Hazards of Hospitalization in Older Adults

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Objectives

- **Describe hospitalization-associated disability and why older adults are at risk**
- **Review existing models of safe and efficient hospital care**
- **Provide clinical pearls for prevention of hospitalization-associated disability that can be used in daily practice**

Patient story

- Penny is an 82 year old woman, presented with abdominal pain over site of known ventral hernia
- PMH: Aortic stenosis s/p TAVR, pulmonary hypertension, atrial fibrillation on warfarin, osteoarthritis
- Baseline functional status: Lives alone, ambulates with walker, independent; retired RN
- CT scan concerning for incarcerated hernia – admitted for observation
- On day 2 of admission: abdominal pain and exam worsened, went to OR for laparoscopic hernia repair

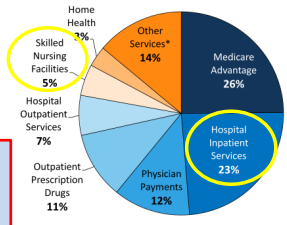
Lots of things to consider:

Adapted from: Palmer, RM. Acute Care of Elderly Patients 24th Annual Clinical Update in Geri Med; 2016

What you are being asked

- Inpatient vs observation status
- When is the patient ready for transition to lower level of care?
- Barriers to discharge?
- Where will patient go from the hospital?
- Rehab needs, home safety?

Distribution of Medicare Benefit Payments, 2014



At least one-fourth of all Medicare spending is for inpatient care or post-acute care

Almost 20% of Medicare patients are re-admitted within 30 days

Total Medicare Benefit Payments, 2014 = $597 billion

Why geriatric patients are important to hospitalists

- 35% of patients in the hospital are age 65+
- Patients age 65+ have highest average length of stay
- Majority of H&Ps, progress notes, complexity (disproportionate care time)

Why hospitalizations are important to geriatric patients

- Higher mortality
- Higher risk of becoming disabled

Disability = functional decline **= loss of independence**

Hospitalization, Restricted Activity, and the Development of Disability Among Older Persons

- Prospective cohort study of ~750 patients age 70+ over 5 years
- Independent in all ADLs at baseline
- Main outcome: disability of at least one ADL (dressing, hygiene, walking, eating, toileting)

- **Results: Hospitalization (for any reason) in the month prior conferred 60 times greater risk of developing disability than stroke, CHF, cancer**

What's the prognosis?

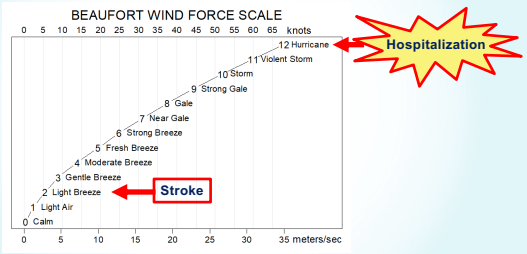
Recovery in Activities of Daily Living Among Older Adults Following Hospitalization for Acute Medical Illness

Cynthia M. Boyd, MD, MPH[1], C. Seth Landefeld, MD[2], Steven R. Counsell, MD[3], Robert M. Palmer, MD, MPH[4], Richard H. Fortinsky, PhD[5], Denise Kresevic, RN, PhD[6], Christopher Burant, MA, PhD[7], and Kenneth Covinsky, MD, MPH[2]

- Observational study of ~800 patients who had decline in at least one ADL over course of hospitalization
- **Results: By 12 months, 41% of patients died, 29% remained disabled at 1 year, and only 30% returned to prior level of functioning**
  - Presence or absence of ADL recovery at 1 month was associated with long term outcomes

In the path to disability for a geriatric patient:

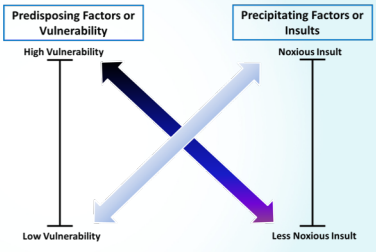
Hospitalization increases risk by an entire order of magnitude



How does this happen?

- Reduced homeostatic reserve
- Multiple chronic diseases (multimorbidity), acute insults
- Under-recognition of geriatric syndromes
- Immobility
- Environment not conducive to healing
- Silos of care

Homeostenosis: the inability to maintain homeostasis under stress due to narrowing of reserve capacity

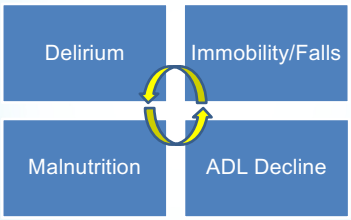


Adapted from: Inouye SK *et al*, *Lancet*, 2014.

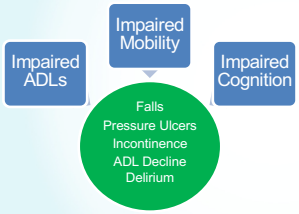
Back to our patient: the Domino Effect

- POD #5: Rapid response called for syncope while transferring from chair to bed, hypotension, abdominal pain
- Hemoglobin drop to 6.3 g/dL
- Abdominal wall hematoma diagnosed
- Transfused, hgb back to near baseline
- POD #7: hypoactive delirium recognized
- Multiple medical consultants on board (volume status, electrolyte mgmt.)
- Following days – unable to get out of bed, poor appetite, pressure ulcer, persistent delirium

Hazards of hospitalization



Geriatric syndromes: Shared risk factors



Reducing risk factors for one syndrome

Reduces risk factors for all syndromes

Adapted from: Palmer, RM. Acute Care of Elderly Patients 24th Annual Clinical Update in Geri Med, 2016.

More on delirium:

- Acute decline in cognitive function and attention
- Incidence of hospital-acquired delirium: Up to 63%
- Etiology usually multifactorial
- Associated with mortality, functional decline, long term cognitive decline
- Major iatrogenic risks: polypharmacy, anticholinergic meds

Acute brain failure

Table 2. The Association of Medications with Delirium

Drug Class or Variable	Reference(s)	Relative Risk of Delirium
Type/class of drug		
Sedative-hypnotic drugs	29–31	3.0–11.7
Narcotics	30–33	2.5–2.7
Anticholinergic drugs	29, 33, 34	4.5–11.7
Any psychoactive drug	33	3.9
Number of drugs		
≥2 psychoactive drugs	18	4.5
Adding >3 drugs in 24 hours	18	4.0
2–3 drugs	27	2.7
4–5 drugs		9.3
≥6 drugs		13.7

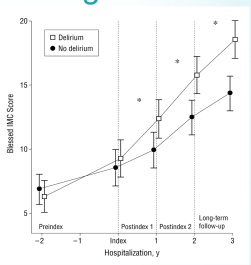
Inouye, Sharon K, *et al*, Am J Med 1999.

Inouye SK *et al. Lancet*, 2014.
Kiely DK *et al. JAGS*, 2009.
Inouye, SK *et al. Arch Intern Med*, 2007

Delirium and long term cognition

263 hospitalized patients, part of the Mass. Alzheimer's Disease Research Center

Y-axis: Blessed Dementia Rating Scale
Score >14 indicates major cognitive impairment



Reducing Risk Factors for Hospital Delirium

Enhance Mobility
Avoid bedrest orders
Avoid restraints/tethers
Mobility protocol

Enhance ADLs
PT/OT
Hearing/vision aids
Assistive Devices

Enhance Cognition
Avoid sedatives
Minimize sleep disruption
Reorientation

Delirium Prevention

Reducing Risk Factors for Hospital Falls

Enhance Mobility
Avoid bedrest orders
Avoid restraints/tethers
Mobility protocol

Enhance ADLs
PT/OT
Hearing/vision aids
Assistive Devices

Enhance Cognition
Avoid sedatives
Minimize sleep disruption
Reorientation

Falls Prevention

Solution: Models of Care

- Multidisciplinary, team-based approach
- Hospital culture shift – more geriatric friendly
- Proactive measures

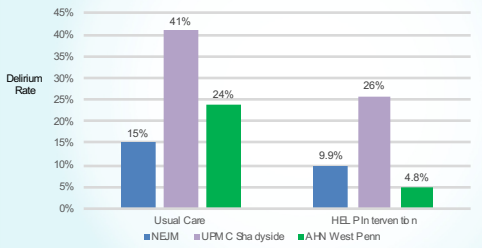
Evidence-based = clinical trials, systematic reviews

Model for Delirium Prevention: Hospital Elder Life Program (HELP)

Hospital Elder Life Program
HELP

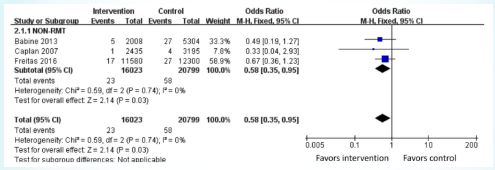
- Multicomponent, non-pharmacologic program which targets patients age 70+ at risk for delirium
- Bedside protocols target mobility, cognition, hydration, sleep, vision/hearing impairment
- Interventions provided by trained volunteers, led by Elder Life Specialist and Elder Life Nurse Specialist
- Team approach

HELP delirium prevention results



- Inouye SK et al. NEJM, 340(9): 669-76, 1999
- Rubin FH *et al. JAGS*, 59:359-365, 2011
- Weinberg L *et al.* Poster at AGS Annual Meeting, 2018

HELP reduces falls



Meta-analysis: HELP reduces odds of falls by 42%

Hshieh TT *et al.* Hospital Elder Life Program: Systematic Review and Meta-Analysis of Effectiveness. *American Journal of Geriatric Psychiatry*, 26(10):1015-1033, 2018

Model for Patient-Centered Geriatric Care: Acute Care for Elder (ACE) units

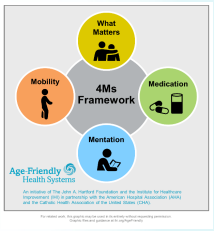
4 Key Elements:
- Physical environment to promote ADL independence/safety
- Patient-centered care delivered by interdisciplinary team
- Medical care focused on medication review and geriatric practice standards
- Early, comprehensive discharge planning

Outcomes:
- Lower hospital length of stay
- Lower functional decline
- Less falls and delirium
- Increased discharge to home

Palmer, RM. *Geriatrics*, 3, 59:1-16, 2018
Fox, MT *et al. JAGS*, 60:2237-2245, 2012

No ACE or HELP?

You as a provider can make a difference in your patients' outcomes



http://www.ihi.org/Engage/Initiatives/Age-Friendly-Health-Systems/Pages/default.aspx

What you can do: Mobility

- Assess baseline mobility
- Avoid bed rest orders
- OOB to chair for meals, empower independent patients to walk
- Daily review of tethers – continuous IV fluids, telemetry monitor
- Limit number and duration of indwelling catheter use
  - Specific medical indications: retention, stage 3-4 sacral ulcers, I/O measurement critical, comfort for end-of-life
- Team up with nurses, patient, families, PT/OT – avoid enforced dependence (encourage patient/family for independent ADLs)

Covinsky KE, *et al. JAMA*, 306(16): 1782-1793, 2011

What you can do: Delirium (Mentation)

- Screen and diagnose delirium – Confusion Assessment Method
- Avoid or stop potentially inappropriate medications
- Avoid abrupt cessation of benzodiazepines, SSRIs, gabapentin
- Day/night cycle – open blinds
- Limit tethers – IVF, telemetry, restraints
- Involve families

Diagnosing Delirium: Confusion Assessment Method

1. Acute Onset + Fluctuating Course
+
2. Inattention
AND
3. Disorganized Thinking **or** 4. Alteration in Level of Arousal

Marcantonio, ER *et al. Annals of Internal Medicine*, 2014

What you can do: Medications

Drugs with strong anticholinergic properties	
First generation antihistamines	**Anti-muscarinics (urinary incontinence)**
• Diphenhydramine • Hydroxyzine • Meclizine • Dicyclomine • Hyoscyamine	• Oxybutynin • Solifenacin • Tolterodine • Trospium
Skeletal muscle relaxants	**Antidepressants**
• Cyclobenzprine	• Paroxetine • Amitriptyline • Nortriptyline • Doxepin (>6 mg)
Antiemetics	
• Prochlorperazine • Promethazine	

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What you can do: Nutrition/Hydration

- Limit proactive NPO orders
- Talk to our patients and nurses about NPO orders
- Liberalize diet as much as possible
- Monitor IVF use closely
- **Avoid PEG tubes in patients with advanced dementia or terminal diagnosis**
  - No data to suggest PEG improves mortality, aspiration risk, comfort

Choosing Wisely CELEBRATING OUR 7TH YEAR An initiative of the ABIM Foundation

What you can do: Find out What Matters

- ***Sit at the bedside***
  - Patients whose physicians sit at bedside are perceived as listening more carefully and explaining things in a way that is easier to understand
- Assess perceived knowledge of current medical situation
- Ask for invitation to deliver information (with/without family present)
- Words to use:
  "When you think about what lies ahead, what worries you the most?"
  "When you think about the future, what do you hope for?"
- Avoid: "Would you like us to do everything possible?" or "There is nothing more we can offer"
- Strategize with patient. "Based on your prognosis and goals, I recommend..."

What you can do: Transitions of care

- Anticipate caregiver support, rehabilitation needs on admission
- Meet daily with case manager and social worker
- Keep family involved for discharge plans
- For patients transitioning to SNF or inpatient rehab:
  - Set realistic expectations
  - Medication reconciliation
  - Concise discharge summary
  - Prescriptions for controlled substances
  - Reach out to accepting provider for complex cases

Where are we going?

Annals of Internal Medicine ORIGINAL RESEARCH

Hospital-Level Care at Home for Acutely Ill Adults

A Randomized Controlled Trial

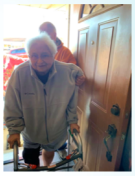
David M. Levine, MD, MPH, MA; Kei Ouchi, MD, MPH; Bonnie Blanchfield, ScD; Agustina Saenz, MD, MPH; Kimberly Burke, BA; Mary Paz, BA; Keren Diamond, RN, MBA; Charles T. Pu, MD; and Jeffrey L. Schnipper, MD, MPH

- Hospital at home model: 1 daily visit from internist, 2 visits from RN, remote monitoring, 24/7 access to RN/physician
- Dx: infections, CHF, asthma/COPD (carefully selected)
- Home group: *n*=43 (mean age 80), control group: *n*=48 (mean age 72)

- **Results: Hospital at home = 41% lower costs including 30 days post-discharge, 16% lower 30-day readmission rate**
- **Improved mobility: 11% less time sedentary, 37% less time lying down**

Back to our patient

- Spent total 6 weeks inpatient
- Long course of fluctuating delirium, organ dysfunction, impaired mobility
- Goals of care discussed – prognosis, appropriate level of care
- Discharged to skilled nursing facility



...4 months later, regained functional status, returned home!

Summary

- Mobility: Assess baseline functional status, keep patients out of bed
- Mentation: Assess delirium with CAM daily
- Medications: Avoid "never use" anticholinergic medications
- What Matters: Determine goals – for most, it's autonomy, self-care, being with family

Thank you

- Dr. Robert Palmer
- Dr. Sharon Inouye
- Dr. Neil Resnick
- Dr. Shuja Hassan
- Jackie Collavo, West Penn Hospital CNO
- Penny Collavo