Hospital Associated Disability: An Update

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Hospitalization Acquired Disability

- Hospitalization often precipitates disability in older persons
  - After discharge, elder no longer able to take care of themselves without assistance
  - Definition: The older persons needs more help with activities of daily living than before they became ill
  - (Bathing, dressing, transferring, toileting, eating)
- Often after hospitalization for medical condition that is NOT disabling
  - “successful medical treatment”

Two Disability Pathways in Older Persons

- Catastrophic (sudden): 20%
- Insidious (very slow): 80%
- Insidious disability:
  - Slow accumulation of deficits that progressively increase VULNERABILITY and risk for disability
  - PRECIPITATING EVENT (often minor hospitalization) that results in loss of independent functioning
  - VULNERABILITY + PRECIPITATING EVENTS model has guided much research on elder disability

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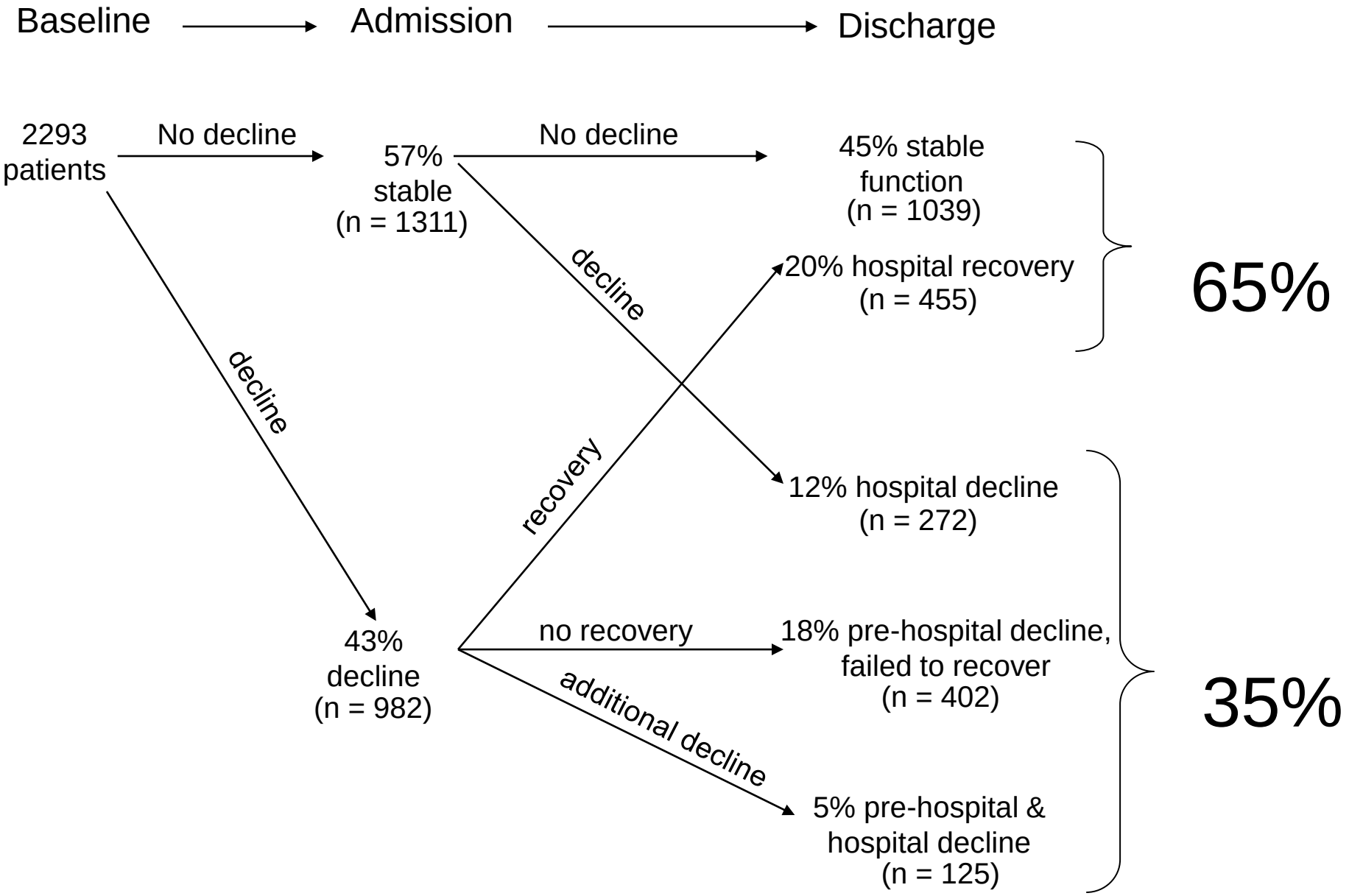
How Often Does Hospitalization Precipitate Disability?

- A lot!
- Prospective Studies of Hospitalization: 1/3 of patients > 70 years
  - Over 50% of patients > 85 years


Baseline
Admission
Discharge
2293 patients
No decline
57% stable (n = 1311)
No decline
45% stable function (n = 1039)
20% hospital recovery (n = 455)
65%
decline
decline
12% hospital decline (n = 272)
recovery
43% decline (n = 982)
no recovery
18% pre-hospital decline, failed to recover (n = 402)
additional decline
5% pre-hospital & hospital decline (n = 125)
35%

Hospital Disability is a Dynamic Process

- Disability is changing rapidly over the course of acute illness
- Disability at Discharge Result of
  - Failure to recover pre-illness function during hospitalization
  - New Disability during hospitalization
- Implication: Reducing disability requires
  - Rehabilitation of pre-hospitalization decline
  - Prevention of new decline

Hospital ADL Decline Has a Bad Prognosis

- 1-year outcomes for patients discharged with functional decline
  - 30% recovered
  - 28% alive, but not recovered
  - 42% dead
- 1 month recovery big predictor of 1-year outcomes
  - 56% of those who recovered remained at baseline function at one year
  - 17% of those who did not recover returned to baseline function at one year

Boyd CM; JAGS: 2008:2171-9

Risk of Hospital Disability Increases with Age

Age	% Decline
70-74	23
75-79	28
80-84	38
85-89	50
90+	63

Covinsky KE; JAGS; 2003;51:451

Risk Factors For Hospital Disability

- Depression
  - High depression symptom score associated with 2.5 fold risk
- Cognitive Impairment
  - Delirium associated with 3 fold risk
  - Failed cognitive screen: 4 fold risk
- Mobility and Balance Problems
  - Use of walker or balance problem: 3 fold risk
- Social Factors (limited social support, poverty)
  - In safety net hospitals, 25% of those 55-64 develop hospital acquired disability

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Hospital processes that promote disability

- Limited Mobility
- Delirium Inducement
- Malnutrition

Hospitalized Patients are Put to Bed and Stay There

- Accelerometers worn by older patients at Birmingham VA Hospital
  - All could walk before hospitalization
  - 80% could walk unassisted at time of admission
- An average day
  - 83% lying in bed (20 hours!)
  - 13% sitting (3.1 hours)
  - 4% standing or walking (55 minutes)

Brown CJ; J Am Geriatr Soc;2009:1660-65

Active restraints (Tethers)

- IV poles
- Oxygen
- Monitoring leads
- Urinary catheters (“one-point restraint”)
- Bed Alarms

Bed Alarms Do Not Prevent Falls

- Randomized Study of Bed Alarms (Shorr R; Ann Intern Med; 2012;892
  - Rates of Falls on Bed Alarm Units (RR 1.09; 95% CI 0.85-1.53)
  - No decrease in fall injuries
- Patient experience of Bed Alarms

” I felt like I was in jail. I can’t get up or go to the bathroom without them coming after me”

(Shoen MW; JAMA IM; 2016; 741)

Delirium

- Acute confusional state: Inattention, disorganized thinking, waxing and waning, sleep wake disruption
- Can be hyperactive or hypoactive
  - Hypoactive considerably more common (why it goes unrecognized)
- Delirium is really bad
  - Dramatically increases disability risk
  - Lasts a long time (maybe sometimes forever)

Hospital processes that may promote delirium

- Mobility
- Sleep Disruption: Vital signs, noise, daytime sleep
- Sensory Deprivation (Vision/Hearing)
- Meds (especially psychoactive meds)
- Dehydration

Malnutrition

- Weight loss, muscle loss in hospital common
- Average albumin drop 0.5gm/dl
- Problems
  - NPO orders
  - No assistance with eating
  - Overly restrictive diet orders (Hospitals are not prisons)

Can Functional Decline Be Prevented?

- Acute Care for Elders Units (ACE Unit)
- Hospital Elder Life Program (HELP)
- In hospital mobility and exercise

ACE Units

- Environmental Design to encourage mobility and independence
- Team based interdisciplinary care
- Increase time out of bed
- Medication review
- Planning to go home

Improved Outcomes on ACE

- Baztan (2009, BMJ) Metaanalysis (5 RCTS)
  - 30% Increased chance of discharge to home
  - 18% reduced risk of disability at discharge
- Other outcomes
  - Decreased length of stay (cost savings exceed added ACE costs)
- Lower risk of readmission
- Increased patient, staff satisfaction

Hospital Elder Life Program

- Protocols to Prevent Delirium
  - Enhance mobility
  - Minimize Sleep Disruption
  - Reduce sensory deprivation
  - Reduce Psychoactive Meds
  - Avoid Dehydration
- Inouye's 1999 NEJM report showed 33% reduction in delirium incidence
- Multiple studies worldwide show benefits
  - Less ADL decline in some studies
- The distinction between ACE and HELP is historical and no longer good practice

Promoting Walking

- Walking RCT Intervention
  - Twice daily sessions with mobility aide
  - 20 minutes twice/day
  - Progressive increase in mobility level
  - Interventionist: Lay person trained to safely mobilize patients
  - Behavioral coaching to promote mobility
- Outcome
  - 10 point improvement on Life Space Mobility Assessment 1 month after discharge

Brown CJ; JAMA IM 2016; 921

Promoting Mobility in the Hospital

- There is no person on most teams able to regularly mobilize patients
- Time consuming—Needs 40 minutes per day
- Not realistic for busy overworked PT and RN team members
- Brown study demonstrates persons without health degrees can do this effectively
- Family members do this all the time
- Solution?

Contemporary Issues

- Inadequate Penetration of ACE Units
- Challenges with Post-Acute Care
- Addressing the needs of newly disabled older patients

Inadequate Penetration of ACE Units

- The current landscape of ACE care in US
  - Surveyed 3662 US hospitals
  - 68 had an ACE Unit at one point
  - 43 hospitals reported currently having an ACE unit
  - 68% in academic hospitals, 7% safety net hospitals, 98% urban regions

Rogers SE: JAGS; 2022: 3012

Challenges With Post-Acute Care

- Access to sub-acute rehab is becoming increasingly limited
- Can lead to increased length of hospital stay
- Double whammy: Increased risk of hospital disability; delayed rehab for hospital disability
- Long term effects unclear
  - But concerning given low rates of ADL recovery after one month

Focus on Palliating Disability

- Hospital based interventions have paved a path for better care models that could reduce prevalence of disability in older persons
- But not all disability can be prevented
- Hospital based interventions also need focus on improving quality of life in those with progressing disability
  - Attention to needs of caregivers
  - Home modifications
  - Activate community-based support

Minimum Standards: Assessment

- Cheap bedside mobility exam
  - Can your patient sit up?
  - Can your patient get out of bed and stand?
  - Can your patient walk a few steps?
- Delirium assessment
  - Remember: Most delirium is hypoactive!
  - The UB2 (Fick et al, J Geront Nur; 2018:18)
    - Tell me the day of the week
    - Tell me the months of the year backwards starting with Dec.

Minimum Standards: Preventing Disability

- Mobility
  - Avoid bed rest orders
  - Avoid restraints (catheters, IV poles)
  - Bedside chair—Out of bed when not sleeping
  - Encourage family to mobilize
- Delirium prevention
  - Frequent reorientation
  - Manage hearing impairment (pocket talkers)
  - Avoid sleep disruption (avoid vitals when asleep)
  - Avoid delirium meds (benzos, sleeping pills, benadryl)

Thank You!

- We have learned a lot
  - We understand how hospital care leads to disability
  - We have effective models to reduce hospital associated disability
- Lots to Do!
  - Implementation of ACE and HELP principles
  - Changes in the culture of hospital care