

An operational definition of frailty predicted death, hip fracture, and hospitalization in older women

Fugate Woods N, LaCroix AZ, Gray SL, et al. **Frailty: emergence and consequences in women aged 65 and older in the Women's Health Initiative Observational Study.** *J Am Geriatr Soc.* 2005;53:1321-30.

Clinical impact ratings: GIM/FP/GP ★★★★★☆☆ Geriatrics ★★★★★☆☆

QUESTION

In older women, does frailty, defined by a combination of 5 simple measures, predict death, hip fracture, and hospitalization?

METHODS

Design: Prospective cohort study.

Setting: 40 clinical centers in the United States.

Participants: 40 657 women 65 to 79 years of age who did not have Parkinson disease and did not take medication for Parkinson disease or depression and were expected to survive and live in the same area for ≥ 3 years.

Risk factors: Frailty, defined as having ≥ 3 of 5 frailty components: muscle weakness and slow walking speed (score < 75 out of 100 on the RAND-36 physical function scale, counts as 2 components), exhaustion (score < 55 out of 100 on the RAND-36 vitality scale), low physical activity (Kcal of weekly energy expenditure in the lowest quartile, calculated from a detailed physical activity questionnaire), or unintentional weight loss ($> 5\%$ of body weight in the previous 2 y).

Outcomes: Death, hip fracture, and overnight hospitalization during the follow-up period.

MAIN RESULTS

At baseline, 16% of women were considered to be frail and 28% to be intermediate (1 or 2 frailty components). At 3 years, frailty had developed in 15% of women with < 3 frailty components at baseline. Frailty at baseline increased risk for death, hip fracture, and hospitalization during the mean 5.9 years of follow-up (Table). Intermediate frailty was also a predictor of these outcomes, to a lesser extent (Table).

CONCLUSION

In older women, the operational definition of frailty was associated with increased risk for death, hip fracture, and hospitalization.

Source of funding: National Heart, Lung and Blood Institute.

For correspondence: Dr. N. Fugate Woods, University of Washington School of Nursing, Seattle, WA, USA. E-mail nfwoods@u.washington.edu. ■

Association between frailty (≥ 3 frailty components) or intermediate frailty (1 or 2 frailty components) at baseline and adverse outcomes in older women at mean 5.9 years*

Outcomes	Frailty	Intermediate frailty
	Adjusted hazard ratio (95% CI)	
Death	1.7 (1.5 to 2.0)	1.3 (1.1 to 1.4)
Hip fracture	1.6 (1.1 to 2.2)	1.3 (1.0 to 1.7)
Adjusted odds ratio (CI)		
Hospitalizations		
< 0.5/y	1.4 (1.3 to 1.6)	1.2 (1.1 to 1.3)
$\geq 0.5/y$	2.0 (1.7 to 2.2)	1.3 (1.2 to 1.5)

*CI defined in Glossary. Hazard ratios based on Cox proportional hazards models and odds ratios based on logistic regression models, adjusted for age, ethnicity, income, education, baseline health risk factors, disability, and comorbid conditions.

COMMENTARY

Current operational definitions propose indicators to measure frailty (1), using clinical judgment on additional items (2) and including standard geriatric assessment components (3). The study by Fugate Woods and colleagues enrolled the largest sample examining frailty to date, included many health and demographic characteristics, and had lengthy follow-up on relevant outcomes. The results were consistent with previous work in older men and women in the Cardiovascular Health Study (CHS) (1). The 2 studies showed similar magnitude of hazard ratios.

The ideal frailty measure identifies women not already overtly disabled but at risk for serious outcomes. Thus, the study by Fugate Woods and colleagues is close to the ideal, as only 6% of frail women reported activity of daily living disabilities compared with 27% of women in the CHS study (1). A potential confounder was the inability to assess or correct for cognitive impairment. However, the baseline population of the Women's Health Initiative hormone trial had few cognitively impaired women.

Reaching a consensus on frailty indicators is critical because of rapid growth of the elderly population and the associated increase in persons at risk for frailty, chronic conditions, and disability. While more research

is needed in measuring and aggregating frailty components and discerning increased risk levels of frailty, the strong evidence reported here deserves translation into clinical practice. These frailty indicators should be integrated into comprehensive care for older women.

*Rosalyn Correa-de-Araujo, MD, MSc, PhD
Agency for Healthcare Research and Quality
Rockville, Maryland, USA*

References

1. Fried LP, Tangen CM, Walston J, et al. Frailty in older adults: evidence for a phenotype. *J Gerontol A Biol Sci Med Sci.* 2001;56:M146-56.
2. Studenski S, Hayes RP, Leibowitz RQ, et al. Clinical Global Impression of Change in Physical Frailty: development of a measure based on clinical judgment. *J Am Geriatr Soc.* 2004;52:1560-6.
3. Jones DM, Song X, Rockwood K. Operationalizing a frailty index from a standardized comprehensive geriatric assessment. *J Am Geriatr Soc.* 2004; 52:1929-33.

The views expressed in this article are those of the author and do not necessarily represent the views of the Agency for Healthcare Research and Quality or the U.S. Federal government.