diuresis in 0.5% to 52% (usually AUR on CUR)
 - α -blocker in all men: TWOC successful in 60%*



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Chronic Urinary Retention:

Management and outcomes for non-neurogenic CUR longitudinally are poorly defined. Consensus definition as PVR > 300 for >6 months, documented on two or more occasions.

Indications of high risk CUR

Radiological findings:

- Hydronephrosis
- Hydroureter

Laboratory findings:

- Stage 3 chronic kidney disease (estimated glomerular filtration rate 30 to 59 mL/minute/1.73 m²)
- Recurrent, symptomatic, culture proven UTI
- Culture proven systemic urosepsis

Signs and symptoms:

- Urinary incontinence associated with perineal skin changes
- Urinary incontinence associated with sacral decubitus ulcers

Assess risk and symptoms to determine recommended treatment.

Treatment recommendations for CUR stratified by symptoms and risk

	Low Risk	High Risk
Asymptomatic	Do not treat	1. Drain bladder, reassess risk 2. Treat CUR if associated with risk
Symptomatic	Discuss symptom specific treatment options	1. Drain bladder, reassess risk 2. Treat CUR if associated with risk 3. Discuss symptom specific treatment options



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Stoffel J, Peterson AC, et al. AUA White Paper on Non-neurogenic Chronic Urinary retention: Consensus Definition, Treatment Algorithm and Outcome End Points. J Urol. 198; 153-160. 2017

CUR: Evaluation and Longitudinal Surveillance

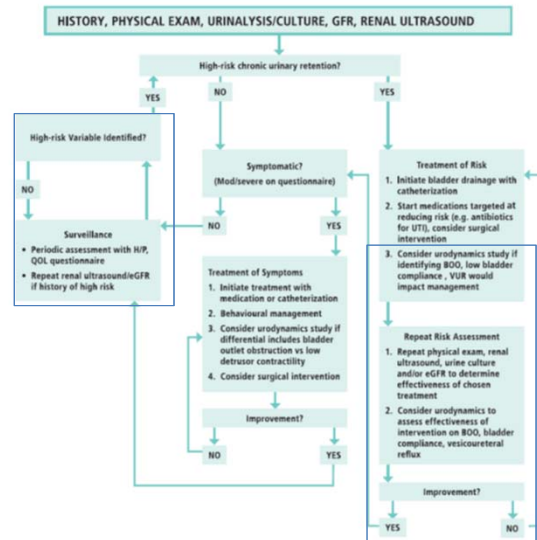


Figure 2. Nonneurogenic chronic urinary retention treatment algorithm. GFR, glomerular filtration rate. Mod, moderate. H/P, history/physical. eGFR, estimated GFR. BOO, bladder outlet obstruction. VUR, vesicoureteral reflux.

Stoffel J, Peterson AC. et al. AUA White Paper on Non-neurogenic Chronic Urinary retention: Consensus Definition, Treatment Algorithm and Outcome End Points. J Urol 198; 153-160, 2017

Underactive Bladder “UAB”

- LUTS symptoms are non-specific.
- BOO can progress to UAB, unknown risk factors and incidence.
- UAB may be thought of the presenting *clinical syndrome* with poor detrusor contractility the *UDS diagnosis*.

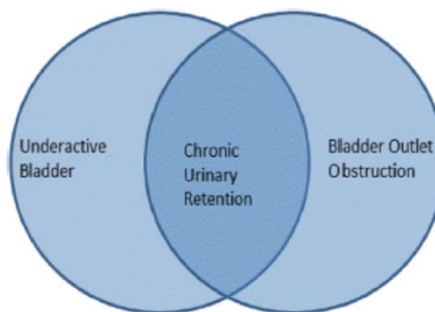


Figure 1. Overlap of chronic urinary retention with clinical syndromes of underactive bladder and bladder outlet obstruction.

ARS Q2:

An elderly woman presents with chronic urinary retention; she *should* undergo a UDS to determine if this is secondary to outlet obstruction if:

- a) The post void residual is greater than 1 l
- b) She has had a prior outlet procedure, such as a sling
- c) She is less than 65 years old
- d) She is asymptomatic and this was an incidental finding



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Answer: B

B. She has had a prior outlet procedure, such as a sling.

- A prior outlet procedure is a common cause of outlet obstruction in women. None of the others mandate a UDS.



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BACH Study: OAB Prevalence and CRP Kuperian 2011

FIG. 1. Prevalence of overactive bladder by gender, age and C-reactive protein (CRP) levels.

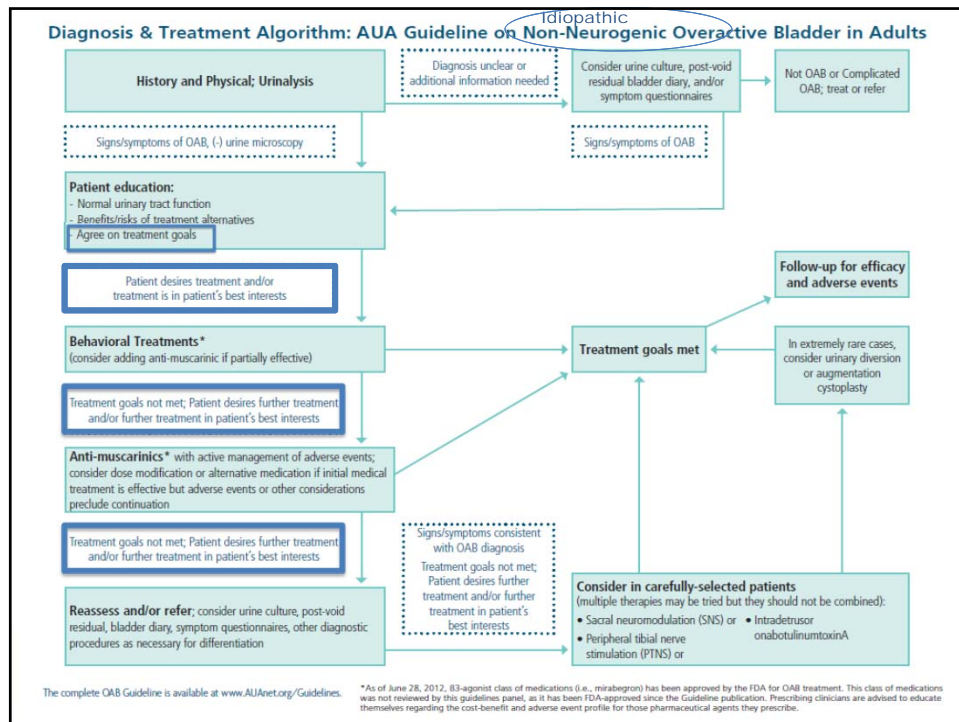


Urge, Urge Incontinence is a Symptom, Not a Diagnosis.

- Obstruction in women produces storage symptoms (urge, urge incontinence) more commonly than voiding symptoms.
- “Neurogenic bladder” occurs only in the setting of a defined neurologic disease *that is associated with those LUTS symptoms*, eg. spinal cord injury, multiple sclerosis, post- CVA, etc. *Don’t use NGB for urge, urge incontinence symptoms.*
- **Overactive Bladder is, by definition, idiopathic.** And not neurogenic! *Don’t use OAB when you mean NGB if the patient has relapsing remitting MS with significant storage symptoms.*



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ARS Q3:

An elderly woman has urge and urge incontinence. The finding most consistent with the diagnosis of OAB is:

- She has hematuria
- She has Parkinsonism
- She is poorly ambulatory due to severe osteoarthritis and leaks on the way to the bathroom
- Her post void residual volume is 250 cc
- Her daughter is the only one complaining of the leakage, the patient is unconcerned



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Answer: C

C: She is poorly ambulatory due to severe osteoarthritis and leaks on the way to the bathroom.

Bladder is firing before she can reach the toilet. Although a large mobility component is present, **this is OAB**. Management of the mobility component will be a major part of her treatment plan.

- The patient with hematuria may have these irritative symptoms due to a bladder cancer and requires a hematuria evaluation. **Not OAB**.
- The patient with a known neurologic disease that commonly produces storage symptoms has a neurogenic bladder. **Not OAB**.
- The patient with an elevated PVR may have UAB leading to overflow incontinence, a weak detrusor. **Not OAB**.
- OAB is a symptom- complex wherein symptoms are **bothersome to the patient**.



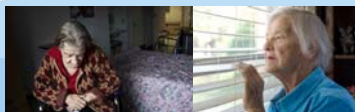
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Impact of High Grade Incontinence

- Social withdrawal: affecting sense of hygiene, odor, especially when pads insufficient.
- Disturbed sleep.
- Fall risk.
- Chemical Dermatitis, decubitus risk.
- Always ask about coexisting fecal incontinence as patients will not volunteer this information.



With increasing longevity, there's a longer time to live with poor QOL.

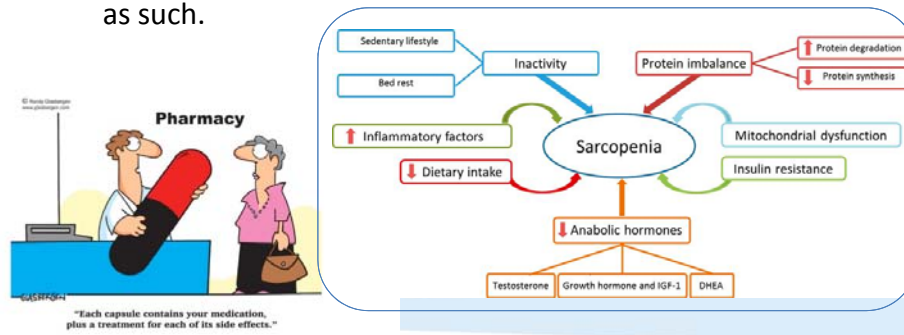


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Medications and the Elderly

The Beers Criteria for Potentially Inappropriate Medication (PIM) use in Older Adults AUA White Paper 2015

- Common meds included as PIMs are *long-term* nitrofurantoin, as well as α -1 blockers, antimuscarinics, sedatives...
- HEDIS® HRM list of these PIMs has been implemented as a negative quality indicator, though not originally intended as such.



Polypharmacy and the Elderly

- Average elderly patient is on 2-6 prescription meds and 1-3 OTCs.
- Anticholinergics, anesthetics, analgesics, sedatives, antidepressants, all neuroleptics are commonly associated with weakening detrusor function.
- Antihypertensives, diuretics, ACE inhibitors with increase in nocturia, urge, urge incontinence symptoms Hall SA, Chiu GR. Commonly Used antihypertensive and LUTS: Results from the BACH Survey. BJU Int 109, 2012
- Pharmacologic changes with Age:
 - Decreased muscle mass, increased body fat → decrease in total body water. [Lipid-soluble drugs] will ↑, [water-soluble drugs] will ↓.
 - Protein binding usually ↓, [barbiturates, benzodiazepines, opioids] ↑.
 - Decreased renal function will ↓ clearance of most antibiotics, x Fosamycin which can be used with Cr Cl of 20 ml/mg or higher.

Ex. Antimuscarinics & Impaired Cognition

- Commonly UI & dementia coexist.
- Dementia is underdx by non-geriatricians, esp. if mild!
- Antichol more likely to be used in dementia.⁺
 - Should not be used concomitantly with cholinesterase inhibitors (the dementia, Parkinson's drugs, sleep disorders)
- Avoid antimuscarinics b/c ↑vulnerability to cognitive & functional AE.*

*Gormley AE, Lightner DJ, OAB, AUA Guideline 2012;

Beers Criteria AGS, 2015

+Green AN, Use of Antimuscarinics, 2017



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Are our elderly patients missing out
on the benefits of antimuscarinics?
Consider, in those *best of all possible worlds* drug trials...

TABLE II. Data Extracted From the 2012 AHRQ Report¹³

	Continence—attributable events per 1,000, n (range)	Continence—number needed to treat (NNT), n (range)	Clinically meaningful improvement—attributable events per 1,000, n (range)	Improvement NNT, n (range)	Discontinuation for adverse events compared to placebo (%)	Dry mouth compared to placebo (%)
Darifenacin	NA	NA	117 (57–177)	9 (6–18)	4.6/3.3	22/5.6
Fesoterodine	130 (58–202)	8 (5–17)	100 (56–145)	10 (7–18)	6.0/3.0	27/7.0
Oxybutynin	114 (64–163)	9 (6–16)	167 (95–240)	6 (4.0–11)	10/5.0	34/15
Propiverine	163 (86–239)	6 (4–12)	192 (132–252)	5 (4–8)	NA	NA
Solifenacin	107 (58–156)	9 (6–17)	180 (97–263)	6 (4–10)	5.0/4.0	21/5.0
Tolterodine	85 (40–129)	12 (8–25)	96 (42–149)	10 (7–24)	4.0/3.0	18.4/6.7
Trospium	114 (83–144)	9 (7–12)	NA	NA	5.8/3.9	15.1/4.5

The figures relate to available anticholinergic agents and head-to-head comparisons with placebo or other anticholinergics. Attributable events represent the difference between placebo response and active drug response.

Neurourology and Urodynamics DOI 10.1002/nau



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Continued: What about Mirabegron in BPW trials?

SCORPIO: Achieving Zero
incontinence @12 wks:

- Mirabegron 50 mg 45.1%
- Tolterodine 4 mg 47.3%
- Placebo 40.5%

TAURUS: 1 yr,

- Not designed to demonstrate differences, efficacy “appears maintained”
- A safety study



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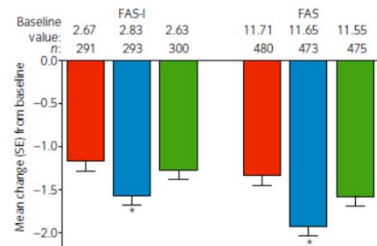
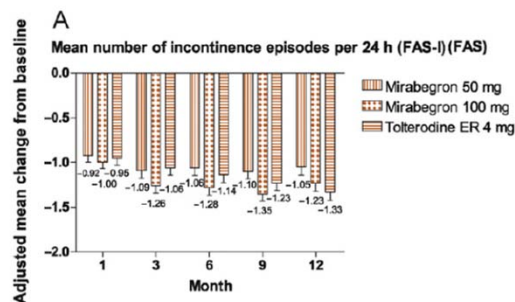
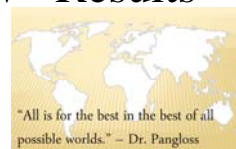


Fig. 2 Adjusted change from baseline to final visit in mean number of incontinence episodes/24 h (FAS-I) and mean number of micturitions/24 h (FAS); SCORPIO. *Statistically significantly superior compared with placebo at the 0.05 level with multiplicity adjustment. ■, placebo; ■, mirabegron 50 mg; ■, tolterodine ER 4 mg.



Pharmacotherapy Trials are “BPW” Results

- Motivation of the patient is high
- Intensive follow-ups are required
- Generally of moderate severity for entry
- *Excluded comorbidities including diseases with failure to concentrate, cardiac and vascular disease, frailty, immobility, psychiatric disorders, polydipsia...*



These trial results will not be achieved in our general urology patients! Let alone the geriatric ones!



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Primary treatment of bothersome urge, urge incontinence, like OAB, is also behavioral.

- Education on normal physiology.
- Fluid intake, fruits, vegetables, fluid schedules.
- Restore/maintain general health, weight, and bowel function.
- Cognitive and mobility issues: Timed and prompted voiding.
- Pelvic floor muscle re-education: especially Quick Flicks for urge suppression +/- formal biofeedback.



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Bladder Diary at 1st visit! : Why volumes, not just time...

Patient 1

- 7:00am 200 cc
- 8:15am 75 cc
- 9:00am 100 cc
- 12:30am 125 cc
- 2:00pm 75 cc
- 3:15pm 75 cc
- 4:30pm 100 cc
- 8:00pm 125 cc
- 10:30pm 100 cc
- 3:00am 175 cc

Patient 2

- 7:00am 650 cc
- 8:15am 500 cc
- 9:00am 375 cc
- 12:30am 525 cc
- 2:00pm 475 cc
- 3:15pm 450 cc
- 4:30pm 325 cc
- 8:00pm 425 cc
- 10:30pm 500 cc
- 3:00am 800 cc



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Setting Realistic Expectations

- Understanding Bladder Physiology *and their bladder*.
- Cure Rates with OAB, the easier one than poor cognition...
 - Studies report mean change, not generally cure.
 - These are generally intact and not declining adults.
 - Yet, in best practices, ex. TAURUS and SCORPIO trials, “% of responders incontinence at baseline and became dry post-baseline was numerically (*although not statistically significantly*) higher for mirabegron 50 and tolterodine than for placebo” (emphasis mine)
- Commitments over time, multiple modalities, costs.
- Demonstrable improvements for the patient: Use of validated Questionnaires and bladder diaries.

The elderly will be more challenged with any and all of these expectations placed upon them.



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Fluid Schedules: based on FBC
Timed Voiding: based on inter-void intervals

Drink lots of water.



Is vague guidance, at best.

When you assess the bladder diary, surprise! →

How many recurrent stone formers will consume over 4.9 l in 24 h to avoid another stone?

Time	Amount
7am	400 cc
9:30	200 cc
10:45	125 cc
12:30	150 cc
12:50	200 cc
1:20	450 cc
4:00	150 cc
7:00	300 cc
8:00	250 cc
9:00	400 cc
11:15	350 cc
3:40	400 cc
7:30	425 cc
11:20	200 cc
12:00	200 cc
2:00	450 cc
5:30	250 cc
24 hrs. 7:20	400 cc
8:45	300 cc



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OAB and Non-Compliance with Pharmaceuticals

Drug Discontinuation: Response:

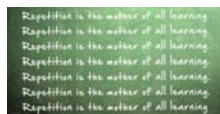
- | | |
|----------------------|--|
| #1. Lack of efficacy | a. Duration of use |
| | b. Switch (1° to reduce TEAEs) |
| | c. Start and/or continue behavioral tx! * |
| 2. TEAEs | Use extended release, treat AE |
| 3. Cost | Use inexpensive generics |

* 13 clinical trials, 1.8K patients, pharmacotx better than retraining alone, but both better than pharmacotx alone. Alhasso et al, Cochrane ,2006



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OAB and Cortical Function



- ***OAB is defined as idiopathic.***

- Frontal micturition center which is normally suppressive is deactivated in OAB.
- Tolterodine-induced changes in NIRS-UDS improved prefrontal cortex activity and reduced bladder urge sensations. Sakakibara et al, NeuroUrol 2014
- NB- requires higher brain function to have socially acceptable bowel and bladder & get out of diapers.
- “Poor short-term memory? Don’t expect continence.”

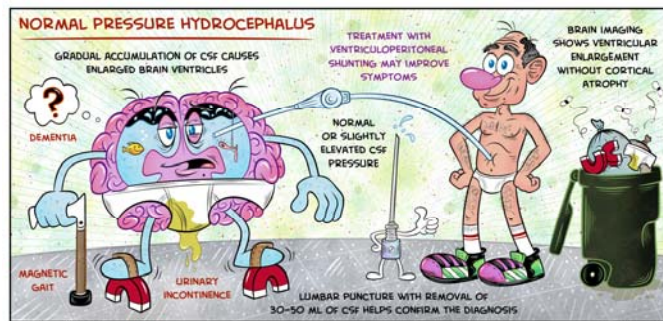
” But
Slogans
oversimplify



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Will You Recognize Normal Pressure Hydrocephalus?

- Potentially treatable cause of incontinence.
- Triad: Typical gait “magnetic feet”, slowness of thought/actions, urinary incontinence
- If you suspect it, refer it!



Nocturia: ICS Definition is at Least Once After Sleep

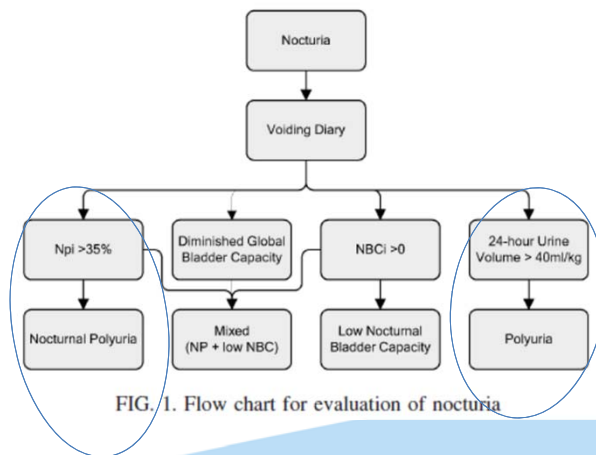


FIG. 1. Flow chart for evaluation of nocturia

- Nocturnal polyuria often a manifestation of systemic disease, i.e. cardiac, renal disease, vascular insufficiency, sleep disorders, BPO, late day polydipsia.

- Global polyuria secondary to global polydipsia!



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Weiss JP, Lee, CL and Blaivas JG. Nocturia in Adults, AUA Update 27, 2008

ARS Q4:

Nocturnal Total Urine Volumes:

- a) Decrease with age
- b) Increase with age
- c) Are normally larger than diurnal volumes
- d) Are normally greater than 35% of total 24 h volume



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Answer: B

B. Increase with age

- Nighttime urine volumes increase with age, but are only rarer larger than diurnal volumes. Urine volumes at night >35% of total 24 h volumes defined nocturnal polyuria and is not normal.



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Dysfunctional Voiding (DFV)

- Hallmark is urge, frequency; women > men, all ages.
- Both storage ^{and} voiding symptoms
 - Intermittency or fluctuating due to *non-neurologic* involuntary intermittent contractions of the pelvic floor. Can be highly obstructive.
 - Disturbance of coordination & induction of voiding by PMC, perhaps “abnormal guarding” (?)→sphincter and detrusor dysfunction.
 - In the elderly, can be 2^o to uninhibited detrusor contractions leading to sensation of urge.
 - Associated (not causal) increase in UTIs.



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More Tidbits: Lichen Sclerosus:

No longer called BXO, nor LS et atrophicus.

- Chronic inflammatory dermatitis, unknown etiology, immune components likely.
- Can be obstructive. In both men and women.
- 3 to 10: 1 W:M.
- Two incidence peaks: premenstrual & elderly. Estimated to occur in 1 in 30 nursing home female residents.
- White, intensely pruritic papules coalescing into plaques→ adhesive and obliterative scarring.
- 5% with SCC, biopsy if ulcerated.
- 1^o tx with clobetasol, gentle hygiene.



Lichen sclerosus demonstrating classic hourglass or figure 8 vulvar and perianal distribution. Courtesy of Wilford Hall Medical Center slide files, and emedicine. Medscape. Accessed 8-12-17.



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AUA Guidelines are the distillation of the best evidence and are a **major emphasis** in resident education, board certification, **recertification** and MOC.



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AUA Guidelines Statement revision 2014			
	Evidence Strength A (High Certainty) ²	Evidence Strength B (Moderate Certainty) ³	Evidence Strength C (Low Certainty) ⁴
Strong Recommendation ¹	Benefits>Risks/Burdens (or vice versa)		Benefits >Risks/Burdens (or vice versa)
	Net benefit (or net harm) is substantial		
Moderate Recommendation ¹	Benefits>Risks/Burdens (or vice versa)		Benefits>Risks/Burdens (or vice versa)
	Net benefit (or net harm) is moderate		
Conditional Recommendation (No apparent net benefit or harm)	Benefits=Risks/Burdens		Balance between Benefits & Risks/Burdens unclear
	Best action depends on individual patient circumstances		Alternative strategies may be equally reasonable

Statement strength is linked to the evidence strength, i.e.

1. Applies to most patients in most circumstances (MCMC).
2. Future research is unlikely to change confidence.
3. Better evidence could change confidence.
4. Better evidence is likely to change confidence.