

# Urinary Incontinence and Urinary Frequency

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Dr. Simpson earned his medical degree from the Medical University of South Carolina in Charleston and completed his family medicine residency there. He completed a faculty development fellowship at the University of North Carolina at Chapel Hill and a fellowship in geriatrics at Johns Hopkins in Baltimore, MD. He practices and teaches family medicine and maintains board certification in family medicine and geriatrics. He was named Family Physician of the Year by the South Carolina Academy of Family Physicians, was a finalist for National Family Physician of the Year, and he received the Distinguished Faculty Service Award from the Medical University of South Carolina. He is the author of more than 80 publications, including a book (*Ag-Med: The Rural Practitioner's Guide to Agromedicine - Diagnosis and Management at a Glance*) and multiple book chapters, and he produces a quarterly review of topics at the intersection of medicine and agriculture. With a minister and ethicist, he writes a twice-monthly newspaper column called "Aging for Amateurs."

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# Learning Objectives

1. Incorporate current guidelines for diagnosis in patients presenting with urinary problems.
2. Coordinate referral to a urologist or urogynecologist if initial diagnosis is unclear; or red flags such as hematuria, obstructive symptoms or recurrent urinary tract infections are present.
3. Counsel patients regarding first-line treatment options, including behavioral therapy and lifestyle modifications, emphasizing adherence and follow-up.
4. Prescribe second or third line treatment options if first-line therapies are unsuccessful, coordinating referral and follow-up care for surgical treatment as necessary.

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# Audience Engagement System

The image displays three sequential screenshots of a mobile application interface, labeled Step 1, Step 2, and Step 3, illustrating the audience engagement system workflow.

**Step 1:** The 'Dashboard' screen shows a grid of icons for 'My Schedule', 'CME/Events', 'Faculty', and 'Exhibit Hall'. An arrow points to the 'CME/Events' icon.

**Step 2:** The 'CME/Events' screen shows a calendar view for the week of October 9th to 13th. An arrow points to the 'CME041 (PBL) Arrhythmias and Dysrhythmias' event listed for 3:00 PM - 4:00 PM in Room 217.

**Step 3:** The 'CME/Event' detail screen for 'CME041 (PBL) Arrhythmias and Dysrhythmias' is shown. It includes details such as Location (Room 217), Date (Friday, Oct 12 3:00 PM), Duration (1 hour), and Credit Hrs (1). Below the details, there are two buttons: 'Audience Engagement System' and 'CME Report / Evaluation'. An arrow points to the 'Audience Engagement System' button. Below the buttons, there is a list of learning objectives, with the first one starting with '1. Practice applying new knowledge and skills gained from Arrhythmias and Dysrhythmias sessions...'.

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## AES Question

Urinary frequency is classified as:

1. Primary v. secondary
2. Polyuria v. ↓functional bladder capacity v. psychosocial
3. Neurogenic v. non-neurogenic
4. Functional v. non-functional v. iatrogenic

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## Urinary Frequency

- “Standard”—needing to urinate more often than 8 times a day (based on a study of Scandinavian women). Probably more subjective.
- “Significantly more than what is normal for you”
- No official “Guidelines” for Dx or Rx

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## Classification of Frequency

- Polyuria
  - Primary
    - Dipsogenic
    - Psychogenic
  - Secondary
    - Diabetes mellitus
    - Diabetes insipidus
    - Medications
    - Psychological

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## Classification of Frequency (cont'd)

- Decreased Functional Bladder Capacity(FBC)
  - Non-neurogenic
    - Bladder infection/inflam
    - Bladder outlet obstruction
      - Men-prostate and bladder neck,strictures
      - Women-pelvic organ prolapse, post-surgical

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## Classification of Frequency (cont'd)

- Decreased Functional Bladder Capacity(FBC)
  - Non-neurogenic
    - Incomplete bladder emptying
      - Pregnancy
      - Bladder cancer, stones

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## Classification of Frequency (cont'd)

- Decreased Functional Bladder Capacity(FBC)
  - Neurogenic
    - Stroke • Multiple sclerosis • Diabetes mellitus
    - Parkinson's disease • Hydrocephalus
    - Brain tumor • TBI • Spinal cord injury
    - Myelodysplasia • Transverse myelitis

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## Classification of Frequency (cont'd)

- Psychosocial
  - Habit/social
  - Defensive voiding (incontinence, pelvic pain syndrome)
  - Medical advice (kidney stones, diet, medications)

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## Dx/Rx of Frequency

- History will frequently give the diagnosis
- Physical focused on abdomen, GU tract
- Urinalysis with follow-up labs if abnormal
- 3-day bladder diary if diagnosis is unclear after initial evaluation
- Treat underlying condition

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## What about Incontinence?

- **Definition:**
  - Passing urine in an undesirable place at an undesirable time.

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## Incontinence is Expensive!

### Cost to Society

- \$11.2 **Billion** direct costs in the community
- \$ 5.2 **Billion** direct costs in the NH

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## Perception

- Inevitable symptom of “old age”
- Guilt/depression/isolation
- Social stigma
  - embarrassed--hide it
  - don't seek care
- Afraid of urine smell
- Avoid sexual contact
- Know locations of toilets
- Dislike travel, parties, etc.

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## Prevalence

- One in six women over 45
- One in ten men over 65
- 53% homebound elderly
- >50% of nursing home residents
- 75% incontinent NH residents have cognitive impairment
- 50% of all incontinent persons are unknown to health care workers

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People are VERY tolerant, so ask...

- Women, on average, have incontinence for **three years** prior to seeking treatment.
- Men aren't as tolerant; they seek care after two years of symptoms

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## How to Recognize Incontinence

- Ask!

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## AES Question

Risk factors for incontinence include all  
**except:**

1. Institutionalization
2. Hx of GYN or GU surgery or irradiation
3. Limited mobility
4. Low BMI

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## Risk Factors for Incontinence

- Institutionalization
- Neurologic deficits
- History of GYN or GU surgery/radiation
- Limited mobility
- Multiple medications
- High body mass index

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## Continence is Complicated

- Anatomy
  - Detrusor
  - Vesico-urethral junction
  - Urethra--proximal: transitional cell epithelium
  - --distal: columnar epithelium, estrogen dependent.
  - Internal sphincter--autonomic innervation
  - External sphincter--somatic innervation

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## Neurologic Control of Continence

- Parasympathetic
  - bladder emptying
  - detrusor contraction
- Sympathetic
  - urinary retention
  - detrusor relaxation
  - increased internal sphincter tone

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## Neurologic Control of Continence(Cont'd)

- Supramedullary
  - senses urge to void
  - inhibits reflex detrusor contraction
  - volitional control of pelvic floor and external sphincter

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## Changes of Aging?

- Decreased bladder capacity
- Decreased ability to inhibit reflex bladder contractions
- Decreased urethral closing pressure
- Increased residual urine

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## What about LUTS?

- Lower urinary tract symptom scoring
  - Men-IPSS(International prostate symptom score)
    - Available at <http://www.urospec.com/uro/Forms/ipss.pdf>
    - If score <8 and no treatment desired, no further eval(AUA)
  - Women-CLSS(Core lower urinary tract symptom score)
    - Available at <http://www.fvfiles.com/540618.pdf>
    - To assess urinary symptoms if diagnosis is unclear after initial hx and pe

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## Urinary Incontinence

- Most common persistent urinary tract complaint in older women
- Prostatism is more common than urinary incontinence in men, but urinary incontinence is much more bothersome to men than prostate symptoms

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## First Question—Is it Transient or Established?

- Transient incontinence
  - one-third of all cases of incontinence are transitory
- Causes
  - DRIP
  - DIAPPERS
- Will resolve without further evaluation if underlying cause eliminated

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## DRIP

- D=delirium
- R=restricted mobility, retention
- I=infection, inflammation, impaction
- P=polyuria, pharmaceuticals

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# DIAPPERS

- D=delirium
- I=infection or inflammation
- A=atrophic urethritis or vaginitis
- P=pharmaceuticals
- P=psychological
- E=endocrine disorder(glucose, calcium)
- R=restricted mobility
- S=stool impaction

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## Guidelines for Dx, Rx

- NICE (2006, revised 2013)
- European Association for Urology (2018)
- American College of Physicians (2014)
  - Many similarities
  - See references for full guideline content

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## AES QUESTION

The most common cause of persistent incontinence in elderly is:

1. Overactive bladder
2. Stress incontinence
3. Functional incontinence
4. Overflow incontinence

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## Types of Established Incontinence

- Bladder filling problems
  - detrusor instability (URGE incontinence), or more recently called OVERACTIVE BLADDER (OAB)
  - sphincter insufficiency (STRESS incontinence)
- Bladder emptying problems (OVERFLOW)
- Functional incontinence
- Iatrogenic incontinence
  - No disagreements here!

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## Urge Incontinence or OAB

- Most common cause of incontinence in elderly
- Three underlying problems
  - defect in CNS regulation (loss of cortical inhibition of sacral plexus)
  - hyperexcitability
  - deconditioned voiding reflexes
- Clinically - no dysuria
  - urgency, frequency, nocturia, large volume

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## Stress Incontinence

- Causes
  - alteration of posterior vesico-urethral angle
  - decreased strength of internal urethral sphincter
- Clinically
  - small volume loss after cough, sneeze, laugh, any activity increasing intra-abdominal pressure
  - no urgency, frequency, nocturia

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## Overflow Incontinence

- Results from:
  - Bladder outlet obstruction-prostate, other tumor
  - Insufficient detrusor tone - often drug-induced
  - Impaired sensory input from bladder - most often diabetes
- Clinically
  - Palpable bladder, suprapubic tenderness
  - Decreased urinary flow rate

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## Functional Incontinence

- Locomotion problem
- Psychological
- Clinically
  - occurrence en route to toilet
  - early morning only or other association with activity or “stressful situations”

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## Iatrogenic Incontinence

- Drugs
- Physical restraints
- Clinically
  - occurs in settings noted above

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## Diagnosis

- History
  - most urinary incontinence diagnosed by history alone
  - distinguish established from transient
  - focus on pattern and characteristics of incontinence
  - look for changes in: bowel habits, medications, routine

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## Physical Examination

- Abdomen--palpate bladder
- Rectal--prostate, fecal impaction, fistula
- Pelvic--atrophic vaginitis, eval for prolapse, assess pelvic floor contraction
- Functional status--mental status, arthritis, post-CVA

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## Urinary Functional Testing

- Role not established in elderly
- Many false positives and negatives
- “Normal” not well defined
- Consider use if surgery contemplated or H&P not helpful in diagnosis

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## Lab Studies in Incontinence

- Urine dipstick - blood, glucose, protein, leukocyte esterase, nitrites
- Midstream C&S if :  
UTI sx and LE and/or nitrites +  
no UTI sx - both +  
NO C&S if no UTI sx - only one +
- Postvoid residual urine(cath or U/S) ONLY - if voiding dysfunction hx, recurrent UTI, palpable bladder post-void

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## Further Evaluation

- No urodynamics, cystometry, cystoscopy
- No Q-tip, Bonney, Marshall, Fluid-bridge tests
- No imaging

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## When to REFER?

- Microscopic hematuria, patients >50(3+RBC/HPF)
- Gross hematuria
- Recurrent or persistent UTI with hematuria women >40
- Suspicion of malignant mass
- Women with prolapse at or below vaginal introitus
- Patients with palpable bladder postvoid

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## Bladder Diaries

- Use 3- to 7-day bladder diaries (including work and leisure days) to further assess incontinence symptoms, if diagnosis is not clear from history and physical

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## Lifestyle Interventions

- Recommend caffeine reduction in OAB
  - EAU - doesn't improve UI, improves urgency/frequency. But review type and amount of fluid intake.
- Consider reduction of high fluid intake
- Recommend weight loss in patients with BMI >30
- Recommend regular physical activity (ACP "strong")

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## Treatment of Urge/OAB

- Pelvic floor exercises (if mixed sx) (A), (ACP Strong) 3m trial, min 8 contractions, 3x/day
- Bladder training (A), (ACP Strong) 6w min
- Biofeedback (controversial)
- Oxybutynin (generic, Ditropan 5 mg BID/TID, Ditropan XL 5-30 mg q D)--antispasmodic, anticholinergic
- Tolterodine (Detrol 1-2 mg BID, Detrol LA 2-4 mg q D)--anticholinergic, ?more selective for bladder than salivary glands

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## Treatment of Urge/OAB

- Trospium Cl (*Sanctura*) 20 mg BID
- Darifenacin (*Enablex*) 7.5-15 mg q D

M3 muscarinic affinity >M1

- Solifenacin (*VESIcare*) 5 mg q D

Bladder affinity >salivary glands

- Fesoterodine (*Toviaz*) 4 & 8 mg q D

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## More Specific Recommendations

- NO flavoxate, propantheline or imipramine in OAB (NICE)
- Do not offer IR oxybutynin to frail older women (EAU)
- Offer trial of oxybutynin IR (all), except as above
- Disagreement among guidelines re other alternatives

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## Still More Specifics

- Tolterodine/darifenacin - 2<sup>nd</sup> choices (NICE)
- Tolterodine - 2<sup>nd</sup> choice (EAU)A
- Consider trospium in cognitive dysfunction (EAU)B
- Mirabegron - (EUA)B
- Transdermal oxybutynin if unable to tolerate oral medication - (EUA)B

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## Approximate Cost of Rx for OAB

- |                               |             |
|-------------------------------|-------------|
| • Darifenacin                 | \$ 92/month |
| • Fesoterodine                | 274         |
| • Oxybutynin generic          | 10          |
| • Oxybutynin ER               | 28          |
| • Oxybutynin patch (Rx patch) | 41 (650!)   |
| • Solifenacin                 | 349         |
| • Tolterodine (ER)            | 67 (80)     |
| • Trospium (XR)               | 57 (66)     |
| • Mirabegron                  | 359         |

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## More Invasive Therapies

- Botulinum-A Toxin injections into detrusor muscle
- Neuromodulation Devices
  - Do not offer transcutaneous sacral nerve stimulation (EAU)
  - Do not offer transcutaneous posterior tibial nerve stimulation (EAU)
  - Percutaneous posterior tibial nerve stim only if fail conservative rx (EAU)

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## Treatment of Stress UI

- Pelvic floor exercises (A)
- Bladder training (A)
- Weight loss (B)
- Biofeedback (controversial)
- Estrogen (topical) if atrophic vaginitis/urethritis (EUA) A
- Duloxetine 30-60 mg q D (NICE “only 2<sup>nd</sup> line”), (EUA - not for cure, only temporary use), (ACP rec against pharmacologic therapy- Strong)
- Vaginal appliances
- Surgery

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## Experimental Therapies

- Transurethral injection of autologous myoblasts and fibroblasts to urethral sphincter and mucosa
- Electroacupuncture (one randomized controlled trial)
  - 18 sessions, 30 minutes each, 3x/week for 6 weeks
  - 67% had at least 50% fewer incontinent episodes at 30wks, versus 40% with at least 50% fewer incontinent episodes after sham acupuncture at 30 weeks follow-up

--Liu Z et al. 2017

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## Treatment of Overflow Incontinence

- Atonic bladder
  - bethanecholine
  - intermittent catheterization
- Outlet obstruction
  - prostate enlargement--alpha blockers, finasteride, dutasteride, surgery
  - pelvic tumor--surgery, chemo, radiation
  - Indwell. Foley for non-surg candidate, med non-resp

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## Treatment of Functional Incontinence

- Assist mobility (aides, pain relief)
- Investigate pattern and assist with obtaining psychological therapy if indicated
- Treatment failure: consider indwelling Foley, joint replacement, etc.

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## Treatment of Iatrogenic Incontinence

- Avoid restraints whenever possible and for shortest period
- Be observant for medication-caused or -worsened symptoms and discontinue or decrease medication as appropriate
- Treatment resistant: Second opinion

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## AES Question

Pads, urinals, incontinence briefs /undergarments are:

1. Used only as coping strategy pending definitive Rx or as adjunct to ongoing Rx
2. Used long-term only after treatments have been maximized
3. Used when medication side effects are intolerable and other Rx is refused
4. All of the above

## Pads, Urinals, Toileting Aids

- Use only as coping strategy pending definitive therapy, adjunct to ongoing therapy
- Long-term use only after treatment has been maximized

## AES QUESTION

In patients with established incontinence:

1. Up to 50% will improve with timed voiding (aka bladder training) alone
2. Instruction in timed voiding is relatively time-intensive
3. Extensive instructor training is required
4. All of the above

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## Remember—Bladder Training WORKS!

- Up to half of all patients with established incontinence will improve significantly with only a scheduled voiding plan.
- “Empty your bladder every two hours while you are awake.”
- That takes 30 seconds to institute and another minute or perhaps two to talk about problems with implementation

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## Evidence-Based Summary

- OAB - Urge incontinence
  - Pelvic floor exercises (if mixed symptoms)- A
  - Bladder training- A
  - Trial of long-acting anticholinergic agent- A
- Stress incontinence
  - Pelvic floor exercises- A
  - Bladder training- A
  - Weight loss- B    --No pseudoephedrine-D

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## Best Practice Recommendations

- Remember to ask about incontinence, use a screening tool if desired
- Remember that pelvic floor exercises and bladder training (timed voiding) work
- Bookmark: [www.nafc.org](http://www.nafc.org) (National Association for Continence) for patient-oriented tools, etc

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# Questions



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# Contact Information

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## References

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