Disability in Older Patients

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An “odd” case study of disability

- 80 year old woman
  - Lives independently
- Develops fever/shortness of breath (Pneumonia)
- One week hospitalization: All better
- At home: Family notes she is not the same
  - Needs help bathing and dressing
  - Brain fog
  - After 3 months, moves into NH
- How could something so trivial as a minor pneumonia lead to disability?

Some questions

- What is the outcome measure?
- How does a person develop this outcome (conceptual model)?
- What are the risk factors for this outcome?

A Short Course on Geriatric Disability

- Disability: Inability to do tasks important to patient
- Geriatric Disability: Inability to do tasks important to living independently
- Geriatric Disability: Need for help in basic activities of daily living (ADL)
  - Bathing, dressing, transferring, toileting, eating
- If you need ADL help, you can not live alone. You need a caregiver or a nursing home

Activities of Daily Living

- Ability to perform basic self-care activities essential to being able to live independently in the community
  - Bathing
  - Dressing
  - Transferring from bed and chair
  - Using a toilet
  - Eating

Principles of ADL

- ADL is not purely a physical function.
  - Match between physical capacity and environment
- Lost in ordered fashion
  - First problems usually in bathing/dressing
  - Loss of eating is usually late
- Difficulty precedes dependence

Asking About ADL Problems

- Assess Difficulty
  - Do you have any difficulty taking a bath or a shower?

- Assess Independence (ability to do ADL without assistance)
  - Can you bathe or shower without getting help from another person?
  - Who helps you? What do they do?

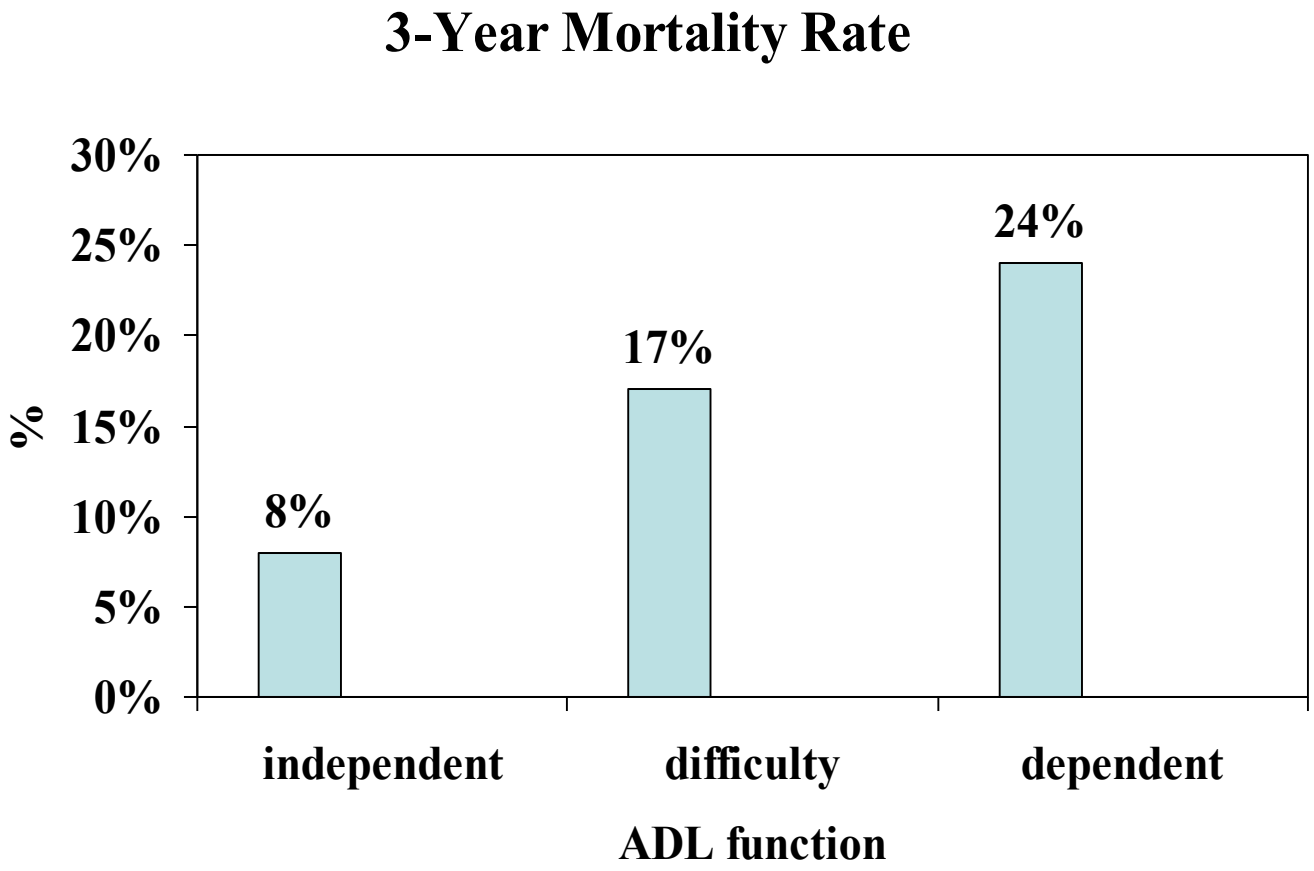
4 ADL Stages

- Can do without difficulty
- Has difficulty (But does not need help)
- Needs help (can't do alone), but gets the help they need (dependent)
- Can't do, does not get the help they need

Value of ADL Function?

- How would you prove your measure of ADL function is important?

ADL Function Predicts Death In Community Dwellers



Gill TM; Ann Intern Med; 1998:96

4-Year Mortality (Lee Score)

Demographics	Diseases	Functional Difficulties
Age 60-64: 1	Diabetes: 1	Bathing: 2
Age 65-69: 2	Cancer: 2	Walking several blocks: 2
Age 70-74: 3	COPD: 2	Managing money: 2
Age 75-79: 4	CHF: 2	Pushing/pulling heavy objects: 1
Age 80-84: 5	Smoker: 2	
Age $\geq$ 85: 7	BMI < 25: 1	
Male Gender: 2		

Lee SJ; 2006;JAMA;801

Lee Score and 4-Year Mortality

Lee Score	Mortality
0-4	2%
5-6	7%
7-10	19%
>10	53%

Some questions

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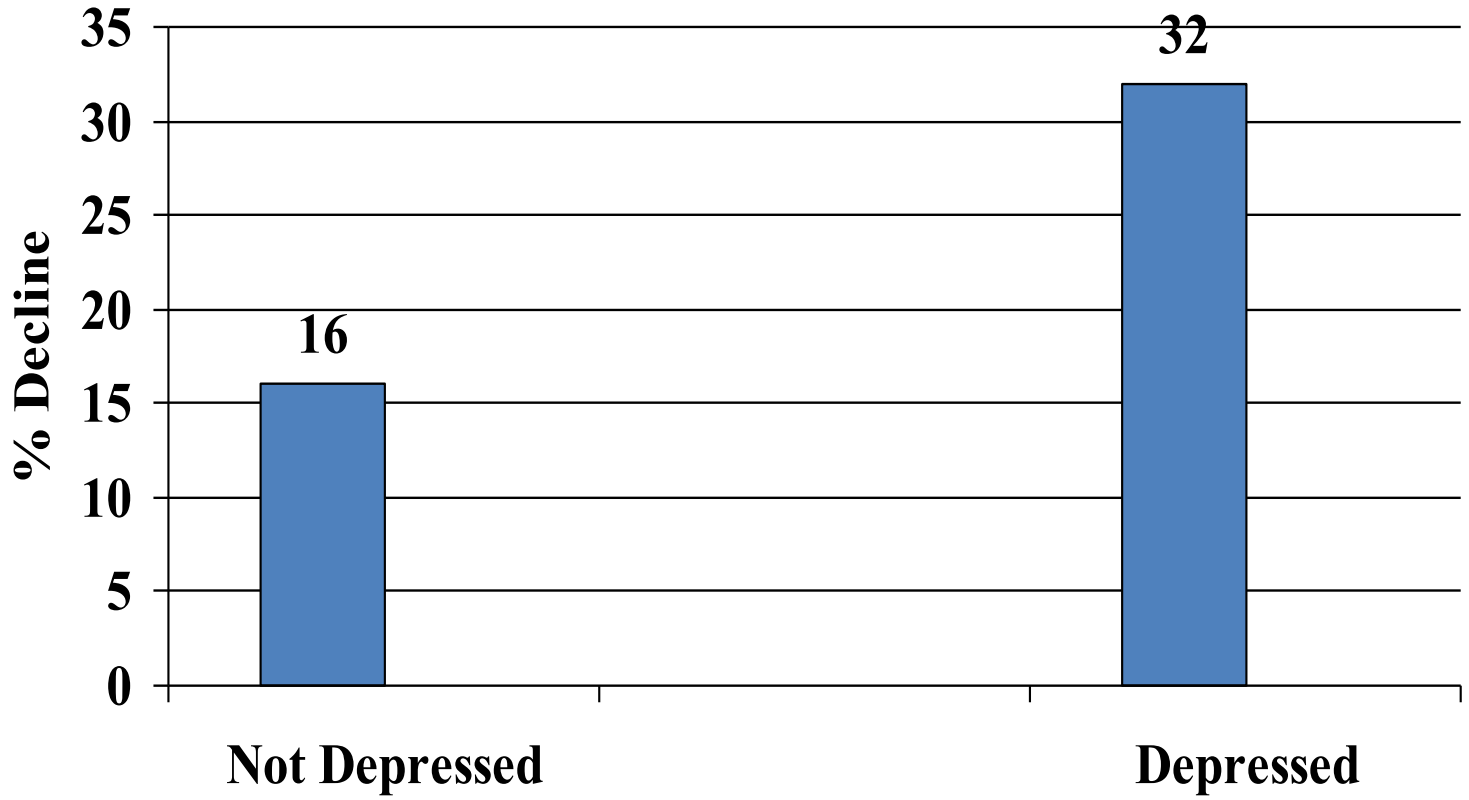
A Case Study of Disability

- Humpty Dumpty sat on a wall
- Humpty Dumpty had a small fall
- All the King's horses and all the King's men could not put Humpty Dumpty back together again

Two Disability Pathways in Older Persons

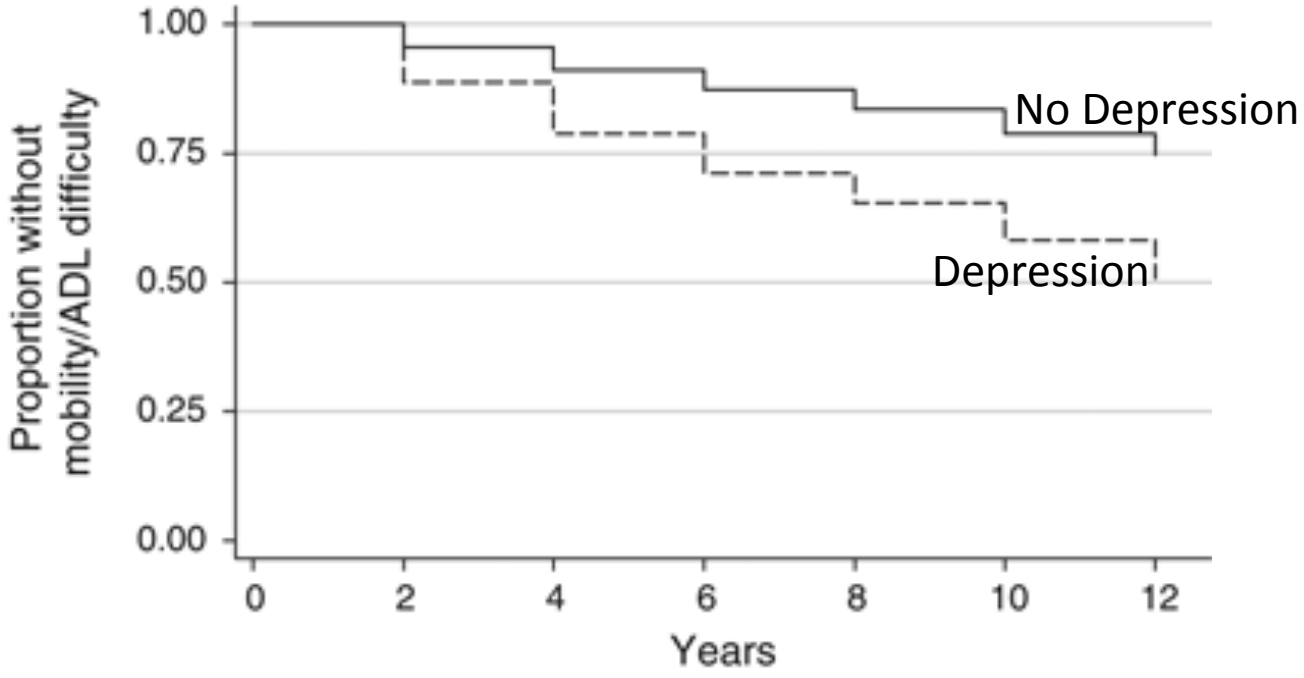
- Catastrophic (sudden): 20%
- Insidious (very slow): 80%
- Insidious disability:
  - Slow accumulation of deficits that progressively increase VULNERABILITY and risk for disability
  - PRECIPITATING EVENT (often minor) that results in loss of independent functioning
  - VULNERABILITY + PRECIPITATING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

Depressed Patients Develop ADL Disability When Hospitalized

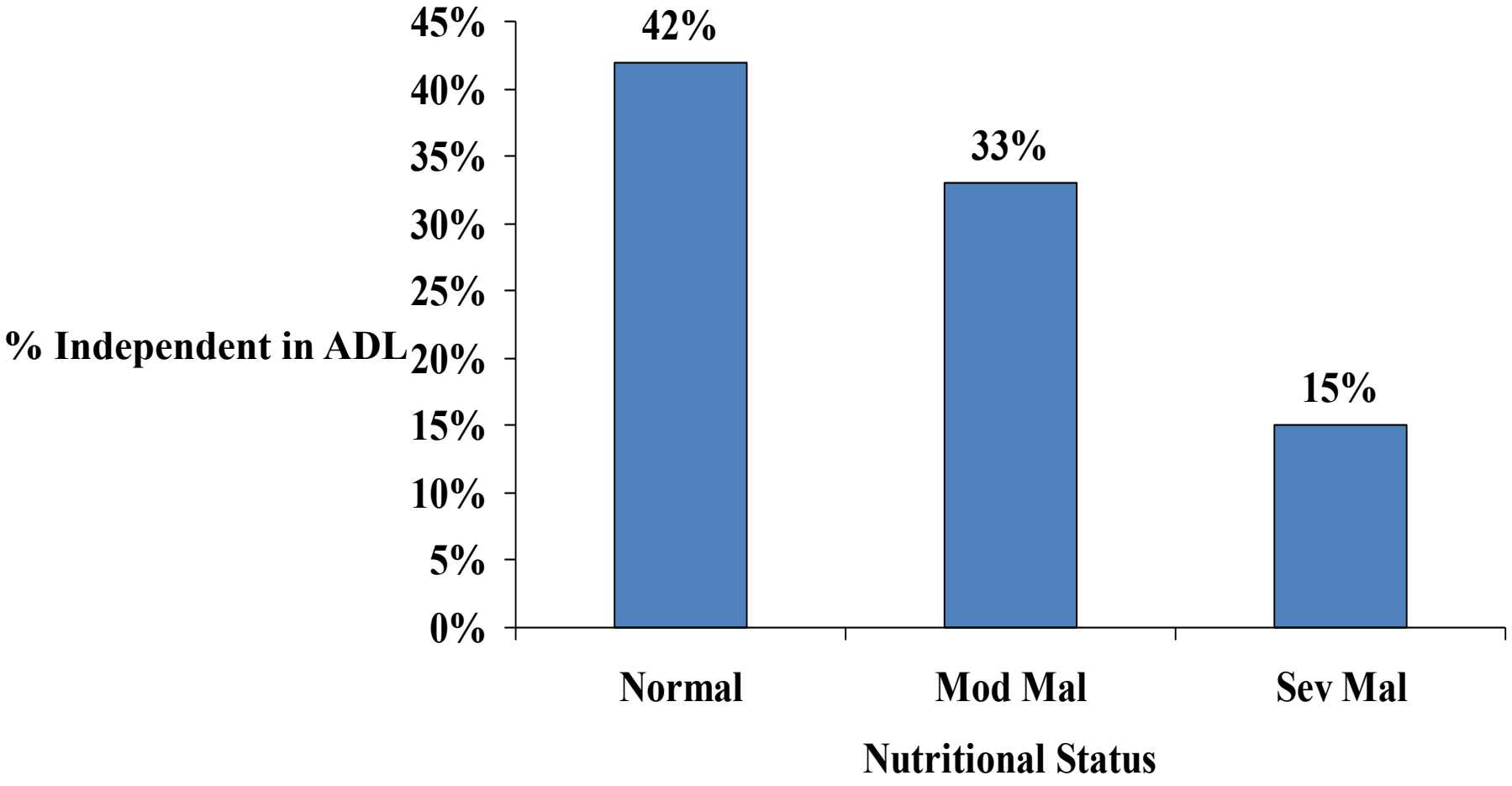


Covinsky KE;Ann Intern Med;1997:417

Depression Leads to Earlier Onset of Disability



Nutritional Status at Admission Predicts ADL Independence 1 Year Later



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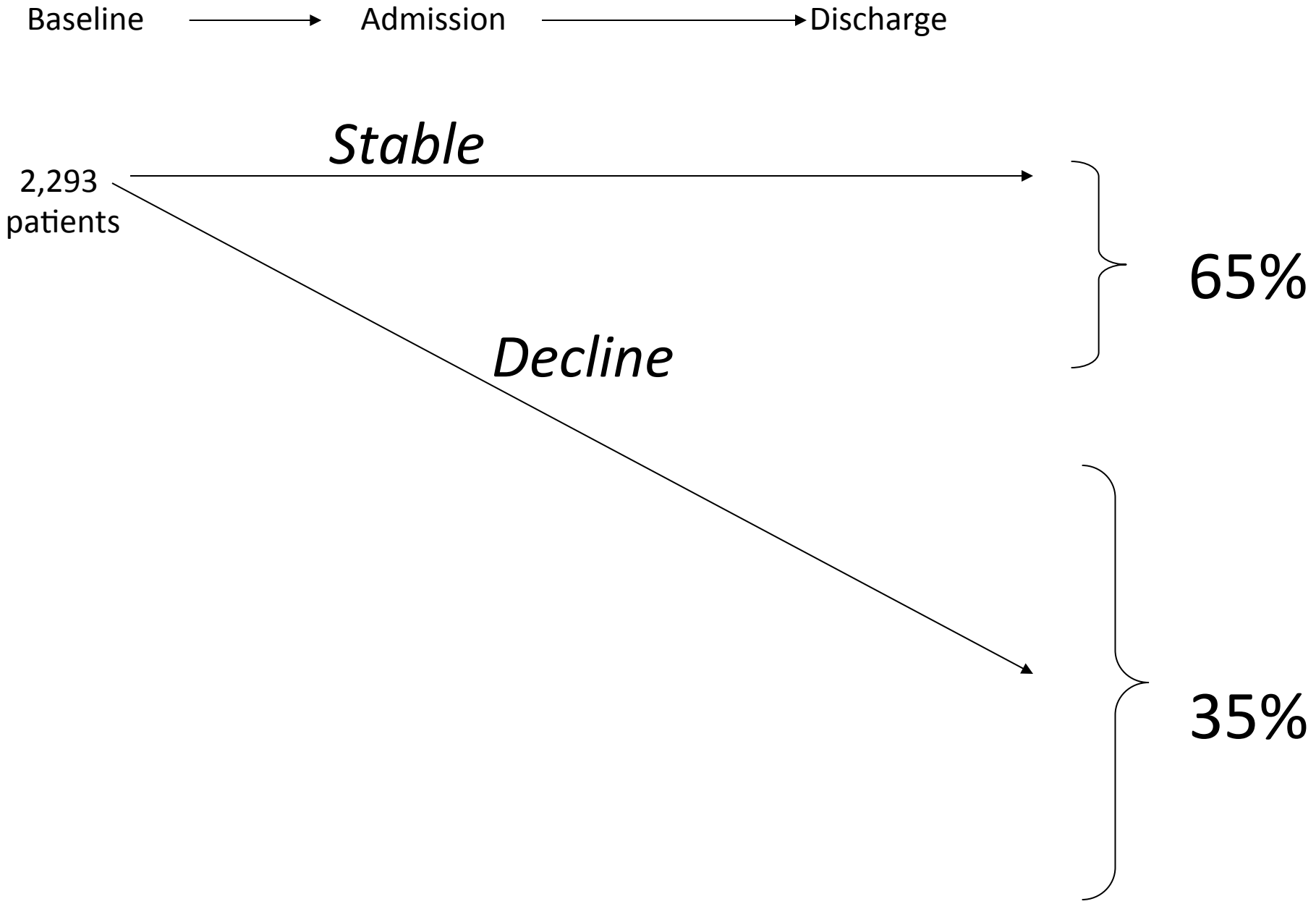
Covinsky KE;J Am Geriatr Soc;1999:532

It's Not Good to Be Poor: Poor Elders Become Poor and Disabled

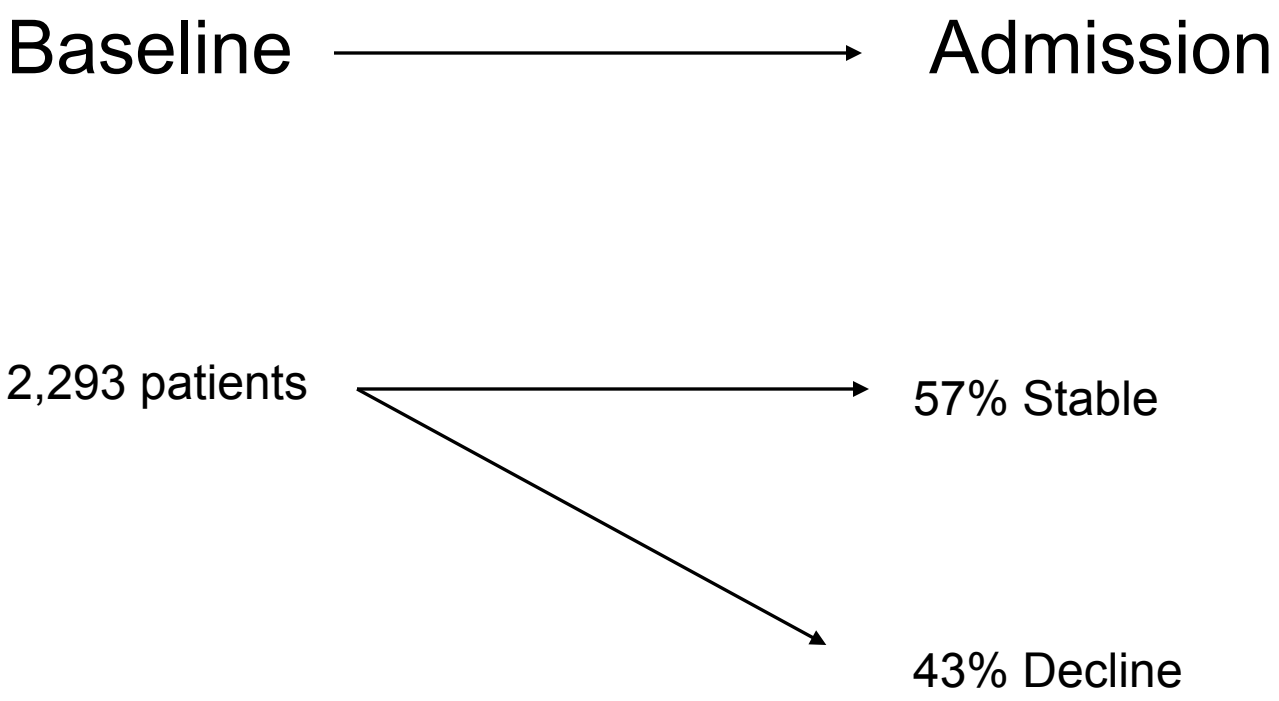
- Do you have enough money to pay for:
  - Food, bills, small emergencies, large emergencies, medicines, medical bills
- Rate of worsening ADL disability after discharge
  - No financial disability (0 unmet needs): 15%
  - Moderate financial disability (1-2 needs): 20%
  - Severe financial disability (≥ 3 needs): 25%

Li A;JGIM;2005;575



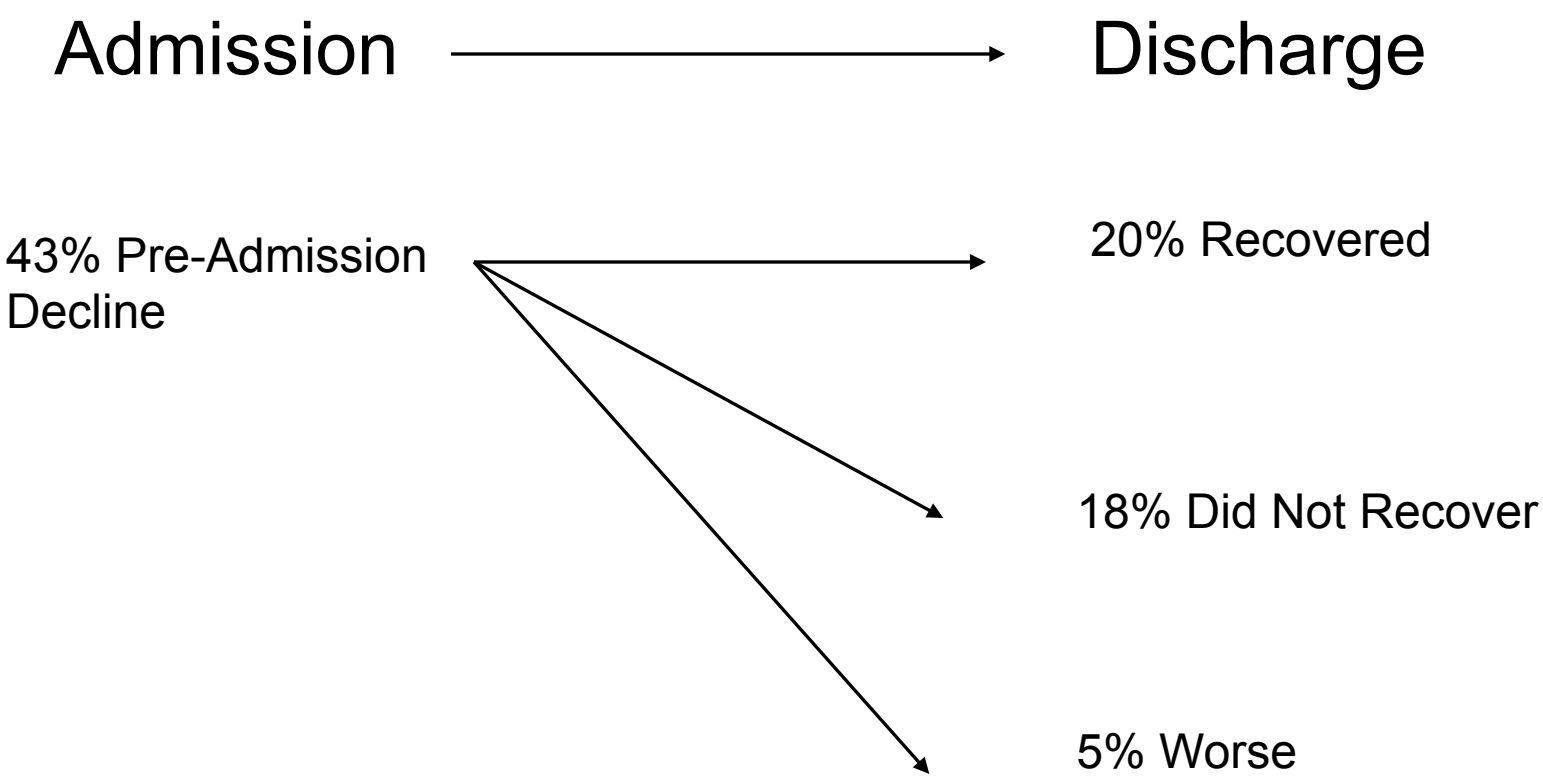
Covinsky KE; JAGS; 2003;51:451

ADL Decline from Baseline to Admission



Covinsky KE; JAGS; 2003;51:451

ADL Change Admission to Discharge



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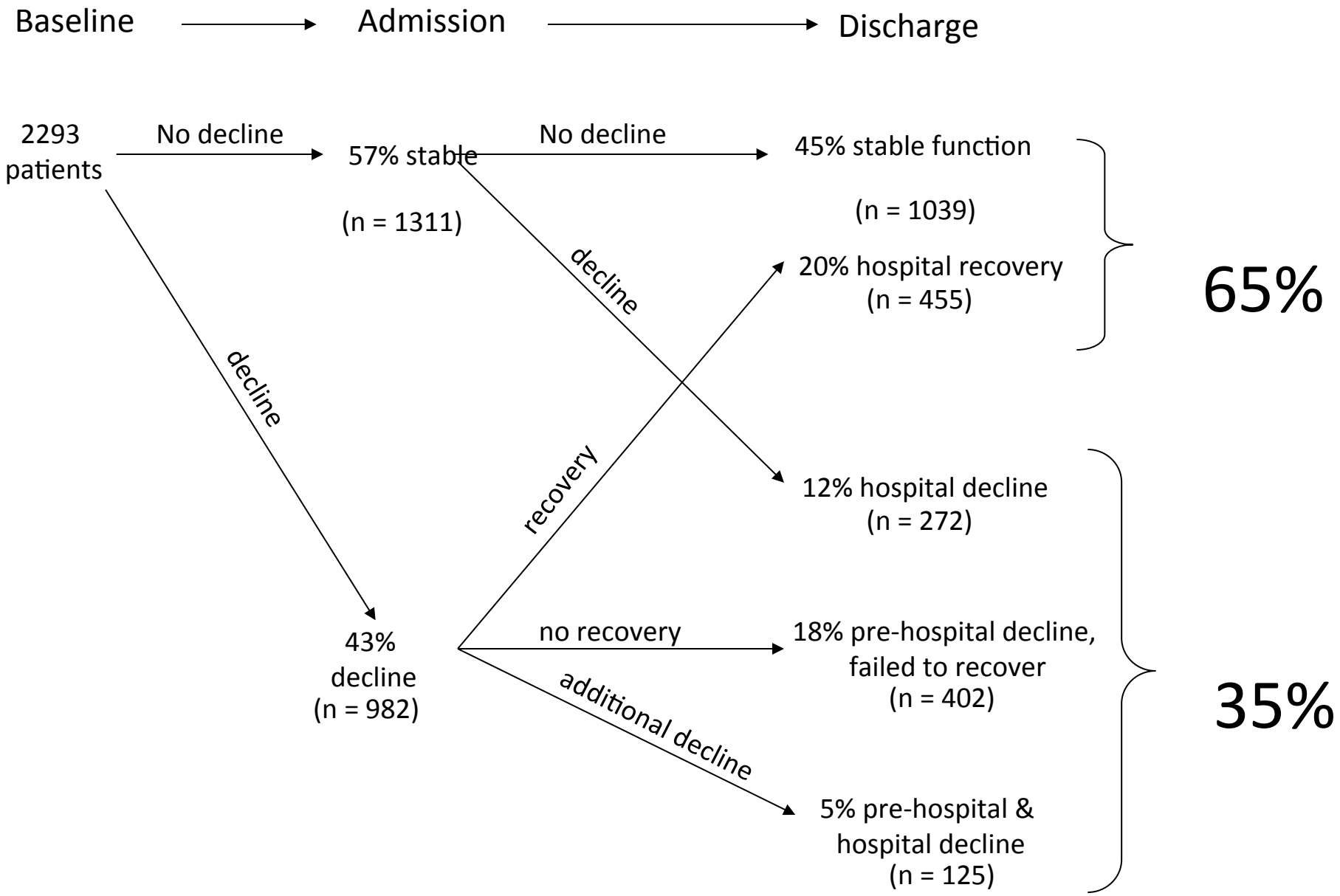
Baseline
Admission
Discharge
2293 patients
No decline
57% stable
(n = 1311)
No decline
45% stable function
(n = 1039)
decline
20% hospital recovery
(n = 455)
65%
decline
recovery
12% hospital decline
(n = 272)
43% decline
(n = 982)
no recovery
18% pre-hospital decline, failed to recover
(n = 402)
additional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

Risk of Hospital ADL Decline Increases Dramatically with Age

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

Covinsky KE; JAGS; 2003;51:451

Hospital Acquired Disability is Bad. Really Bad.

- 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

Hospitalization Associated Disability

- At least one third of hospitalized patients are discharged with worse than baseline ADL function
- May not all be related to acute illness
- Hospital processes that may exacerbate functional decline
  - Bed rest
  - Starvation
  - Delirium (drugs, metabolic disturbances, sleep disruption)

Hospitalized Patients are Put to Bed and Stay There

- Accelerometers worn by 45 older patients at Birmingham VA
  - 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

Can Functional Decline Be Prevented?

- Acute Care for Elders Units (ACE Unit)
  - Redesigned system of hospital care
  - Goal: Reduce rate of functional decline in elderly
  - Fits hospital to elderly rather than fit elderly to hospitals

Components of ACE intervention

- Prepared Environment
  - Carpeting, large clocks, elevated toilet seats
- Patient Centered Care
  - Daily assessment of functional status
  - Protocols (self-care, nutrition, mobility)
  - Daily rounds by multidisciplinary team
- Planning to go home
- Medical care review

Effects of ACE Unit Intervention

- Reduced rate of disability at discharge by 33%
- Reduced discharges to nursing homes by 30%
- Reduced average length of stay (0.5 days)
- 67% reduction in restraint use
- Greater satisfaction with care among patients, nurses, physicians

Landefeld CS: NEJM;1995:1338
Counsell SR:JAGS;2000:1572

General Principles

- Disability is typical of many geriatric syndromes
- No single etiology
  - Accumulating risk factors (vulnerability)
  - Precipitating event “pushes over the edge”