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Article

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Is Relationship Between Serum Cholesterol and Risk of Premature Death From Coronary Heart Disease Continuous and Graded? Findings in 356 222 Primary Screenees of the Multiple Risk Factor Intervention Trial (MRFIT)

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Full Text

Abstract

The 356,222 men aged 35 to 57 years, who were free of a history of hospitalization for any cause were identified from the U.S. military draft registry. They were examined by trained nurses for risk factors for coronary artery disease, and 356,222 (99.9%) of the men had their cholesterol levels measured and serum samples saved. The men were free of any known coronary heart disease at the time of their examination and were followed for 10 years to determine if they died of coronary heart disease. The multiple risk factor intervention trial (MRFIT) is the first study to determine the relative risk of coronary heart disease attributable to serum cholesterol level.
The 356,222 men aged 35 to 57 years, who were free of a history of hospitalization for myocardial infarction, screened by the Multiple Risk Factor Intervention Trial (MRFIT) in its recruitment effort, constitute the largest cohort with standardized serum cholesterol measurements and long-term mortality follow-up. For each five-year age group, the relationship between serum cholesterol and coronary heart disease (CHD) death rate was continuous, graded, and strong. For the entire group aged 35 to 57 years at entry, the age-adjusted risks of CHD death in cholesterol quintiles 2 through 5 (182 to 202, 203 to 220, 221 to 244, and ≥245 mg/dL [4.71 to 5.22, 5.25 to 5.69, 5.72 to 6.31, and ≥6.34 mmol/L]) relative to the lowest quintile were 1.29, 1.73, 2.21, and 3.42. Of all CHD deaths, 46% were estimated to be excess deaths attributable to serum cholesterol levels 180 mg/dL or greater (≥4.65 mmol/L), with almost half the excess deaths in serum cholesterol quintiles 2 through 4. The pattern of a continuous, graded, strong relationship between serum cholesterol and six-year age-adjusted CHD death rate prevailed for nonhypertensive nonsmokers, nonhypertensive smokers, hypertensive nonsmokers, and hypertensive smokers. These data of high precision show that the relationship between serum cholesterol and CHD is not a threshold one, with increased risk confined to the two highest quintiles, but rather is a continuously graded one that powerfully affects risk for the great majority of middle-aged American men.

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