



Atypical Presentations for Older ED Patients & Frailty

UofA Emergency Medicine Residents

October 10, 2023

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Objectives

Atypical Presentations

1. Develop an understanding of why medical diagnoses in older patients can present with atypical symptoms including age-related changes in anatomy, physiology, psychosocial factors, and polymorbidity and polypharmacy.
2. Generated a broad differential diagnosis and appropriate work-up/management plan for the "vague" ED presentations seen in older adult patients.
3. Describe the difference between asymptomatic bacteriuria and a urinary tract infection and implement a rational approach to urine investigations in older ED patients.

Frailty

1. Explain what frailty is and how it affects clinical care and outcomes
2. Describe evidence based frailty screening tools for the ED and demonstrate how to incorporate these into your practice

Nonspecific complaints

- It is mostly older adults presenting with non-specific complaints
- Patients with non-specific complaints:
 - Increased mortality [OR 2.50 (95% CI 1.40–4.47)]
 - Triage as less urgent [OR 2.12 (95% CI 1.08–4.16)]
 - Increased admission rates [OR 3.86 (95% CI 1.76–8.47)]
 - Increased ED LOS
 - Increase hospital LOS

Nonspecific complaints in the emergency department – a systematic review

[Kirsi Kemp](#) , [Reija Mertanen](#), [Mitja Lääperi](#), [Leila Niemi-Murola](#), [Lasse Lehtonen](#) & [Maaret Castren](#)

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| [Cite this article](#)

ED Chief Complaints...

General weakness

Fatigue

Confusion

Concern for patient
welfare

Falls

Failure to thrive

Dizziness

Functional decline

Avoid using the term “failure to thrive”

- Majority of patients we label with “FTT” in the ED often have an acute medical issue going on that tipped them to acute functional decline
- 88% of FTT patients had acute medical diagnosis at time of discharge
- Most of these presentations are for acute medical illness rather than “social admission”
- Patients with FTT label in ED have been shown to have delays in care, longer time from triage to admission
- This term can lead to premature diagnostic closure and missing geriatric syndromes

A row of empty metal wheelchairs is parked against a blue wall. The wheelchairs are arranged in a line, receding into the background. The lighting is soft, highlighting the metallic frames and the dark seats. The overall mood is quiet and contemplative.

Why do older people present
atypically?

Why do older people present atypically?

Anatomic changes

- Abdominal exam
- Skin exam

Physiologic Changes

- Vital sign differences
- Immunosuppression
- Lab changes

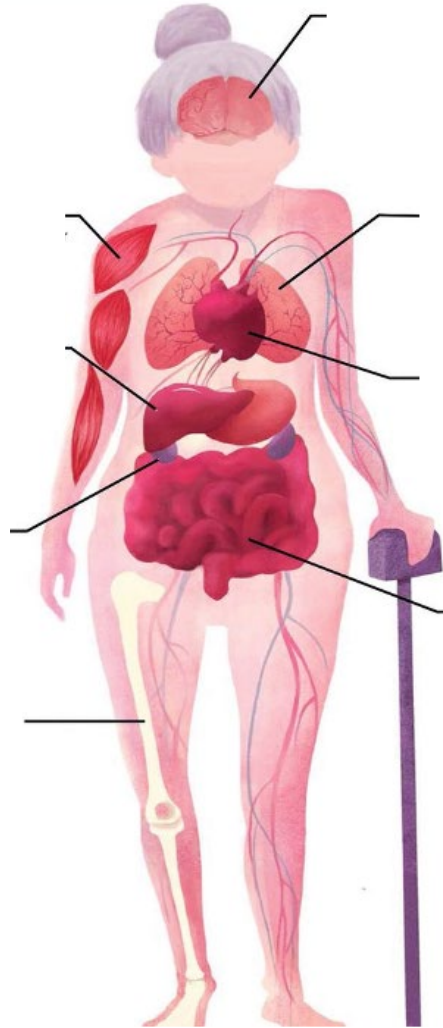
Psychosocial

- Cognitive impairment
- Social isolation
- Sensory/functional impairment

Complex medical history

- Polypharmacy
- Polymorbidity

Physiology of aging



Physiology of aging

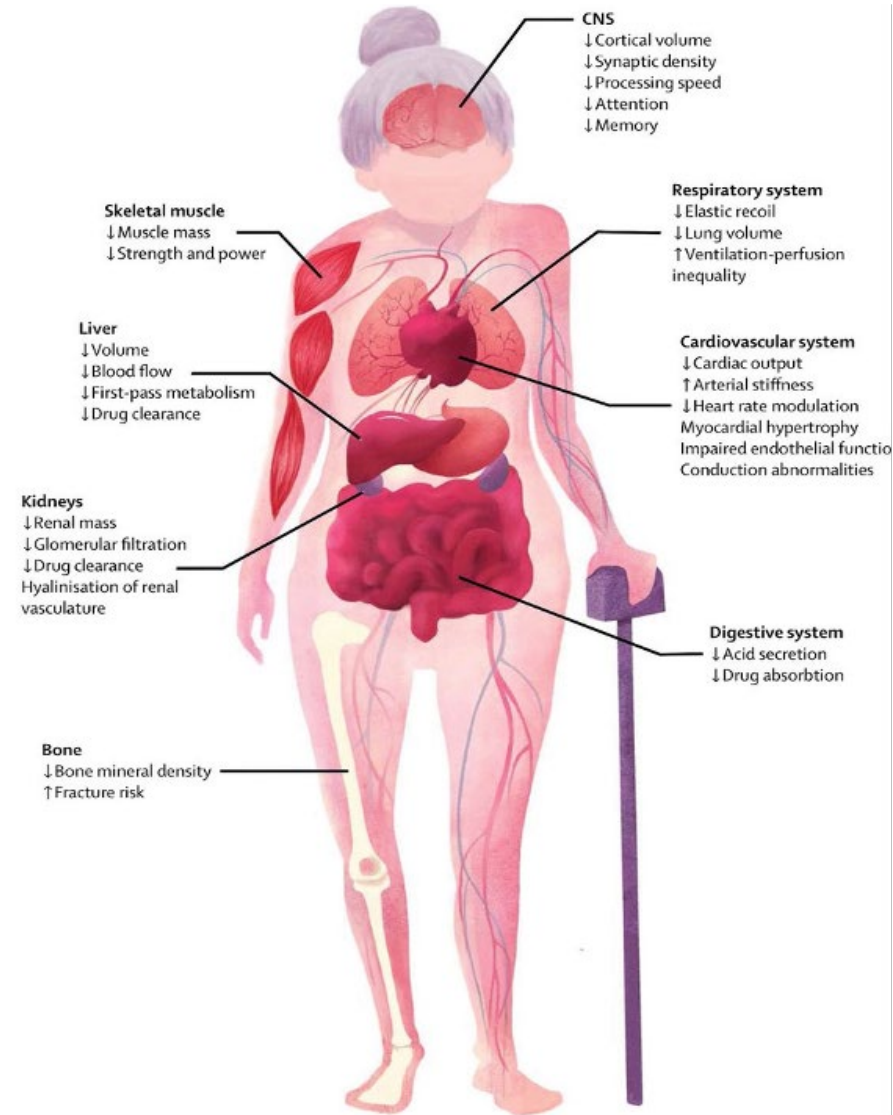


Figure 2: Physiological changes of ageing by organ system^{16-20,22}



Different abdominal assessment

- Decreased peripheral sensory nerve cells in the peritoneum
- Decreased abdominal muscles
- Smaller omentum
- Thinner gastric mucosa

Intra-abdominal emergencies are subtle

In older adults with appendicitis, 25% will have no RLQ pain

<50% of older adults with ruptured AAA present with classic triad of hypotension, abdo pain, palpable abdo mass

Biliary disease is the most common surgical cause of abdo pain in older adults

In patients >60, with endo confirmed PUD, 35% report no pain

Do focused skin exam

- Fewer peripheral sensory nerve cells in skin
- Skin atrophy

Increased risk of infection

- Immune dysfunction with age (immunosenescence)
 - Decreased cell-mediated immunity
 - Decreased antibody titers
- Decreased blood flow to tissues

Lab changes with age

- Less leukocytosis with infection
- Asymptomatic bacteriuria
- Elevated ESR
- Lower serum creatinine



Vital sign changes with age

- May not see tachycardia in shock
 - Dec response to beta-adrenergic stimulation
 - Medications may mask tachycardia (beta-blockers)
- Fever may be later to develop or not develop in severe infection
 - Dec immune response (less cytokines, leukotrienes, inflammatory markers)
- May not see hypotension with shock
 - Baseline hypertension (look for relative hypotension)
 - Peripheral vasculature is less elastic

Psychosocial changes

- Cognitive impairment
 - May account for why the patient is vague or can't remember their symptom details
 - Delay in presentation
- Lack of social supports
 - Delay in presentation
- Hearing impairment
 - Make history taking hard

Complex medical history



Poly-morbidity

Multiple active comorbidities that interact with one another



Poly-pharmacy

Multiple medications that can have drug-drug interactions, side effects, mis-use, etc.

Enhance your ability to find out what is going on

Get collateral from patient's care circle

- Family members, caregivers
- Call LTC facility
- Call their pharmacist or family physician

Assess medical records for collateral

- Review old hospital records
- Get a medication list (netcare, not connect care)
- Review the EMS record

Rationale for Comprehensive Geriatric Assessment (CGA)



- Multi-dimensional, multi-disciplinary process to assess older people

5 main components:

- Medical: problem list, comorbidities, medications, nutrition
- Psychological: cognitive status, assessment of mood
- Social: social supports
- Functional: ADLs, IADLs, gait assessment, exercise assessment
- Environmental: finances, care resources, home safety, transportation

Some specific examples on atypical presentations



Acute coronary syndrome



Bacteremia



General Weakness



Asymptomatic bacteriuria

Let's compare 2 cases

CASE 1

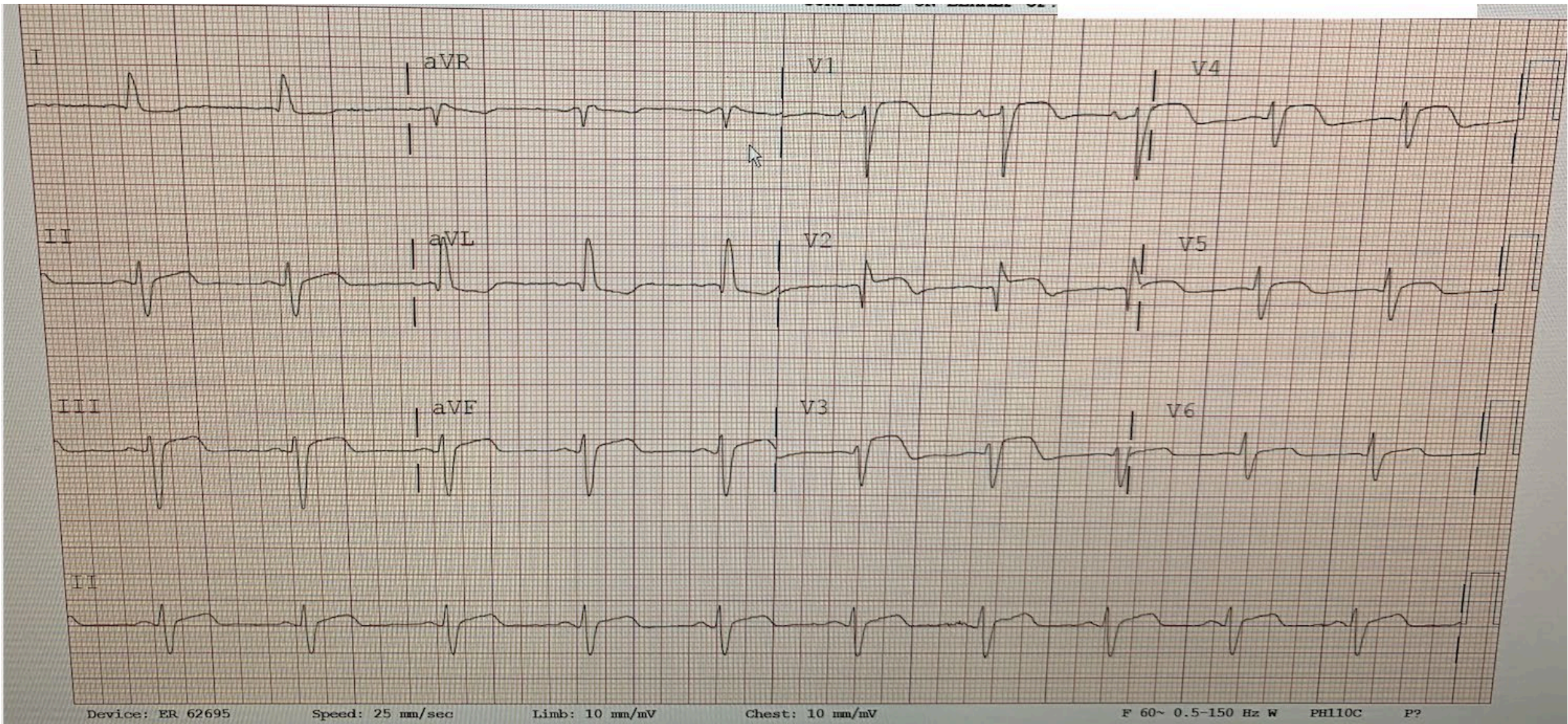
94yo F from home, lives alone.

Independent with all ADLs, most IADLs

PMHx: mild cognitive impairment, HTN, OP, insomnia

Presented with 12-24 hours of CP radiating inter-scapular, nausea

Came in via EMS, some relief with nitro



Device: ER 62695

Speed: 25 mm/sec

Limb: 10 mm/mV

Chest: 10 mm/mV

F 60~ 0.5-150 Hz W

PH110C

P?

Case 1 resolution



DAPT, heparin



Called cardiology, cath lab activated



PCI showed 99% LAD stenosis



Discharged home one week later

Let's compare 2 cases

CASE 2

90yo F from home, lives alone

PMHx: Alzheimers dementia, OA, HTN, T2DM

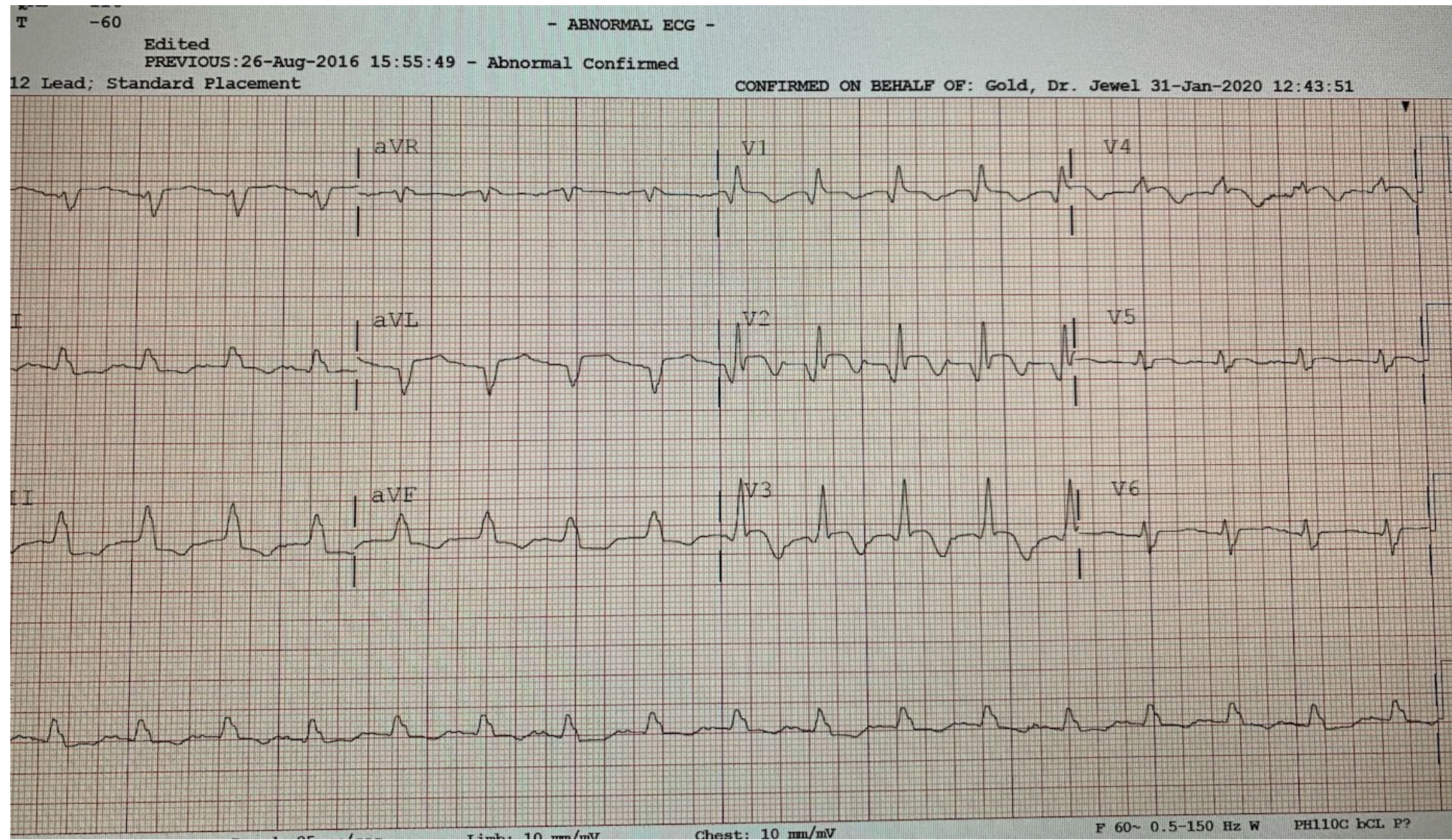
Presented with 4 days inc SOB. Denied any chest pain. Mild increase peripheral edema. Bibasilar crackles. Normal vitals.

She was with her son, presented private vehicle.

I saw her in the triage assess room in the waiting room. I ordered labs while in WR

- CXR done early – cardiomegaly, pulm edema
- It was 4 hours until she got moved to a stretcher, and her ECG was not done until that time due to limitations in nursing support in WR.

Trop 5400



Case 2 resolution



Echo showed significant regional wall motion abnormalities



Cardio decided she was not a candidate for the cath lab given the unclear time of onset, her late presentation, and her underlying comorbidities



Developed arrhythmia and died 12 hours later after admission to CCU

What factors led to
case 2 having a
different outcome?



Atypical ACS presentations in older adults

- Clinical evidence for ACS less robust in patients >75 years
- AHA has a scientific statement on ACS in older people
 - Silent/unrecognized infarcts account for 25% of all MIs, but 60% of MIs in >85 yo
 - Time to ECG, time to antithrombotic therapy, time to cath are all longer in patients >85yo
 - Risk of dying in hospital for NSTEMI:
 - 1/100 in patients <65 vs 1/10 in patients >65
 - For STEMI patients, pts >85yo are more likely to present with HF and atypical symptoms (no chest pain) than younger patients
 - CP present in only 40% of patients >85 with STEMI, vs 80% in patients <65
 - Older STEMI patients less likely to get reperfusion therapy even if eligible
 - Guideline-directed medical therapy and coronary revascularization are associated with better survival, even in persons > 85 yo

Bacteremia

RESEARCH ARTICLE

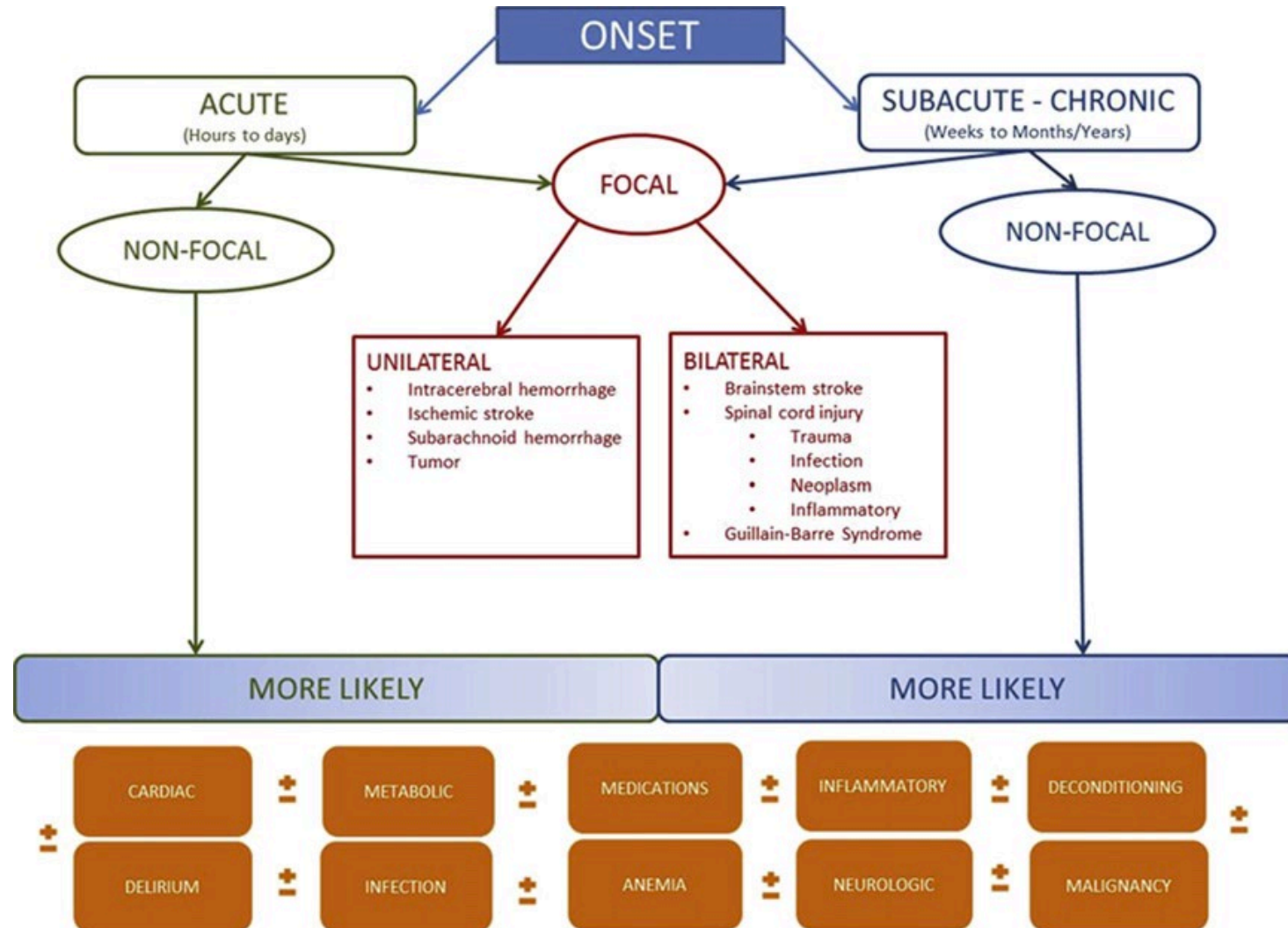
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Age-related differences in symptoms, diagnosis and prognosis of bacteremia

Astrid L Wester^{1*}, Oona Dunlop², Kjetil K Melby^{3,4}, Ulf R Dahle¹ and Torgeir Bruun Wyller^{3,5}

- Older patients more often presented with atypical symptoms like “confusion, falls, incontinence, immobility, malaise” vs the typical symptoms seen in younger patients
- Older patients had significantly higher in-hospital mortality
- SIRS-criteria have poorer sensitivity for identifying organ failure in older patients

Approach to “general weakness”





Urine testing in older adults

The patient in bed 9 is confused, do you want me to send a urine?

I think bed 4 has a UTI; their urine has a foul odour.

My mom has been more confused and sleepy lately, I think she has a UTI again.



Define ASB and UTI

Asymptomatic bacteriuria

Presence of:

- Bacteriuria (isolation of urinary pathogen at $\geq 10^5$ CFU/mL in mid-stream urine)

AND

- No genitourinary signs or symptoms

Urinary tract infection

Presence of:

- Bacteriuria (isolation of urinary pathogen at $\geq 10^5$ CFU/mL in mid-stream urine)

AND

- Genitourinary signs or symptoms



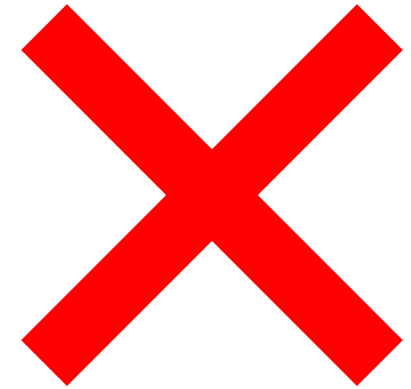
What ARE genitourinary signs or symptoms?

- Urinary frequency
- Urinary urgency
- Dysuria
- New or worsening urinary incontinence
- Gross hematuria
- Suprapubic tenderness
- CVA pain or tenderness



What are NOT genitourinary signs or symptoms?

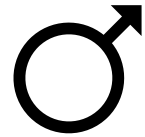
- Presence of confusion, delirium, disorientation
- Wandering
- Verbal aggression
- Decreased appetite
- Decreased balance
- Falls



Asymptomatic bacteruria is common



Community dwelling ≥ 70 yo

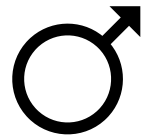


3.6-19%

10.8-16%



LTC residents



15-50%

25-50%



Catheters

98-100% long-term use
3-8%/day for short-term use



Misdiagnosis of UTIs can lead to problems



Missing the true cause
&
premature diagnostic
closure



C. difficile
infections



Medication
burden & drug-
drug interactions



Promoting
antimicrobial
resistance



Other adverse
events

But the patient can't give an
accurate history of genitourinary
symptoms...



Delirium with ASB vs UTI

- Older adults with confusion in the ED are frequently investigated and treated for UTI's, even in absence of symptoms
- Antibiotic treatment has been associated with higher hospitalization and mortality
- No current studies to show that antibiotics for ASB improve delirium outcomes
- Canadian and American ID guidelines confirm:
 - Confusion or delirium are not indications for investigations of a UTI
- Consider other common causes and careful observation for altered mental status first

Patients with indwelling catheters

- **Collect an accurate urine sample:** Remove and replace the current foley & collect urine from freshly inserted catheter

Catheter associated UTI definition	Catheter associated ASB definition
1. Signs/symptoms of UTI*	1. $\geq 10^5$ cfu/mL of ≥ 1 bacterial species in a single catheter urine specimen
2. No other identified source	2. Without signs or symptoms*
3. $\geq 10^3$ cfu/mL of ≥ 1 bacterial species in a single catheter urine specimen	

*Signs and symptoms include:

- New or worsening fever, rigors, AMS, lethargy *with no other identified cause*
- Flank pain
- CVA tenderness
- Acute hematuria
- Pelvic discomfort

Patients from long term care

- High prevalence of bacteriuria and pyuria in this population
- Overdiagnosis of UTI among residents
- Various clinical criteria proposed: Loeb, McGeer

Choosing Wisely, Modified Loeb criteria:

MINIMUM CRITERIA FOR UTI (MODIFIED LOEB CRITERIA^{1,2})

In a non-catheterized resident:	In a catheterized resident:
• Acute dysuria <u>or</u> 2 or more of the following: • fever [$> 37.9^{\circ}\text{C}$ (100°F) or a 1.5°C (2.4°F) increase above baseline on at least two occasions over the last 12 hours] • new or worsening urgency • frequency • suprapubic pain • gross hematuria • flank pain • urinary incontinence	• Any one of the following after alternate explanations have been excluded: • fever [$> 37.9^{\circ}\text{C}$ (100°F) or a 1.5°C (2.4°F) increase above baseline on at least two occasions over the last 12 hours] • flank pain • shaking chills • new onset delirium

¹ Note that these are clinical criteria validated for diagnosis for a UTI and differ from criteria that are used for surveillance.

² Note that confusion alone is not symptom of UTI in non-catheterized resident.

Atypical Presentations - Summary

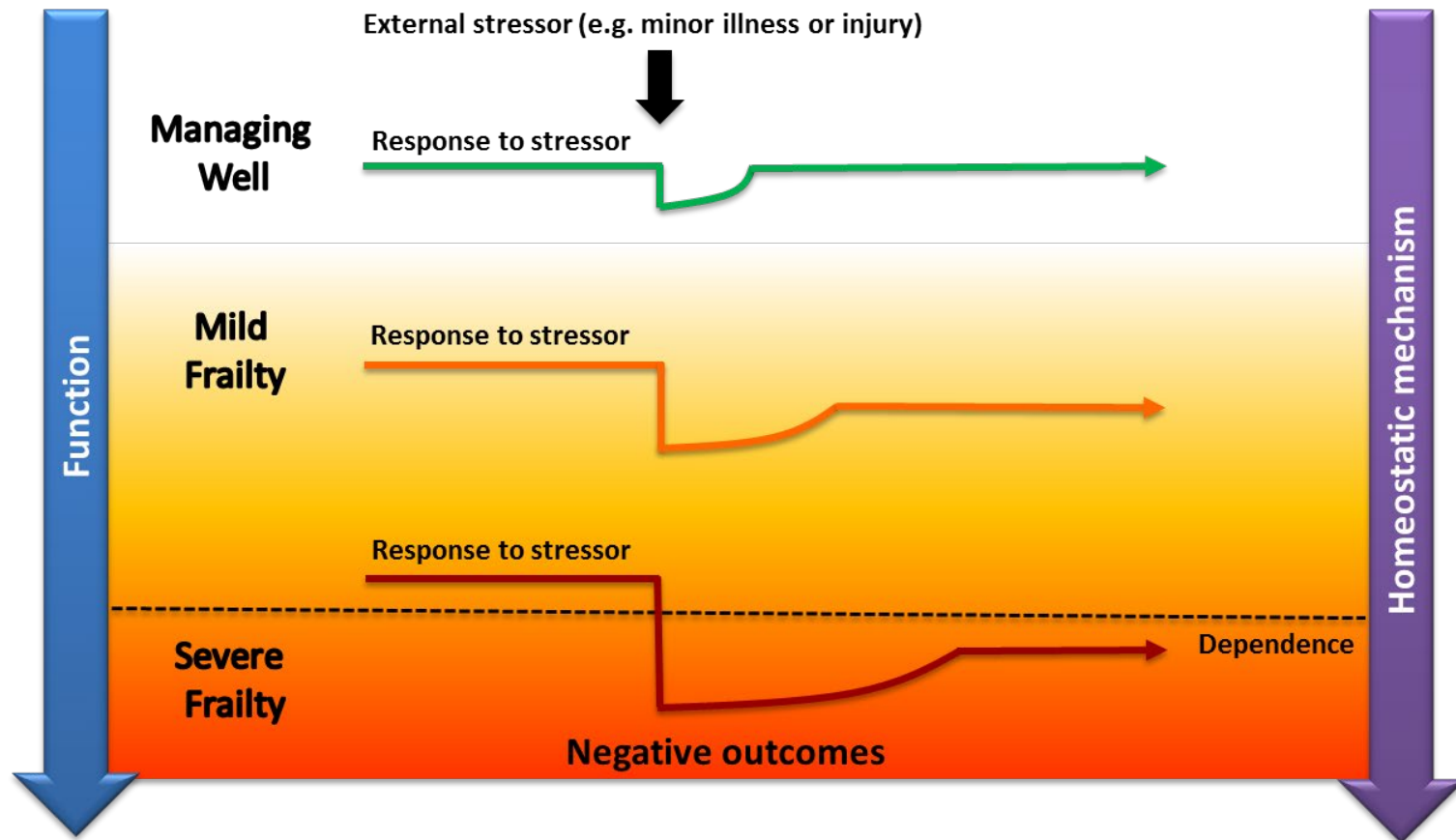
- Expect that older patients may present atypically for acute medical illnesses
- Complete a thorough history/physical and use multiple collateral sources
- Be aware of lab changes and vital sign changes
- Keep a broad differential for the “vague” and “nonspecific” complaints
- Avoid the use of “failure to thrive”
- Consider the indications to send off a urinalysis in your next older patient

Frailty





- New concept in medicine and geriatrics.
- We see gradual decrease in physiologic reserve with aging, but frailty has an accelerated decrease and homeostatic mechanisms fail.



Definitions:

- “state of increased vulnerability to poor resolution of homeostasis after a stressor event, which increases the risk of adverse outcomes”
- “decreased mobility, energy, physical ability, and ability to respond to stressors”



Associated outcomes

- Increased mortality
- Institutionalization
- Increased surgical complications
- Increased healthcare utilization
- Increased hospital LOS
- Functional decline
- Visits to the ED
- Higher readmission rates



Screening tools

- Clinical Frailty Scale (CFS)
- Study of Osteoporotic Fractures (SOF) Index
- Pictorial Fit Frail Scale (PFFS)
- FRAIL scale
- Identification of Seniors at Risk (ISAR)
- Program on Research for Integrating Services of the Maintenance of Autonomy (PRISMA-7)
- Deficit Accumulation Index
- Others

CFS

- 9 point scoring range
- Based on recent baseline of the patient, 2 weeks prior to onset of current acute illness
- Valid and reliable instrument to identify frailty in the ED
- Accurate predictor of hospitalization, ICU admission, and 30-day mortality
- CFS predicts 1-year all-cause mortality for older ED patients (65+) and predicts survival time.

CLINICAL FRAILITY SCALE

	1	VERY FIT	People who are robust, active, energetic and motivated. They tend to exercise regularly and are among the fittest for their age.
	2	FIT	People who have no active disease symptoms but are less fit than category 1. Often, they exercise or are very active occasionally , e.g., seasonally.
	3	MANAGING WELL	People whose medical problems are well controlled , even if occasionally symptomatic, but often are not regularly active beyond routine walking.
	4	LIVING WITH VERY MILD FRAILITY	Previously "vulnerable," this category marks early transition from complete independence. While not dependent on others for daily help, often symptoms limit activities . A common complaint is being "slowed up" and/or being tired during the day.
	5	LIVING WITH MILD FRAILITY	People who often have more evident slowing , and need help with high order instrumental activities of daily living (finances, transportation, heavy housework). Typically, mild frailty progressively impairs shopping and walking outside alone, meal preparation, medications and begins to restrict light housework.

	6	LIVING WITH MODERATE FRAILITY	People who need help with all outside activities and with keeping house . Inside, they often have problems with stairs and need help with bathing and might need minimal assistance (cuing, standby) with dressing.
	7	LIVING WITH SEVERE FRAILITY	Completely dependent for personal care , from whatever cause (physical or cognitive). Even so, they seem stable and not at high risk of dying (within ~6 months).
	8	LIVING WITH VERY SEVERE FRAILITY	Completely dependent for personal care and approaching end of life. Typically, they could not recover even from a minor illness.
	9	TERMINALLY ILL	Approaching the end of life. This category applies to people with a life expectancy <6 months , who are not otherwise living with severe frailty . (Many terminally ill people can still exercise until very close to death.)

SCORING FRAILITY IN PEOPLE WITH DEMENTIA

The degree of frailty generally corresponds to the degree of dementia. Common **symptoms in mild dementia** include forgetting the details of a recent event, though still remembering the event itself, repeating the same question/story and social withdrawal.

In **moderate dementia**, recent memory is very impaired, even though they seemingly can remember their past life events well. They can do personal care with prompting.

In **severe dementia**, they cannot do personal care without help.

In **very severe dementia** they are often bedfast. Many are virtually mute.



Clinical Frailty Scale ©2005–2020 Rockwood, Version 2.0 (EN). All rights reserved. For permission: www.geriatricmedicineresearch.ca
Rockwood K et al. A global clinical measure of fitness and frailty in elderly people. CMAJ 2005;173:489–495.

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Questions to ask:

- Do you need help with personal care (ADLs) (toileting, getting dressed, bathing)?
 - If yes = **at least moderately frail**, CFS 6 or higher
- Do you need help with IADLs (handling money, taking medications, going outside)?
 - If yes = **at least mildly frail** (CFS 5 or higher)
- Do you feel constantly tired throughout the day? Or Are you walking slower than usual?
 - If yes = **CFS 4 (pre-frail)**

Well = 1-3

Pre-frail/vulnerable = 4

Mild frailty = 5

Moderate to severe frailty = 6-8

Terminal illness = 9



Triage and frailty

- Incorporating CFS into a triage system improves prediction of ICU admission and in-hospital mortality in older ED patients.
- CTAS Frailty Modifier (2016)
 - Allows triage to up-triage patients that may have normally been rated 4 or 5 if they are completely dependent for personal care (WC bound, cognitive impairment, terminal illness late in course, >80 yo)
- **Frailty and triage acuity have been found to be independent measures – both drive separate outcomes**
 - Frailty associated with inc hospital LOS, admission, repeat ED visits, future hospitalization
 - Triage only associated with admission

How do we apply this in the ED?

- Assess frailty to identify those at risk of poor outcomes
- Assess frailty to help slow down the progression
- Use this to guide your disposition
 - i.e. if discharging home a frail patient, ensure you have optimized their home outpatient services
 - Add home care supports
 - PT/OT ED assessment to optimize gait aids
 - Liaise with GP, family/caregiver, etc.
- As it is a marker for adverse outcomes medically/surgically, can be used to describe a patient to specialist colleagues

Questions?

