"IF ONLY SOMEONE HAD WarnED US"

How to recognize pre-terminal patients and the potential harms caused by continuing traditional care.

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CMO Outpatient Palliative Care
Sharp HospiceCare
No Disclosures
Cardiac Case Study
86 Year old female comes in to see you for passing out after picking something up off the ground while walking her poodle in the backyard. She has stable substernal discomfort with exertion as well. She is occasionally light headed.
History of Present Illness

Known AS for 10 years; now with dyspnea walking across a room with a cane and ankle edema. Has a FWW but “never uses it”. Feels generally more fatigued, weaker and has lost 12 pounds over the last year due to change in appetite. Work up for weight loss was unrevealing. Denies palpitations. 2 stents placed 7 years earlier for CAD. H/O DM, Htn, CAD, a-fib and mild diastolic failure. She also is being treated for gout, moderate osteoarthritis pain and depression.

She has a BMI of 21. She is generally inactive and rarely gets out because she is “not up to it.” She states she hasn’t had the energy she used to for years. Does not smoke or drink.
She has lived with her daughter and son-in-law for 2 years. Both work. Does not drive, cook or pay bills. She is mildly demented with a MMSE of 22, 6 months ago. Her family states that she is just a little forgetful. She wears glasses (20/100 without) and hearing aids (when she remembers). Daughter states she needs more help since she is losing her strength.

Previous Surgical History

- TAH
- Lap chole
- ORIF with stage 3 heel ulcer (resolved) and delirium
## Medication Table

<table>
<thead>
<tr>
<th>Medication</th>
<th>Dose</th>
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</tr>
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<tbody>
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<td>ASA</td>
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<td>Metformin</td>
<td>500 bid</td>
<td>Tylenol PM</td>
<td></td>
</tr>
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<td>Allopurinol</td>
<td>300mg</td>
<td>MVI</td>
<td></td>
</tr>
<tr>
<td>Furosemide</td>
<td>20mg</td>
<td>Potassium ER</td>
<td>20meq</td>
</tr>
<tr>
<td>Aricept</td>
<td>5mg qd</td>
<td>Pantoprazole</td>
<td>40mg</td>
</tr>
</tbody>
</table>
Vitals

Vitals: BP 100/50, HR 52, RR 16, Temp 97.8

Alert and oriented but easily distracted. No JVD at 90 degrees. Heart is irregular with a 2/6 SEM at the RSB, Lungs are CTA with diminished AE. Abd is soft, NT and NABS. No HJR. No focal neuro deficit. +1 bilateral ankle/le edema.

CXR - Poor inspiration but NED

ECHO - Mod Severe AS, diastolic failure, mild decrease in LVF.

EKG; a fib with HR 54
Lab Data

Abnormal for hemoglobin 11.2, total chol 110 (was 150 the previous year)/ LDL 43 (was 65), pro-BNP 537, albumin 3.3, BUN 24/Cr 0.7, hgbA1c 6.0
A Decision is made to consider surgery after an angiogram is obtained.

Before you proceed...
Here are some questions to ask.
Up to Date: Physiology and Goals of Care for the Pre-terminal Populations are Not the Same as a Younger and Healthier Geriatric Patient
Identifiers of a Pre-terminal patient:

Weight loss (Wallace, JAGS 1995) – 2 year follow up
   No loss 11%
   Involuntary loss 28%
   Voluntary loss 36%

Heel ulcer (Malik, JAMDA 2013) – 1 year
   Stage 1 or 2, 55%
   Stage 3 or 4, 70%
   All stages without vascular intervention 68%
   All stages with vascular intervention 59%

Delirium (multiple articles)
   30% at 3 mo. to 78% at 34 mo.

Biomarkers (Verdery 1991 J of Gerontology)
   84% 1 year mortality for patients with low cholesterol (<160) plus low albumin and hemoglobin versus 7% if none were low. For stable custodial patients.
Biomarkers 84% (1yr)\(^{\downarrow}\) chol, \(^{\downarrow}\) alb, \(^{\downarrow}\) hgb
Heel Ulcer 68% (1yr)
Delirium 59% (2yrs)
Weight Loss 28% (2yrs) >4% yr.

Hoefer, Daniel, MD
Other Risk Factors for this patient:

• Cognitive Decline
• Depression
• Social Isolation
• Polypharmacy
What is this patient's biggest concern?

How much does the patient's cardiac condition really play into her health status?
Do providers want to know what stage of advanced age their patient belongs to?
This patient’s risk of developing hospital induced delirium is:

a. 23%
b. 33%
c. 53%
d. 63%
e. 83%
Inouye, Sharon, MD, *Risk Factors for Delirium at Discharge*, Arch Intern Med 2007; 167(13)

Incident delirium

Risk Factors:
1. Dementia
2. Vision worse than 20/70
3. Functional Impairment
4. High comorbidities
5. Any Restraint

0-1  Low
2-3  Intermediate
4-5  High
<table>
<thead>
<tr>
<th></th>
<th>Delirium</th>
<th>Death or NH Placement</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Low risk</strong></td>
<td>4%</td>
<td>15%</td>
</tr>
<tr>
<td><strong>Intermediate</strong></td>
<td>18%</td>
<td>39%</td>
</tr>
<tr>
<td><strong>High</strong></td>
<td>63%</td>
<td>64%</td>
</tr>
<tr>
<td>Risk factor</td>
<td></td>
<td></td>
</tr>
<tr>
<td>---------------------------------------------------------------------------</td>
<td>---</td>
<td></td>
</tr>
<tr>
<td>Cognitive impairment (inability to think, concentrate, reason, remember, formulate ideas)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Elevated blood urea nitrogen/serum creatinine ratio (greater than 18)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Severe illness (APACHE score greater than 16, or nurse rating of severe)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Vision impairment (corrected near vision worse than 20/70 in both eyes)</td>
<td></td>
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</tr>
</tbody>
</table>

Interpretation: 0 points = low risk (10% chance of developing delirium;
1 or 2 points = intermediate risk (25% chance of developing delirium;
3 or 4 points = high risk (80% chance of developing delirium,

APACHE = Acute Physiology and Chronic Health Evaluation
clinica.com/ICUMortality/APACHEII.aspx).

Information from reference 3.
Table 2. Risk Factors for Postoperative Delirium

- Age greater than 65 y
- Cognitive impairment
- Severe illness or comorbidity burden
- Hearing or vision impairment
- Current hip fracture
- Presence of infection
- Inadequately controlled pain
- Depression
- Alcohol use
- Sleep deprivation or disturbance
- Renal insufficiency
- Anemia
- Hypoxia or hypercarbia
- Poor nutrition
- Dehydration
- Electrolyte abnormalities (hyper- or hyponatremia)
- Poor functional status
- Immobilization or limited mobility
- Polypharmacy and use of psychotropic medications (benzodiazepines, anticholinergics, antihistamines, antipsychotics)
- Risk of urinary retention or constipation
- Presence of urinary catheter
- Aortic procedures

1. Age greater than 65. OR: 3.03
2. Chronic cognitive decline or dementia. OR: 6.3
3. Poor vision or hearing. OR: 1.7 for hearing
4. Severe Illness. OR: 3.49
5. Infection. OR: 2.96
Marcantonio: Non-cardiac Delirium Risk Postoperative

1. Age greater than 70.  OR 3.3
2. Poor cognitive status.  OR 4.2
3. Poor functional status.  OR 2.5
4. Self Reported Alcohol abuse.  OR 3.3
5. Markedly abnormal pre-operative serum sodium, potassium or glucose.  OR 3.4
6. Non-cardiac thoracic surgery.  OR 3.5
7. Aortic Aneurysm Surgery.  OR 8.3
Delirium – Predisposing Factors

Fig. 1. Age and the probability of transitioning to delirium. The most notable finding related to age was that probability of transitioning to delirium increased dramatically for each year of life after 65 years. Adjusted OR 1.01 (1.00, 1.02) \((P = .03)\). Y-axis = Probability; X-axis = Age in years. (From Pandharipande P, Shintani A, Peterson J, et al. Lorazepam is an independent risk factor for transitioning to delirium in intensive care unit patients. Anesthesiology 2006;104(1):23; with permission.)

Maldonado, JR, Delirium in the Acute Care Setting: Characteristic, Diagnosis and Treatment, Critical Care Clinic 24 (2008); 657-722
It is important to recognize who might develop delirium because delirium is associated with all of the following long term consequences except:

1. Delirium is only associated with short term but not long term consequences
2. Higher mortality
3. Longer lengths of stay
4. Higher rates of Readmissions
5. Permanent functional decline
6. Permanent Cognitive decline
7. Higher rates of institutionalization
Risk of Death Kaplan-Meier Estimate

Months following PAC admission

HR=unadjusted hazard ratio (95% confidence interval)

Delirium [HR=4.9 (1.7-13.5)]
Subsyndromal [HR=3.4 (1.2-9.4)]
No Delirium [HR=1.0]
<table>
<thead>
<tr>
<th>Study</th>
<th>Number of people with delirium/total population</th>
<th>Population characteristics</th>
<th>Prognosis mortality/time</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>mean age</td>
<td>females</td>
</tr>
<tr>
<td>Levkoff et al. [4]</td>
<td>144/325</td>
<td>82</td>
<td>67</td>
</tr>
<tr>
<td>Francis et al. [18]</td>
<td>50/229</td>
<td>78</td>
<td>60</td>
</tr>
<tr>
<td>O’Keeffe and Lavan [5]</td>
<td>95/226</td>
<td>82</td>
<td>60</td>
</tr>
<tr>
<td>Inouye et al. [6]</td>
<td>87/727</td>
<td>79</td>
<td>60</td>
</tr>
<tr>
<td>McCusker et al. [8]</td>
<td>243 compared with 118 nondelirious &gt;85 years</td>
<td>30%</td>
<td>60</td>
</tr>
<tr>
<td>Present study</td>
<td>106/425</td>
<td>66%</td>
<td>&gt;85 years</td>
</tr>
</tbody>
</table>

Charlson = Charlson Comorbidity Index [28]; NR = not reported.
Pathophysiology:

1. Direct Brain Insults
   a. Hypoxia
   b. Hypoglycemia
   c. Stroke (however, only 3% of stroke patients develop delirium)
   d. Metabolic abnormalities
   e. Drugs

Pathophysiology (cont.)

2. Aberrant stress response
   a. Inflammation (baseline increase with age, infections)
      i. Increase in pro-inflammatory cytokines and altered prostaglandins (IL1, IL2, IL6, TNF, Interferon)
   b. Sickness behavior response
      i. Limbic-hypothalamic-pituitary-adrenal response

NEJM Cognitive Decline Post Cardiac procedure 2012

• 60 years of age or older
• Statistically significant decrease in MMSE scores at 12 months for status post operative cardiac procedures $p < 0.001$

• 31% vs. 20% : delirious vs. non delirious patients $p = 0.055$

Wacker, Priscilla, et al, Post-Operative Delirium is Associated with Poor Cognitive Outcomes and Dementia, Dement Geriatri Cogn Disord 2006; 21:221-27

Is delirium the precursor for dementia?

For this study – no pre-existing cognitive, hearing or visual deficit known Hip or Knee replacement

Fracture – 60% developed delirium
Elective Repair – 24.6% developed delirium.

5 year prospective Study

Results: Patients who developed delirium were 1050% (10.5 times) more likely to have developed dementia than those who did not.
<table>
<thead>
<tr>
<th>Study</th>
<th>N</th>
<th>Population</th>
<th>Study design</th>
<th>Follow-up period</th>
<th>Delirium measure</th>
<th>Cognitive outcome measure</th>
<th>Findings</th>
</tr>
</thead>
<tbody>
<tr>
<td>Koponen and Riekkinen, 1989</td>
<td>70</td>
<td>Geriatric psychiatric hospitalized patients</td>
<td>Prospective</td>
<td>1 year</td>
<td>Clinical Rating</td>
<td>D-Test</td>
<td>Cognitive deterioration associated with delirium observed in 36% of patients at 1-year follow-up</td>
</tr>
<tr>
<td>Francis and Kapor, 1992</td>
<td>229</td>
<td>General hospitalized medical patients</td>
<td>Descriptive</td>
<td>2 years</td>
<td>Chart review, clinical interview, MMSE MMSE, Clinical Judgment, CIRS</td>
<td>Modified Telephone MMSE, MMSE, Blessed Dementia Rating Scale, Gero-psychiatric Interview</td>
<td>Decline in MMSE scores in patients with delirium compared to controls</td>
</tr>
<tr>
<td>Rockwood, 1999</td>
<td>203</td>
<td>General hospitalized medical patients</td>
<td>Prospective</td>
<td>3 years</td>
<td>DRS, MMSE, Clinical Judgment, CIRS</td>
<td>Modified Telephone MMSE, MMSE, Blessed Dementia Rating Scale, Gero-psychiatric Interview</td>
<td>Delirium was associated with increased dementia at follow-up</td>
</tr>
<tr>
<td>Dolan et al., 2000</td>
<td>682</td>
<td>Hip replacement surgery</td>
<td>Prospective</td>
<td>2 years</td>
<td>Chart review, proxy interviews using a modified version of the CAM DSM-Criteria</td>
<td>MMSE</td>
<td>Patients with delirium were more likely to have cognitive impairments at 2-year follow-up</td>
</tr>
<tr>
<td>Rahkonen et al., 2000</td>
<td>51</td>
<td>Community-dwelling elderly hospitalized for acute delirium</td>
<td>Prospective</td>
<td>2 years</td>
<td>DSM-Criteria</td>
<td>Neuropsychological battery</td>
<td>Patients had higher than expected dementia incidence rates over 2 years</td>
</tr>
<tr>
<td>McCusker et al., 2001</td>
<td>315</td>
<td>Medical patients</td>
<td>Prospective</td>
<td>1 year</td>
<td>CAM</td>
<td>MMSE</td>
<td>Patients with delirium had lower MMSE scores at 1-year follow-up compared to controls</td>
</tr>
<tr>
<td>Katz et al., 2001</td>
<td>102</td>
<td>Residential care patients</td>
<td>Prospective</td>
<td>1 year</td>
<td>Clinical evaluations</td>
<td>MMSE, Buschke Selective Reminding Tests, Stroop Test, Verbal Vigilance</td>
<td>Patients who develop delirium within the context of a medical illness demonstrated greater cognitive decline</td>
</tr>
<tr>
<td>Rahkonen et al., 2001</td>
<td>199</td>
<td>Community-dwelling patients</td>
<td>Prospective</td>
<td>3 years</td>
<td>Surrogate interviews, clinical interviews, chart review</td>
<td>MMSE, ADL, IADL, Chart Review</td>
<td>Increased risk for new diagnosis of dementia among “oldest old”</td>
</tr>
<tr>
<td>Jackson et al., 2003</td>
<td>34</td>
<td>Medical ICU patients</td>
<td>Prospective</td>
<td>6 months</td>
<td>CAM-ICU</td>
<td>Comprehensive neuropsychological battery</td>
<td>No significant association between delirium duration and cognitive outcomes</td>
</tr>
</tbody>
</table>

*aD-Test = D-Test is the full title, elsewhere.

bDRS = Delirium Rating Scale.

CMRS = Mini-Mental State Exam.

cCumulative Illness Rating Scale.

dCAM = Confusion Assessment Method.

/ADL = Activities of Daily Living.

/IADL = Instrumental Activities of Daily Living.

CAM-ICU = Confusion Assessment for the Intensive Care Unit.
FIGURE 1. Mean number of delirium symptoms at baseline and follow-up in demented and non-demented patients.
**Figure 2.** Percentage with specific delirium symptoms at baseline and follow-up. Note: Sample sizes at each time point are the same as those in Figure 1.

1 year risk - OR

Mortality 2.30

Institutionalization 4.53

Readmission 2.05

Delirium occurred in 52 of 126 patients
After adjusting for risk factors delirium was associated with poor functional outcomes at 1 mo

- ADL decline OR - 2.6
- Decrease in ambulatory ability OR - 2.6
- Death or Nursing Home Placement OR - 3.0

< 50% of patients returned to their pre-fracture level of function.
Followed for 6 months.
Terri R Fried MD, et al, Understanding the Treatment Preferences of Seriously Ill Patients, NEJM 2002; 346: 1061-66

For advanced illness patients, 74.4% and 88.8%, of patients would forgo treatment if the treatment burden was low but the probability of severe functional impairment or cognitive impairment was high.

This compares to 98.7% of patients who would want treatment in the treatment burden was low and they were more likely to return to their previous level of function.

Mortality was not the major determinant in patient choice.

n=279

Patients' had no cognitive or functional deficits in this study.
Salkeld, G et al, *Quality of life related to fear of falling and hip fractures in older women: a time trade off study*, BMJ 2000; 320(7231): 341-46

Of women surveyed (>74 year of age) 80% would rather be dead than experience the loss of independence and quality of life that results from a bad hip fracture and subsequent admission to a nursing home.
This patient has an anticholinergic burden score of:

1. 0
2. 3
3. 6
4. 9
5. >12
6. What is an anticholinergic burden score?

...and why do we care?
Delirium is directly related to the number of medicines prescribed and the number of drug-drug interactions.

# Medication Table

<table>
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<tr>
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<th>Dosage</th>
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<td>20mg</td>
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<tr>
<td>Aricept</td>
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</tr>
</tbody>
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# Evidence-Based Advanced Illness Medication List

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<tr>
<th>Medication</th>
<th>Dosage</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>ASA</td>
<td>81mg</td>
<td>Nitroglycerin SL prn</td>
</tr>
<tr>
<td>Metoprolol</td>
<td>50mg bid</td>
<td>Allopurinol</td>
</tr>
<tr>
<td>Lisinopril</td>
<td>10mg</td>
<td>Anti Depressant</td>
</tr>
<tr>
<td>Tylenol or hydrocodone TID (no prn)</td>
<td></td>
<td>Docusate</td>
</tr>
</tbody>
</table>
Cai, Xueya, PhD, et al, *Chronic Anticholinergic Use and the Aging Brain* 2013 Alzheimer's Dement 9(4); 377-85

N=3690

The odds ratio of developing MCI with a 90 day exposure with at least 3 meds with a possible ACB of 1 or 1 med with ACB of 2 or 3 was 2.73

N=8334  x=75.2

After adjusting for multiple variables, use of a medication with definite anticholinergic effects was associated with a 0.33 greater decline in their MMSE score over a 2 year window. The decline was slightly higher if the patient had an ACB score or 4 or greater.

The greatest effect was seen on persons with the highest baseline MMSE scores. Under a MMSE of 22 the effect cannot be evaluated due to too small a sample.

Mortality was 20% at 2 years if on an anticholinergic versus 7% if not. For every point increase in ACB above 4 there was a 26% greater chance of death.
Medications which put patients at risk for post-operative delirium

• 1. Diphenhydramine  OR 2.3
• 2. Meperidine         OR 2.7
• 3. Benzodiazepines   OR 3.0

Stopping Statins in the last Year of Life:

1. 381 patients
   a. 189 stopped statins and 191 continued
   b. 49% Cancer Patients 51% non-CA
   c. Primary and secondary prevention
   d. Median time to death
      i. Off – 229 days
      ii. On - 190 days
      iii. Trend
   e. Statistically significant improvement in QOL scores off statins
   f. Less symptoms off statins and $712 dollars less per patient.


2. 84% 1 year mortality for stable custodial nursing level patients for patients with chol <150, low hemoglobin and low albumin (versus 7% if no markers present)

Verdery 1991 J of Gerontology
Side Effects of SSRIs in the Advanced Elderly

Falls with Fracture: HR fracture 2.1, OR Falls 2.2 (Arch Int Med 2007, 106:188-940)

Worse risk of fracture than with glucocorticoids or PPIs: 19% of postmenopausal women will fall twice after starting an SSRI per year with a statistically significant increase in fractures (J Bone Miner Res 2012, 27(5):1186-95)

Upper Gastrointestinal and post-surgical bleeding (J Clin Psych 2010, 71(12); 1565-75): doubles the risk of UGIBs and possible increase bleeding associated with surgical procedures

Hyponatremia: (Ann Pharmacother 2006; 40(9):1618-622)
Fig. 1. Kaplan-Meier survival curves for excessive polypharmacy (ten or more drugs), polypharmacy (six to nine drugs) and non-polypharmacy (five or fewer drugs) groups in (a) the first phase \((n=601, \text{aged } \geq 75 \text{ years})\) between 1998 and 2002 and (b) the second phase \((n=339, \text{aged } \geq 80 \text{ years})\) between 2003 and 2007.

Using prognostic modeling, this patient’s post hospital risk of functional decline is:

1. 15%
2. 25%
3. 35%
4. 45%
5. 55%
We can identify the at risk population for functional decline and provide statistical information:

Developmental Cohort n=448
Validation cohort n=379

3 Risk Factors Identified
   1. Increased age
   2. Decreased MMSE
   3. IADL deficiency
   (IADLS – Managing Finances, Taking Meds, Using the phone, Shopping, Transportation deficit, Preparing meals, deficient housework)

# TABLE 3 -- Scoring of the Risk Profile: Relationship Between Significant Predictor Variables and Loss of ADL Function for the Development Cohort (n = 448)

<table>
<thead>
<tr>
<th>Patient Characteristic</th>
<th>Parameter Estimate</th>
<th>Risk Score</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Age</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&lt;75 (n = 128)</td>
<td>reference</td>
<td>0</td>
</tr>
<tr>
<td>75-84 (n = 232)</td>
<td>.668</td>
<td>1</td>
</tr>
<tr>
<td>≥85 (n = 87)</td>
<td>1.24</td>
<td>2</td>
</tr>
<tr>
<td>**Abbreviated MMSE **</td>
<td></td>
<td></td>
</tr>
<tr>
<td>15-21 (n = 349)</td>
<td>reference</td>
<td>0</td>
</tr>
<tr>
<td>0-14 (n = 99)</td>
<td>.562</td>
<td>1</td>
</tr>
<tr>
<td><strong>Preadmission IADL function</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6-7 (n = 210)</td>
<td>reference</td>
<td>0</td>
</tr>
<tr>
<td>0-5 (n = 238)</td>
<td>.965</td>
<td>2</td>
</tr>
</tbody>
</table>

* Abbreviated Mini-Mental State Exam, range 0-21.

†† Number of independent instrumental activities of daily living before admission.
## Risk of long term functional decline

<table>
<thead>
<tr>
<th>Level</th>
<th>Development</th>
<th>Validation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low (0-1)</td>
<td>17%</td>
<td>19%</td>
</tr>
<tr>
<td>Intermediate (2-3)</td>
<td>28%</td>
<td>31%</td>
</tr>
<tr>
<td>High (4-5)</td>
<td>56%</td>
<td>55%</td>
</tr>
</tbody>
</table>
This patient has how many characteristics of geriatric Frailty Syndrome? And why should we care?

1. 1:5
2. 2:5
3. 5:5
4. 3:8
5. 6:8
Frailty has a Phenotype: Requires 3 or more of 5 clinical features

1. Loss of strength
2. Weight loss (unintended)
3. Low activity level/increased sleeping
4. Poor endurance or easily fatigued
5. Slowed performance/unsteady gait
What is Frailty?

“Physiologic syndrome, characterized by decreased reserve, and diminished resistance to stressors, resulting from cumulative decline across multiple physiologic systems, and causing vulnerability to adverse outcomes.”

— The American Geriatric Society

Lack of physiologic reserve
Frailty is progressive
It is independent of other medical disease

Boockvar, Kenneth S MD, MS et al, *Palliative Care for Frail Older Adults*, JAMA 2006 Vol 296(18), pp 2245-53
Pathophysiology of this Syndrome

1. Loss of Skeletal muscle mass – “Sarcopenia”
   a. Rate of muscle loss accelerates after ages 50 and 75
   b. May also involve visceral protein loss (albumin)

2. Neuroendocrine dysfunction
   a. Hormones associated with frailty: low estrogen, low testosterone, low growth hormone, low IGF 1 (insulin growth factor), DHEA, cortisol

3. Chronic Inflammation
   a. Increased levels of proinflammatory cytokines; IL6, c-reactive protein
Proinflammatory cytokines

- Aging
- Inflammatory disease
- Cancer
- NSAIDs, Antioxidants
- Corticosteroids
- Sex steroids

- Inhibition of EPO
- Plasma cell stimulation
- Inflammatory proteins eg, APP

- Catabolic processes
- Osteoclast activity
- Endothelial injury, Smooth muscle proliferation

- Sarcopenia, Cachexia
- Osteoporosis
- Anemia
- Increased gamma globulins BMG, MM
- Alzheimer's disease, Atherosclerosis

Frailty As A Predictor of Surgical Outcomes

LOS for Major Procedures
- No Frailty: 4.2 days
- Intermediate: 6.2 days
- Frail: 7.7 days

Surgical Complications Major Procedures
- No Frailty: 19.5%
- Intermediate: 33.7%
- Frail: 43.5%

## Discharge Disposition

**(Assisted Living or SNF)**

<table>
<thead>
<tr>
<th>Minor Procedure</th>
<th>Frailty Level</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>No Frailty</td>
<td>0.8%</td>
<td></td>
</tr>
<tr>
<td>Intermediate</td>
<td>0%</td>
<td></td>
</tr>
<tr>
<td>Frail</td>
<td>17.4%</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Major Procedure</th>
<th>Frailty Level</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>No Frailty</td>
<td>2.9%</td>
<td></td>
</tr>
<tr>
<td>Intermediate</td>
<td>12.2%</td>
<td></td>
</tr>
<tr>
<td>Frail</td>
<td>42.1%</td>
<td></td>
</tr>
</tbody>
</table>
This patient’s risk of “Hospital Associated Disability (HAD)” is:

1. 53%
2. 63%
3. 73%
4. 83%
5. What is HAD?...and why should we care?
“Hospital-Associated Disability”

• Defined as loss of 1 ADL needed to live independently without assistance
• Occurs in 30% of persons over age 70 – frail patients have higher risk
• Occurs even if the illness is successfully treated and has no direct relationship to the illness
• Less than 50% of patients with HAD have recovered to pre-illness levels at 1 year

Prognosis with HAD:

- 41% died at 1 year
- 29% Remained disabled
- 30% returned to pre-illness levels
Predictive Model for Developing Hospital Associated Disability (HAD)

Risk Factors:

1. Decubitus Ulcer  RR-2.7
2. Cognitive Impairment  RR-1.7
3. Functional Impairment  RR-1.8
4. Low Social Activity Level  RR-2.4
<table>
<thead>
<tr>
<th>Total Risk Factors</th>
<th>Probability of Developing HAD</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>6%</td>
</tr>
<tr>
<td>1 – 2</td>
<td>29%</td>
</tr>
<tr>
<td>3 – 4</td>
<td>83%</td>
</tr>
</tbody>
</table>

National Surgical Quality Improvement Program (NSQIP)

Preoperative evaluation 2012 and 2016 guidelines ACS and AGS

- MMSE on every patient going for surgery age 70 or older
- Geriatric frailty on every patient age 70 or older
Palliative Preoperative Screen: (Always discussed in the context of the type of surgery or intervention.)

1. TUGT of > or = to 15 seconds
2. MMSE of less than 25 or ANY documented cognitive disturbance (e.g. MCI, previous delirium episode)
3. Alcohol or drug use
4. Polypharmacy (Greater than 10 medications, including any OTC and vitamins = 1 point)
5. ACB score of 3 or greater or any benzodiazepine use
6. Multiple comorbidities
7. Age greater than 70
8. ADL deficiency
9. IADL deficiency

Any single factor, aside from age, should trigger a trained pre-operative palliative consultation.
Using this model to develop a Geropalliative Anticipatory Standard

Replace the "Annual Physical" with a Palliative Exam every second or third year after age 65
The Benefits of the Geropalliative Physical

1. Predicting who is likely to develop hospital-induced delirium
2. Identifying who is likely to be institutionalized after hospitalization
3. Identifying who will be discharged with psychotropic medications.
4. Identifying who will likely develop cognitive and/or functional decline regardless of the outcome of the organ system treated
5. Identifying who is at high risk of post hospital mortality
6. Identifying who is at high risk of prolonged hospital stay
7. Identifying who is at high risk of hospital complications
8. Identifying before hospitalization who is at risk of rehospitalization.
Surgical System wide Palliative Consultation and Frailty Screening:
Ernst, KF, et al, Surgical Palliative Care Consultations Over Time in Relationship to System wide Frailty Screening, 2014 JAMA Surg

33% reduction in 180-day mortality (p<0.001) even after controlling for age, frailty or whether the patient had surgery if the patient receives a (physician led) palliative consultation.
1. Shared decision making is the process through which clinicians and patients share information with each other and work toward decisions about treatment chosen from medically reasonable options that are aligned with the patients’ values, goals, and preferences.

2. For patients with advanced heart failure, shared decision making has become both more challenging and more crucial as duration of disease and treatment options have increased.

3. Difficult discussions now will simplify difficult decisions in the future.

4. Ideally, shared decision making is an iterative process that evolves over time as a patient’s disease and quality of life change.

5. Attention to the clinical trajectory is required to calibrate expectations and guide timely decisions, but prognostic uncertainty is inevitable and should be included in discussions with patients and caregivers.

6. An annual heart failure review with patients should include discussion of current and potential therapies for both anticipated and unanticipated events.

7. Discussions should include outcomes beyond survival, including major adverse events, symptom burden, functional limitations, loss of independence, quality of life, and obligations for caregivers.

8. As the end of life is anticipated, clinicians should take responsibility for initiating the development of a comprehensive plan for end-of-life care consistent with patient values, preferences, and goals.

9. Assessing and integrating emotional readiness of the patient and family is vital to effective communication.

10. Changes in organizational and reimbursement structures are essential to promote high-quality decision making.

Table 1. Top Ten Things to Know

| 1. Shared decision making is the process through which clinicians and patients share information with each other and work toward decisions about treatment chosen from medically reasonable options that are aligned with the patients’ values, goals, and preferences. |
| 2. For patients with advanced heart failure, shared decision making has become both more challenging and more crucial as duration of disease and treatment options have increased. |
| 3. Difficult discussions now will simplify difficult decisions in the future. |
| 4. Ideally, shared decision making is an iterative process that evolves over time as a patient’s disease and quality of life change. |
| 5. Attention to the clinical trajectory is required to calibrate expectations and guide timely decisions, but prognostic uncertainty is inevitable and should be included in discussions with patients and caregivers. |
Figure 2. Prognosis is not only about expectations for survival. There are multiple domains that are of varying importance to individual patients. Adapted from Spilker.⁵⁸
When a patient has lost their physiologic reserve decisions regarding care plans must involve Patient centered quality outcomes (PCQOs) vs Organ system directed interventions (OSDIs)

<table>
<thead>
<tr>
<th>PCQOs</th>
<th>Versus</th>
<th>OSDIs</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Worsening Symptoms</td>
<td></td>
<td>1. Improving Symptoms</td>
</tr>
<tr>
<td>2. Preventing cognitive decline</td>
<td></td>
<td>2. Improving Function</td>
</tr>
<tr>
<td>3. Preventing Functional decline</td>
<td></td>
<td>3. Maintaining Status</td>
</tr>
<tr>
<td>4. Preventing Institutionalization</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. Not being an emotional and</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6. financial burden to the family</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Organ System Benefits

Deterioration of Patient Centered Quality Outcomes
OWNERSHIP

We are not only responsible for the acute outcomes of our patients but the long term consequences of that same care.

By using our professional skill of palliative prognostication we can foresee the risks of the unintended consequences of our care. We can then, at the least, offer them an alternative aggressive patient centered pathway.
Conclusion

The new paradigm: Integrating the Outcome goals of the advanced elderly is possible. Prognostication will be mandatory. Regaining this professional tool and the multiple diverse benefits will improve care for this demographic.
Thank you!