GERIATRICS JOURNAL CLUB

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Article

- "Risk Factors and Precipitants of Long-Term Disability in Community Mobility."
- Gill et al.
- Annals of Internal Mediicne 2012;156:131-140.

Background

- Older adults who lose independent mobility:
  - Less likely to remain in the community
  - Higher rates of morbidity, mortality, and self-care disability
  - Experience poorer quality of life- depression, social isolation

Background

- In 2004, mobility disability among Medicare beneficiaries led to:
  - >$42 billion in additional health care costs
  - > 2 million additional hospitalizations

Background

- Relatively little is known about why older persons develop long-term disability in community mobility

- Examples from clinical practice

Objective

- To identify the risk factors & precipitants for the development of long-term disability in walking a quarter mile & driving a car.

Methods

- Design: Prospective cohort study from March 1998 to December 2009
- Setting: Greater New Haven, CT
- Participants: 641 persons, age 70 and above, who were active drivers or nondisabled in walking ¼ mile.
- Oversampled physically frail individuals

Study Population

- Members of "Precipitating Events Project"
  - Longitudinal study
  - 754 community dwellers
  - 70 yrs or older
  - Not disabled at baseline in 4 ADL's
    - Bathing, dressing, walking inside the house (?), transferring from a chair.

Study Population (cont.)

- Exclusion criteria
  - Significant cognitive impairment w/ no available proxy
  - Inability to speak English
  - Diagnosis of terminal illness
  - Relocating out of New Haven

- See Appendix Figure 1 for assembly of cohort

  (Excluded 1170 for low probability of physical frailty?)

Data collection

- Candidate risk factors: collected during home-based assessments, every 18 months (nurse) x 9 yrs
- Data on potential precipitants: monthly telephone interviews (separate researchers, median 118 months)
- Community mobility data: monthly telephone interviews (separate researchers, median 118 months)

Data collection (cont.)

- 418 (55.4%) died after median follow-up 71 months
- 35 (4.6%) dropped out after median follow-up of 24 months
- "Data were otherwise available…" (see pg 132)

Candidate Risk Factors

- Demographic & 4 additional domains:
  - Health-related factors
  - Cognitive or psychosocial
  - Behavioral
  - Physical capacity (including modified Short Physical Performance Battery, SPPB)

Potential Precipitants

- Intervening illnesses or injuries that led to either hospitalization or restricted activity

------ or-------

- Two questions related to restricted activity ("to ascertain less-potent intervening events…")

  [Restricted activity= staying in bed for at least half a day or cutting down on activities because of an illness or injury]

Community Mobility

- Disability in walking:
  - Need help from another person to walk ¼ mile
- Disability in driving:
  - Not driving a car in the past month
- Disability lasting 6 or more consecutive months was considered long-term

Statistical analysis

- Accounting for missing data
- Paragraph 2?
- Censoring – at time of death, or last completed interview
- Absolute risk difference???

Results

- Walking Subgroup
  - Median follow-up 45 months
  - 18.1% died without long-term disability

  - Median follow-up 44 months
  - 56% developed long-term walking disability

Results

- Driving Subgroup
  - Median follow-up 51.5 months
  - 19.3% died without long-term disability

  - Median follow-up 54 months
  - 53.1% developed long-term driving disability

Results – Table I

- Bivariate associations of risk factors with disability
- Strongest association for SPPB score <7
- Other factors achieving hazard ratio ≥3:
  - Age 85 or older, low functional self-efficacy, physical activity, manual dexterity, and gross motor coordination.

Results – Table II

- Exposure both to hospitalization & restricted activity was considerably greater among participants who developed either of the mobility outcomes.

- Exposure to restricted activity at least 3 x greater than exposure to hospitalization.

Results – Table III

- Multivariate results for risk factors & precipitants associated with long-term disability.

Results – Table III

- 7 risk factors indep assoc w/ walking disability:

  age, female, chronic conditions, cognitive impairment, low functional self-efficacy, low physical activity, low or intermed SPPB scores.

- 8 factors indep assoc w/ driving disability:

  age, female, visual impairment, weight loss, cognitive impairment, low physical activity, low SPPB score, slower gross motor coordination.

- *Largest hazard ratios: AGE, SPPB Scores. Precipitants also had large effects on disability.*

Figures 1 & 2

- The largest differences in absolute risk were generally observed in participants with a specific risk factor who were subsequently hospitalized.

Six Discussion Points

- Over nearly 12 years, more than ½ developed long-term disability
- Older age & lower SPPB scores most strongly associated w/ disability
- Many other risk factors indep associated (potentially modifiable?)

Six Discussion Points

- The precipitants (esp hospitalization) had stronger associations than the risk factors with both mobility outcomes
- The associations btwn risk factors & precipitants and subsequently disability differed only modestly btwn walking & driving
- Likelihood of disability was highest for persons with a specific risk factor, who were subsequently hospitalized.

Concluding Points

- "By enhancing our understanding of community mobility, these findings can help to identify older persons at high risk for long-term mobility disability, and they suggest potential targets for interventions to maintain independent mobility in the community."

- Potentially modifiable (per the authors): cognitive impairment, low physical activity, and poor physical performance (low SPPB)

Strengths

- Unique in focus on long-term disability in community mobility
- Long duration of follow-up
- Assessed a multitude of risk factors

Limitations

- Observational design, cannot determine causality
- Lack of data on severity of illnesses leading to hospitalization, complications, LOS
- Could not distinguish emergent from elective hospitalization
- Generalizability? (Over-sampled slow gait speed)

In A Nutshell:

- Several risk factors associated with risk of disability (Age, lower extrem weakness the worst)
- Hospitalization is bad, and restricted activity is too
- This doesn't change my practice… but is nice to have some #s to support what we already know…
- Your thoughts?