

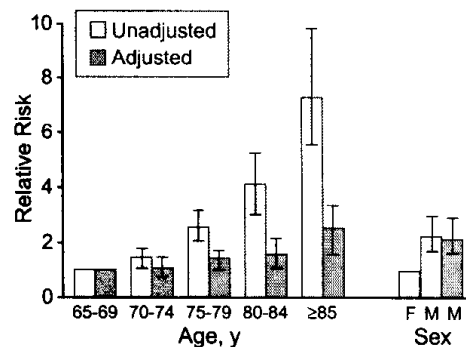
Risk Factors for 5-Year Mortality in Older Adults

The Cardiovascular Health Study

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ABSTRACT **Context.**— Multiple factors contribute to mortality in older adults, but the extent to which subclinical disease and other factors contribute independently to mortality risk is not known. **Objective.**— To determine the disease, functional, and personal characteristics that jointly predict mortality in community-dwelling men and women aged 65 years or older. **Design.**— Prospective population-based cohort study with 5 years of follow-up and a validation cohort of African Americans with 4.25-year follow-up. **Setting.**— Four US communities. **Participants.**— A total of 5201 and 685 men and women aged 65 years or older in the original and African American cohorts, respectively. **Main Outcome Measures.**— Five-year mortality. **Results.**— In the main cohort, 646 deaths (12%) occurred within 5 years. Using Cox proportional hazards models, 20 characteristics (of 78 assessed) were each significantly ($P < .05$) and independently associated with mortality: increasing age, male sex, income less than \$50000 per year, low weight, lack of moderate or vigorous exercise, smoking for more than 50 pack-years, high brachial (>169 mm Hg) and low tibial (127 mm Hg) systolic blood pressure, diuretic use by those without hypertension or congestive heart failure, elevated fasting glucose level (>7.2 mmol/L [130 mg/dL]), low albumin

level (37 g/L), elevated creatinine level (106 μ mol/L [1.2 mg/dL]), low forced vital capacity (2.06 mL), aortic stenosis (moderate or severe) and abnormal left ventricular ejection fraction (by echocardiography), major electrocardiographic abnormality, stenosis of internal carotid artery (by ultrasound), congestive heart failure, difficulty in any instrumental activity of daily living, and low cognitive function by Digit Symbol Substitution test score. Neither high-density lipoprotein cholesterol nor low-density lipoprotein cholesterol was associated with mortality. After adjustment for other factors, the association between age and mortality diminished, but the reduction in mortality with female sex persisted. Finally, the risk of mortality was validated in the second cohort; quintiles of risk ranged from 2% to 39% and 0% to 26% for the 2 cohorts. **Conclusions.**— Objective measures of subclinical disease and disease severity were independent and joint predictors of 5-year mortality in older adults, along with male sex, relative poverty, physical activity, smoking, indicators of frailty, and disability. Except for history of congestive heart failure, objective, quantitative measures of disease were better predictors of mortality than was clinical history of disease. *JAMA.* 1998;279:585-592.



Association of age and sex with 5-year mortality in older adults, both with and without adjustment for other variables. Male sex remained associated with substantial mortality risk, compared with females, while age became less strongly associated with mortality, after adjustment for other demographic, disease, function, and behavioral characteristics. The height of the bars indicates the relative risk for each category.



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