Definition of a “Fall”
ref: Medicare
An unintentional change in position to a lower level.

Cardiac Ingredients
Falls and Syncope

- Host: Missouri Alliance for Home Care
- April 29, 2015
- Tan-Tar-A Resort, Osage Beach, MO
- Speaker: Sharon Coffman, MMSc PT CCS

Be thorough in your assessment:
WHAT's in YOUR PANTRY?

Neuromuscular
Cognitive
Sensory
and
Cardiopulmonary

Neuromuscular Pantry
1. Muscle imbalances: CVA, foot drop,
   LE radiculopathy
2. Neuromuscular control: Parkinson’s
3. Protective responses: Decline with age
4. Poly-pharmacy side effects
5. Pain: it’s a distraction!

Cognitive Pantry:
1. Dementia
2. Learning disability
3. Urgency: Incontinence, hurrying
4. Risk taking personality
5. Distractibility
Sensory Pantry:
1. Labyrinthine dysfunction: inner ear disturbance.
2. Visual deficits: Macular degeneration, low vision
3. Proprioception dysfunction: LE joint replacements

Cardiac Pantry

+ ADD LIQUID
Circle of Willis and Baroreceptors (carotid arteries)

Mixer/CO

Vascular Volume

Peripheral Muscles

Plug IN: SA NODE

Vascular Volume

Plug IN: SA NODE

Peripheral Muscles

MIX:

HR \times SV

MIXER SPEED \times BATTER VOLUME MOVED
HR \times SV = CO

**FACTORS**

- Baroreceptors
- Cardiac Index
- Cardiac Reflex**
- Ventricular Contractility
- Ventricular Filling**
- Vascular Volume**
- Ventricle Muscle Pump**

**VITAL SIGNS**

- HR
- BP

1. Baroreceptors sense low pressure => ↑ HR
2. Add: aging, natural ↓ SV impt after age 70
3. Calf muscle pump (calf circumference)
HR X SV

FACTORS

↓ L Ventricular Filling**:  
1. Premature beats  
2. Tachycardia  
3. Valvular stenosis  
4. Venous pooling in LE  
5. COPD, Pulm HTN, R CHF

HR X SV

FACTORS

↓ L Ventricular Filling**:  
1. Premature beats (PVC, Vtachy, fast a-fib)  
2. Tachycardia (>100/min)  
3. Valvular stenosis (Mitral valve)  
4. Venous pooling in LE  

(daily weight, visually)  
1. COPD, Pulm HTN, R CHF

HR X SV

FACTORS

Vascular Volume**  
1. Dehydration  
2. Post-op blood loss/major active bleed  
3. Over-diuresis (over-medicated)
**Vascular Volume**
1. Dehydration (↑ fluid intake, dark urine)
2. Post-op blood loss/GI bleed (dark stools)
3. Over-diuresis (over-medicated) (↑ void frequency, new diuretic)

**Myocardial muscle pump**
1. Multiple MI, large anterior wall MI
2. CAD: ↓ blood flow to myocardium, blockage
3. Dilated cardiomyopathy
4. L Ventricular Hypertrophy
5. Low ejection fraction (EF)
Myocardial muscle pump**
1. Multiple MI, large anterior wall MI
   poor pump, scarring
   avascular conduction tissues =>
   arrhythmias
   “geographic” application

Myocardial muscle pump**
2. CAD: ↓ blood flow to myocardium
   lack of oxygen to muscle pump
   (poor EF)
   lack of oxygen to conduction tissue
   (arrhythmias by slow conduction or
   hyper excitability)

Myocardial muscle pump**
3. Dilated cardiomyopathy
   hyper-elongated muscle fibers lack
   strong contraction
   scar tissue within myocardium
   low EF
HR \times SV

**FACTORS**

**Myocardial muscle pump**

4. L Ventricular Hypertrophy**

thick myocardium needs ↑ oxygen to contract well

5. Low ejection fraction (EF within 6 mos)

full LV - amount of blood @ end contraction
amount of blood in full ventricle

= “% blood ejected”

**FACTORS**

**Myocardial muscle pump**

5. Low ejection fraction (EF within 6 mos)

Normal EF 55-75%
Mild LV dysf 40-60%
Mod LV dysf 20-40%
Marked LV dysf <20%

*** assess calf diameter for muscle pump factor w/this
5. Low ejection fraction (EF within 6 mos)
   CHF diagnosis can be partially made by
   an EF of <40%

6. Vaso-vagal Response
   - trigger felt, heard, smelled, or seen
   - sensory stimulation of the para-sympathetic nervous system
   - symptoms of sudden ↓ BP & ↓ HR
   - resolution within 10 seconds of removal of trigger

Good Communication
SITUATIONAL CASES

CASE MJ
MJ is a 59 yo who is home after a R THR. She progressed well but is afraid of falling again.
HPI: she fell up stairs and fx R hip requiring hip pinning ORIF
PMH: anterior MI 4 years ago, course complicated by arrhythmias; DM, early retinopathy, B LE neuropathy
Meds: oxycodone 5/325 mg., stool softener, DM meds
Situation: She states she has had a few bouts of dizziness. Before you start your program you notice her usually regular pulse is skipping and irregular.

Possible causes:

- anterior MI with low EF, post MI course complicated by arrhythmias, TIA, dehydration/lack of water intake, Valsalva due to constipation from narcotics/straining with BM, low EF due to anterior wall MI

Likely cause:
arrhythmias or Valsalva: both increasing fall risk

Your actions:
- Take VS, on any anti-arrhythmia medication? Question re: previous cause of her fall, symptomatic of palpitations, angina or SOB with these bouts, BM activity & strain; report findings same day to MD office; educate patient to avoid breath hold and call MD office if repeat bout; go to ER if alarmed

SITUATIONAL CASES

CASE LP
LP is a 68 yo male who is home after a R THR. He progressed well and is eager to get back to his own lawn mowing and spring gardening.
HPI: He was attempting to close his barn door on a gusty day. A gust of wind took the door rapidly open while he was holding on to it.
PMH: unremarkable
Meds: oxycodone, one baby ASA for heart health
Situation: He has a new bruise on his forehead and avoids using his L arm to rise from his recliner. He reluctantly says he fell.

Possible causes:

- Likely cause:

Your actions:
SITUATIONAL CASES

CASE LP
LP is a 68 yo male who is home after a R THR. He progressed well and is eager to get back to his own lawn mowing and spring gardening.

Possible causes: Rushing to the bathroom being eager to gain independence; Valsalva from constipation – on no stool softener; Got up too fast from his recliner, just lost his balance transferring.

Likely cause: Valsalva – on no stool softener

Your Actions: Question patient on where and how he fell; confirm a fall from the toilet. Call MD for OK to advise patient to buy OTC stool softener, increase use of dietary fiber, hydration. Educate in pursed lip breathing, avoiding breath hold during toileting. Monitor patient weaning from narcotic pain medications.

SITUATIONAL CASES

CASE TM
TM is a 79 yo who is home after admission for CHF exacerbation. She lives alone and relies on various family members to shop for groceries and do her laundry.

HP: CHF, adm. for diuresis, electrolyte imbalance - corrected.
PMH: CAD, s/p CABG x2, HTN, cardiomyopathy, Na sensitivity, EF 25%
Meds: Digitalis, Lasix, K

Situation: She states she has had dizziness for 2 days when standing up. You notice her shoes are untied and her feet are swollen.

Possible causes: low EF, new CAD blockage with new myocardial wall weakness, over/under diuresis, return of a-fib or electrolyte imbalance, lives alone-dehydration.

Likely cause:

Your Actions: continue questioning…. 

SITUATIONAL CASES

CASE TM
TM is a 79 yo who is home after admission for CHF exacerbation. She lives alone and relies on various family members to shop for groceries and do her laundry. She weighs herself daily

HP: CHF, adm. for diuresis, electrolyte imbalance - corrected, atrial fib resolved.
PMH: CAD, s/p CABG x2, HTN, cardiomyopathy, Na sensitivity, EF 25%
Meds: Digitalis, Lasix, K

Situation: She states she has been dizzy for 2 days. You notice her shoes are untied and feet swollen today. Further questions: Her daily weight is up 4 lbs. in 2 days. Other questions?

Possible causes: low EF, over/under diuresis, dehydration, a-fib recurrence

Your Actions: Ask about her hydration, water intake, did take her meds, any sit to stand dizziness?
SITUATIONAL CASES

CASE TM
TM is a 79 yo who is home after admission for CHF exacerbation. Other questions?

Possible causes: low EF, over/under diuresis, dehydration, a-fib recurrence

Likely cause: Ask about her hydration, water intake, did take her meds, any sit to stand dizziness?

Further questions: she states her dtr could not get to Pharmacy to re-fill her Lasix, so she decided to cut her Na intake more until she can get it tomorrow.

You take her VS: HR 35 BP: 126/80 RR: 24
You auscultate lungs: bibasilar rales

Now what do you think?
Your actions:

Parting thought, by a 5 year old:

When I was 5 years old, my mom always told me that happiness was the key to life. When I went to school, they asked me what I wanted to be when I grew up. I wrote down “happy.” They told me I didn’t understand the assignment and I told them they didn’t understand life.