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Primary prevention: Do the very elderly require a different approach?

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ABSTRACT

Recent cardiovascular prevention guidelines place a greater emphasis on randomized placebo-controlled trial data as the basis for recommendations. While such trial data are sparse for people over the age of 75 or 80 years, data demonstrate altered risk–benefit relationships in these older patients. Primary prevention strategy decisions should consider estimated life expectancy and overall function as well as cardiovascular event risks, magnitude and time to benefit or harm, potentially altered adverse effect profiles, and informed patient preferences. Data support treatment of systolic hypertension to reduce stroke, cardiovascular events, and dementia in older patients with at least a 2-year estimated lifespan with modifications in systolic blood pressure goals and a need for greater attention to non-cardiovascular side effects such as falls in the very old. Lowering of elevated cholesterol levels with HMG-CoA reductase inhibitors for primary prevention in people over the age of 75 years requires greater individual considerations, as benefits may not accrue for 3–5 years and there is the potential impact of adverse effects. There is a rationale for lipid-lowering treatment in the more highly functional older patient with cardiovascular (especially stroke) risk higher than side effect risks in the near term and with an estimated lifespan longer than the time to benefit. Aspirin has higher side effect risks and requires a longer time to achieve benefit. Trial data are lacking on exercise interventions, but multi-system benefits have been shown in older patients such that exercise should be part of a preventive regimen. Preventive therapy in the very old means considering not only medical issues of co-morbidities, polypharmacy, and altered risk–benefit relationship of medications but also adjusting goals and approaches across the older agespan in keeping with informed patient preferences.

Introduction

High morbidity and mortality from cardiovascular disease warrant approaches to prevention and treatment that are effective in older people. Most data from gold standard highest level of evidence on cardiovascular disease prevention in the "elderly" have been collected from people 60–74 years of age, with women and minorities being underrepresented. Despite physiologic variability in people of the same chronologic age, on average, a 65-year-old individual differs significantly from an 80-year-old individual. People aged 65–75 years are "younger" elderly who usually do not display the multiple medical co-morbidities or frailty or difficulty with activities of daily living or dementia, which become much more common after the age of 75 or 80 years. It is not a foregone conclusion that preventive interventions will have the same desired or unwanted effects in all people over the age of 65 years. When contemplating strategies to

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prevent cardiovascular disease in older people, it is important to consider both likelihoods of benefit as well as harm within the lifespan and functioning of the person and also to incorporate individual preferences for care and risks of interventions. The purpose of this review is to present the existing clinical trial data and guidelines on treatment of systolic hypertension and elevated cholesterol for cardiovascular disease prevention in the elderly as well as data on exercise and aspirin and to provide a perspective for decision-making for areas in which data are limited or non-existent.

Lifespan considerations

In the U.S., the "average" 75-year-old man has a life expectancy of slightly over 10 years, 6 years at the age of 85 years and 4 years at the age of 90 years. The "average" 75-year-old woman's life expectancy is about 12 years and decreases to about 7 years at the age of 85 years and to 5 years at the age of 90 years. It is important, however, to recognize that the average represents only a small fraction of the population. In developed countries, most people in their 60s and early 70s are still fit, active, and able to care for themselves while those older than 75 or 80 years have increasing prevalence of frailty; limitations in the ability to independently perform activities of daily living [bathing and showering, dressing, eating/feeding (including chewing and swallowing), functional mobility (moving from one place to another while performing activities), and personal hygiene and grooming (including brushing/combing/styling hair), and toilet hygiene]; and have multiple chronic conditions and cognitive impairment. Gerontologists variably define older age sub-groups to identify younger old (60–69 years or 65–74 years), middle-old (70–79 years or 75–84 years), and very old (over 80 or 85 years of age) to reflect these physiologic changes. Cardiologists and other clinicians often simplify older age classifications to 2 groups—younger old as those up to the age of 75–80 years and very old as those over the age of 80 years.

Non-cardiovascular causes of death or risk factors for death become more important at older ages, and quality of life and functional independence assume more importance. In fact, everyday functional capacity is a major determinant of estimated life expectancy in the very old, while traditional cardiovascular risk factors are not [1,2]. Logically, cardiovascular event risk calculators for 10 year or longer projections then have less of a role in decision-making for patients over the age of 75–80 years than in younger people.

Figure 1 illustrates the relationships between life expectancy and chronic co-morbid illnesses, heart failure, or impairment in mobility or activities of daily living in data collected from 2 representative samples of older men and women living in the U.S. [3,4]. It demonstrates the wide variation from average life expectancy. In addition to showing the impact of increasing medical co-morbidities or heart failure, it also demonstrates

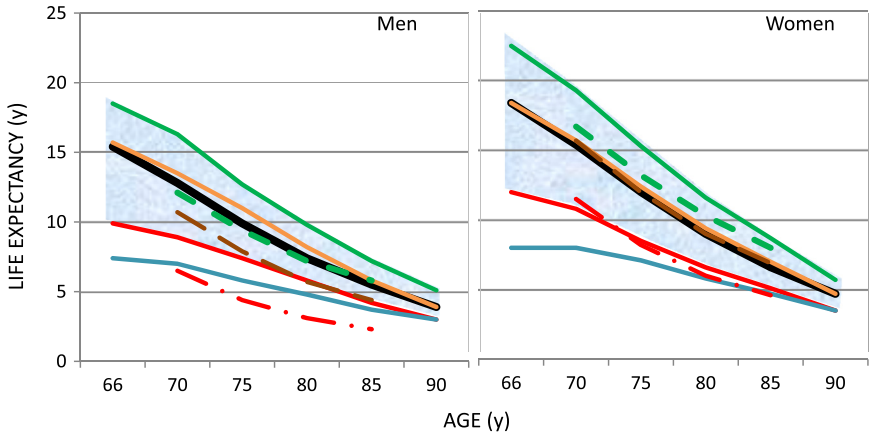

Fig. 1 – Life expectancy estimates for older persons are shown by sex, co-morbidity, and functional status. Average life expectancy is represented by the solid black line. Data based on co-morbid status and for heart failure are from a sample of the Medicare population recently reported by Cho et al. [3]. Low/medium co-morbidity conditions were history of MI, ulcer, acute MI, rheumatologic disease, peripheral artery disease, diabetes, paralysis, and cerebrovascular disease; high co-morbidity conditions were chronic obstructive pulmonary disease, heart failure, moderate/severe liver disease, chronic renal failure, dementia, cirrhosis/chronic hepatitis, and AIDS. The shaded area represents the range of co-morbid conditions (no co-morbid conditions are represented by the green solid line; medium to low co-morbidity by the orange line, and high co-morbid health status represented by the solid red line). Heart failure data are represented by the solid blue line. Data based on functional status are from the Established Populations for Epidemiologic Studies of the Elderly as reported by Keeler et al. [4], ADL = activities of daily living, which include bathing and showering, dressing, eating/feeding (including chewing and swallowing), functional mobility (moving from one place to another while performing activities), personal hygiene and grooming (including brushing/combing/styling hair), and toilet hygiene; mobility impaired was defined as inability to walk half a mile and/or walk up a flight of stairs without help. Total independent status is represented by the green dashed line, mobility impairment by the brown dashed line, and ADL impairment by the red dashed line. Life expectancy declines as age increases but varies by sex, co-morbidities, and functional status. Life expectancy is shortest in those with heart failure and in those with impairment in ADLs and longest in those without co-morbidities who function independently.