Hospitalization- Associated Disability

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An Unfortunately Common Scenario

Mrs. G, 70 y/o, BP: 130/80, DM type II, HTN, s/p CVA, OA, OP admitted for wt. loss, falls.
Living independently at home, ADL independent
Meds: glipizide, lisinopril, lasix, asa, celebrex, fosamax q week, living independently at home, ADL independent.

Exam: Well-kept, A, O x 3, VS Afebrile BP 178/87 P 84 RR 16 Lungs clear, CV: RRR, Neuro exam is non-focal
She is found to have CHF exacerbation, iron def anemia.
Intern reports patient’s function is at baseline—“She was probably able to ambulate, but I’m not sure”
The patient’s daughter reports she is not at her baseline.

Objectives

• Recognize the profile of vulnerable older hospitalized patients at risk for hospitalization-associated disability (H-AD).
• Describe three evidence-based models of care and a pragmatic approach to prevent H-AD in vulnerable older hospitalized patients.
• Appreciate the impact of H-AD on vulnerable older hospitalized patients.

Older Patients in the Hospital setting

- High rates of hospitalization
  - Account for 47% of all inpatient days (but represent only 13% of the population)
  - Age 85 and over, twice hospitalization risk
- High rates of readmission
  - 25% of hospital admissions represent readmission of older patients

Older Patients at Risk for Re-Admission

- Age over 80
- Inadequate social support
- Multiple active chronic health problems
- History of depression
- Moderate-severe functional impairment
- Multiple hospitalizations past 6 months
- Hospitalization past 30 days
- Fair or poor health self rating
- History of non-adherence to medical regimen

Fehin CC, Smith PH, Johnson M. Medical Care. 2006;44:429-437
Hospital-Acquired Disability (H-AD)

- It occurs in vulnerable older patients who accumulate disability(s) in multiple domains of activities of daily living (ADL) at hospital discharge they did not have before the onset of the acute illness.
- The disability leads to the loss of independent functioning needed to live independently without assistance.

Activities of Daily Living (ADLs)

- **ADLs**
  - Dressing
  - Eating
  - Ambulation
  - Transfer
  - Hygiene
  - Bathing
  - Toileting

- **Instrumental ADLs**
  - Telephone use
  - Getting to places beyond walking distance
  - Grocery shopping
  - Preparing meals
  - Housework/handyman work
  - Taking medications
  - Managing money

Incidence H-AD

- ~30% of patients ≥70 years decline during hospitalization in ability to perform ADLs
- Another 20% leave the hospital without recovering pre-hospitalization abilities
- One year after discharge, fewer than half have recovered to their pre illness level of functioning and rates of nursing home placement and death are high.

Fernandez, H. & Callahan, K

Best Understood As a Geriatric Syndrome

Fernandez, H. & Callahan, K

Hospitalization-Associated Disability

Fernandez, H. et al. JAMA 2011;306:1782-1793
Older Patients are a Heterogeneous Population

- Factors that contribute to heterogeneity
  - Aging physiology
    - Vision loss: 27% those over age 85
    - Cognitive impairment: 50% over age 85
    - Assistance w/ADL: > 50% over age 85
  - Collected co-morbid conditions
  - Functional status

Who is at Risk?

Table 1. Studies Examining Individual Risk Factors

- Covinsky, K. E. et al. JAMA 2011;306:1782-1793

Hospitalization-Associated Disability

- Decreased Muscle Strength/Aerobic Capacity
  - Loss of strength/day at bed rest
    - Football players: 1-1.5% strength/day (10%/week)
    - Elderly patients: 5%/ strength/day (35%/week)
    - Reconditioning takes much longer than deconditioning

- Decreased Bone Density
  - Bone resorption of elderly acutely ill person at bed rest 50 TIMES usual involutional rate
**Decreased Ventilation**
- Usual Aging: \( pO_2 = 90 - ( \text{age over 60} ) \)
- Costochondral calcification and reduced muscle strength diminish pulmonary compliance and increase RV \( (pO_2 \text{ for an 80 yo: } 70) \)
- Bed rest decreases \( pO_2 \) by 8 mm on average \( (pO_2 \text{ at bedrest for an 80 yo: } 62) \)
- Closing volume increases, more alveoli hypoventilated

**Pressure Ulcers**
- Skin necrosis results from direct pressure > capillary filling pressure \( (=32 \text{ mmHg}) \) for more than 2 hours
- Sacral pressure after short immobilization \( = 70 \text{ mmHg} \)
- Increased likelihood of shearing forces and exposure to moisture increase risk of skin breakdown
- Pressure ulcer prevalence 20-25%

**Malnutrition**
- Sense of taste decreases with age
  - Hospital food often tasteless
  - Decreased intake if not salted or seasoned
- 25-30% of hospitalized elderly are under/malnourished
- Under/malnutrition a strong negative predictor of clinical outcomes

**Dehydration**
- Older adults tend toward intravascular dehydration
  - Thirst is less for degree of hyperosmolarity
  - Renal concentrating ability often impaired
  - Salt wasting increases

**Prevention of H-AD**

**Table 2. Minimum Functional Assessment in Hospitalized Older Adults**

Covinsky, K. E. et al. JAMA 2011;306:1782-1793

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Dementia and Delirium

- MMSE >24/30 → Delirium risk 2.82(1.19-6.65)
- Delirium associated with worse outcomes
- Orientation board and cognitive stimulation decreased confusion 26% vs. 8%

* Confusion = loss of 2 points on MMSE


Screening Cognitive Impairment: Mini-Cog

- Step 1: Remember & repeat three unrelated words
- Step 2: Clock-Drawing Test (CDT)—distracter
- Step 3: Repeat 3 previously presented words
- Step 4: Scoring: 1 pt. for each recalled word
  - Score=0; + screen for dementia
  - Score=1-2 with abnl CDT; + screen for dementia
  - Score=1-2 with nl CDT; neg. screen for dementia
  - Score=3; neg. screen for dementia


How does One Assess Baseline Functional Status?

<table>
<thead>
<tr>
<th>Report</th>
<th>Level of support</th>
</tr>
</thead>
<tbody>
<tr>
<td>Self-report</td>
<td>Independent</td>
</tr>
<tr>
<td>Proxy report</td>
<td>Needs assistance</td>
</tr>
<tr>
<td>Direct observation</td>
<td>Dependent</td>
</tr>
</tbody>
</table>

Prevention of H-AD: Lessons Learned

Three innovative models have been demonstrated to improve hospital care of older patients:

- Geriatric Evaluation and Management (GEM) Unit
- Acute Care for Elders (ACE) Unit
- Hospital Elder Life Program

Prevention of H-AD: Lessons Learned

- Targeting important for cost-effective program
- Interdisciplinary approach is important
- Nursing leadership, education, empowerment are crucial
- Important to start discharge planning at admission

Comprehensive Geriatric Assessment and Quality Improvement

- Meta-analysis of Comprehensive Geriatric Assessment programs
- 28-controlled trials, 4959 subjects allocated to one of five CGA types and 4912 controls
- Outcomes:
  - Mortality—GEMU programs ↓ 6 month mortality by 35%; HAS ↓ 36 month mortality by 14%
  - Hospital admission—all CGA programs ↓ readmission rate by 12%
  - OR for living at home favorable in all studies

Hospital Elder Life Program: A Nursing Led Program

- Yale hospital system, ≥ age 70, admitted to acute care hospital
- Screened for cognitive impairment, sleep deprivation, immobility, dehydration, vision or hearing impairment
- Targeted interventions
- Outcomes
  - Decrease in functional & cognitive decline

ACE Unit

- Designed to help acutely ill older patients achieve or maintain independence in ADLs
- Four components:
  - Environment promotes mobility and orientation
  - Patient-centered, nursing-initiated protocols
  - Early social work intervention
  - Medication review to promote optimal prescribing
- In randomized trials, improved ADL function at end of hospitalization; increased patient, family, and clinician satisfaction; and reduced costs

Impact of Hospitalization-Associated Disability

Prognostic Index for 1-year Mortality in Older Hospitalized Adults

- 2 prospective studies—age > 70, assess 1-year mortality, points assigned—mortality risk calculated.
- Independent risk factors:
  - Male sex
  - # of dependent ADLs
  - CHF
  - Cr > 3.0
  - Low albumin level

Table 3. Walter Prognostic Index.
Summary

Recognize and prevent H-AD

- Hospitalized older patients should be routinely assessed for pre-illness functional level, risk for disability and assess for loss of independent function at hospital discharge, regardless of admission diagnosis
- Models of care have improved outcomes for older patients

Geriatric Enlightenment

Irrespective of the patient’s age, the best guides to hospital care are to address the clinical circumstances and

- the function at the level of the organ system
- the whole person (quality of life, goals of care)
- the person’s environment
- the prognosis

Geriatric Enlightenment

1) Bed Rest is for hospice patients and a few others. GET THE PATIENT MOVING!!!
2) The fewer drugs, the better. Review meds frequently.
3) Get out IV lines and catheters as soon as possible.
4) Avoid restraints whenever possible.
5) Assess and monitor mental/cognitive status DAILY.

Geriatric Enlightenment

6) Delirium is a medical emergency. Treat with antipsychotics only when indicated.
7) Watch for depression.
8) Pay attention to amount of food consumed. Consider supplements.
9) Start discharge planning with admission (and remember to IDP the day before d/c)
10) Involve patient and family in decision-making and advance directives.