

Evaluating and Managing Falls and Incontinence: Case Study

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Mrs. B. is a 78 year old woman in your practice with congestive heart failure, osteoarthritis, atrial fibrillation, and hypertension. She comes in with a bruised knee sustained during a fall in her home. She sustained no other injuries. She says that the fall occurred when she got up at 2AM to go to the bathroom.

PMH: as above, EF 28% with global hypokinesia, AF for two years with failed cardioversion, rate controlled by beta blockers

Meds: Enalapril 10mg QD, celebrex 100mg BID, warfarin 4mg QD, furosemide 40mg BID, temazepam 30mg HS and atenolol 25mg QD (last time you saw her 3 months ago, she was on Enalapril 10mg QD, warfarin 4mg QD, furosemide 40mg QD, and atenolol 25mg QD. ROS: No headaches or neurologic changes. Notes slight increase in edema and shortness of breath for past month. Increased OA pain in her knees for past few months,. Increased urinary urgency over past few years, now with accidents 1-2 times a week, has nocturia 1-2 times a night for the past month or so.

Physical Examination:

In general: Slightly obese, does not look acutely ill

BP 160/90 with no orthostatic changes P64 R18

Lungs Bibasilar rales

CV Irregular, murmur consistent with aortic sclerosis

Abd Nontender

Extr 1+ edema, ecchymoses over right knee, no effusion or deformity

Neuro Alert and oriented

MMSE 26/30 (missed 3 serial 7's and 1/3 objects)

Gait Difficulty with sitting to standing

Steps slightly short and hesitant, slightly wide based

Balance fairly normal, but sways with eyes closed

Pelvic examination

Absolutely normal

PVR 5 cc

Normal pad test

Labs (others upon request)

CBC normal, Na 140 K 4.9, BUN 32, Cr 1.1, INR 2.2

UA normal

Questions:

1. How do you evaluate new onset incontinence?
2. What factors might be contributing to worsening incontinence in her?
3. What interventions might help her incontinence? What evidence is there to support those interventions?
4. What factors might contribute to an increased risk for falls in her?
5. What else do you want to know about her risks for injury due to falls?
6. What interventions have been shown in randomized controlled trials to reduce falls and/or injuries due to falls?
7. Do you need to stop her warfarin?

Discussion Points for Question #1

When thinking about new onset incontinence, a handy mnemonic is the DIAPPERS mnemonic.

Delirium – due to decreased mental status and awareness of need to urinate

Infection – due to bladder/urethral irritation

Atrophy – probably not a major cause of transient/reversible incontinence, but possible if associated with irritation

Pharmaceuticals – Multiple drugs can influence incontinence, some through direct mechanisms, some through indirect mechanisms:

Direct

Diuretics – loop diuretics much more of an issue than stable doses of thiazides

Alpha agonists – common causes of obstruction in men with BPH due to alpha constriction of sphincter

Alpha blockers – may exacerbate stress incontinence

Anticholinergics – may cause detrusor relaxation and urinary retention

Calcium channel blockers – may cause detrusor relaxation and urinary retention

Indirect

Any medication that can cause mental status changes may cause incontinence

ACE inhibitors ->cough -> incontinence

Narcotics -> impaction -> incontinence

Psychological – severe depression, but this is unusual

Endocrine or Excess urine output- DM, DI, hypercalcemia, diuretics

Restricted mobility – functional incontinence

Stool impaction

(see incontinence sheet for discussion of classification of permanent incontinence)

Discussion Points for Question #2: What factors might be contributing to worsening incontinence in her?

She has multiple possible contributors to her incontinence:

- Her incontinence sounds most like urge incontinence (usually idiopathic)
- She was worsening mobility, which might be enough of a change that she is no longer able to get to the bathroom in time.
- Further questioning reveals that she began celebrex about 6-7 weeks ago after seeing a rheumatologist (you didn't know about this visit).
- About a month ago, she began having more CHF, so her furosemide was increased from 40mg QD to BID by her cardiologist (you didn't know about this visit). So probably her problems began as a result of the increased failure due to increased fluid retention and blood pressure due to the COX2 inhibitor.
- Her temazepam (also new from her rheumatologist) might also be contributing to her increased susceptibility to falls
- So, polyphysician can be a cause of incontinence!

Discussion Points for Question #3: What interventions might help her incontinence? What evidence is there to support those interventions?

- An appropriate intervention would be to discontinue the COX2 inhibitor and try to control her OA pain with acetaminophen, glucosamine, and/or a local joint injection. Once the COX2 is stopped, you may be able to eventually decrease her furosemide, as well. (evidence is indirect for this point)
- In addition, she is now on temazepam, which might decrease her level of alertness at night. In talking to her, her reason for taking it is her increased OA pain, which disturbs

her sleep. Increasing her analgesia would be a better approach (evidence is indirect for this point).

- If the above interventions do not work to reduce her urgency, you can make the following interventions:
 - give her furosemide once daily, at a time determined by her (evidence, indirect);
 - trial of behavioral approaches, including decreasing her fluid intake, caffeine intake, and doing timed voiding during the day (evidence A);
 - behavioral approaches (including biofeedback assisted pelvic floor exercises) were shown to be more effective than drugs (oxybutinin) in a RCT (Burgio, JAMA, 1999) of treatments of urge incontinence.
 - If behavioral therapies do not make an impact, a trial of drugs can be undertaken, and are demonstrated to be better than placebo in RCTs (evidence: A). Probably the drug of choice is oxybutinin XL (my opinion). Usually I will start with low dose oxybutinin (short acting) 2.5 mg daily, and if tolerated, increase to 5mg LA nightly.

Discussion Points for Question #4: What factors might contribute to an increased risk for falls in her?:

- Temazepam (Tinetti, NEJM, 1994)
- Urge incontinence (Brown, 2000)
- Polypharmacy
- Lower extremity weakness

Discussion Points for Question #5: What else do you want to know about her risks for injury due to falls?

- Osteoporosis risk?
- Can she get up from her falls?
- Assessment of risks versus benefits from warfarin

Discussion Points for Question #6: What interventions have been shown in randomized controlled trials to reduce falls and/or injuries due to falls?

Reduce falls or injury due to falls

Osteoporosis

Calcium and Vitamin D for all older people (Dawson-Hughes, NEJM)

If she has low bone mineral density, an antiresorptive agent (I won't review this data here)

Hip protectors (a problem with her urge incontinence) (Kannus, NEJM 2000)

Fall reduction

Multifactorial intervention targeting gait, medicines, orthostasis, home safety

Tinetti A multifactorial intervention to reduce the risk of falling among elderly people living in the community. *New Engl J Med.* 1994;331:821-27.

Exercise, PT, quadriceps strengthening: (quads strengthening not really proven to reduce falls, but helpful with pain and function in OA and improves strength)

Campbell BMJ 1997: The New Zealand Study of Women

Fiatorone MA. *New Engl J Med.* 1994;330:1769-75 Province MA, al e. The effects of exercise on falls in elderly patients. A preplanned meta-analysis of the FICSIT trials. *JAMA.* 1995;273:1341-7.

Province MA, al e. The effects of exercise on falls in elderly patients. A preplanned meta-analysis of the FICSIT trials. *JAMA.* 1995;273:1341-7.)

Wolf, JAGS 1996, Tai Chi and falls: Atlanta FICSIT Discontinuing her benzodiazepine (not proven, but suggested by literature)

Improve her urge incontinence (not proven, but suggested by literature)

Ability to Get up After A Fall

About 30% of people can't get up after a fall

PT training for getting up after a fall (not proven, that I know of)

Home safety assessment (not proven, that I know of)

Portable phones on the floor, lifelines (not proven, that I know of)

Discussion Points for Question #7 She is at high risk of stroke due to AF based on her

- Age
- EF
- Hypertension
- Using published models, her risk of CVA annually without warfarin (with aspirin) is at least 6%, possibly higher, which should be reduced to about 3% with warfarin (Hart, Annals Intern Med, 1999; 131: 688-695).
- How do we assess her risk of bleeding complications due to falls? One way is to assume that the primary bleeding complications that we are concerned about are due to head injury. About 1% of falls will result in head injury. Given that this patient has had only one fall, and that she has modifiable risk factors for her falls, her benefit from warfarin is likely to be higher than her risk.