

Heart disease is the most common cause of death among elderly Americans, killing 2.5 percent of American men and 1.9 percent of American women aged 65 and over in 1984 (121). Prolonged hyperlipidemia, or elevated levels of lipids (fats) in the blood,<sup>1</sup> has long been thought to contribute to the risk of heart disease. Biological, epidemiological, pathological, and clinical evidence has shown that the most important form of hyperlipidemia, hypercholesterolemia (elevation of the blood cholesterol level), is an important risk factor for coronary heart disease (CHD), the leading form of heart disease in adults. hypercholesterolemia is thought to result in CHD by causing atherosclerosis (the accumulation of fat deposits in blood vessels) in the arteries supplying blood to the heart. Atherosclerosis can affect other organs as well, leading to severe limb pain, gangrene, kidney failure, and strokes. Interest in cholesterol screening has sprung from the hope that the detection and treatment of hypercholesterolemia will help avert the pain, suffering, and mortality of these diseases.

Several randomized controlled trials conducted in the past decade have shown that treatment of hypercholesterolemia can diminish the incidence of CHD and reduce the number of cardiovascular deaths. At the same time, inexpensive tests have become available for measuring the cholesterol level in blood serum. The trend toward identifying and treating hypercholesterolemia has culminated in the report of the National Cholesterol Education Program (NCEP), an expert consensus group, which has recommended that all Americans 20 years of age and over be screened for hypercholesterolemia at least once every 5 years. Treat-

ment should be determined according to the cholesterol level and the presence of other risk factors (16). Public awareness of cholesterol as a risk factor for cardiac disease has increased in the wake of concerted educational campaigns of the National Institutes of Health, the American Heart Association, and others. Interest in screening for hypercholesterolemia is at an all-time high, at least among the medical profession (105).

Most of the evidence about cholesterol as a risk factor and about the treatment of hypercholesterolemia has been obtained from populations of middle-aged men. The elderly may be different. Medications often have more severe and frequent side-effects in the elderly (95,101). Many of the elderly metabolize some drugs more slowly than younger people; they may take more medications, risking adverse drug interactions; and they are particularly likely to suffer from multiple illnesses that affect their ability to tolerate medications. Because of these and other factors, the benefits and risks of cholesterol reduction in elderly men and women may be different from those of middle-aged men.

This paper addresses two questions: (1) will cholesterol screening improve the health of asymptomatic elderly Americans? and (2) what are the implications of cholesterol screening and treatment in the elderly for health care expenditures? The population considered in this paper excludes individuals who have clinical evidence of diabetes mellitus or heart disease. Heart disease includes the presence of angina pectoris (brief episodes of chest pain caused by narrowing or blockages of the coronary arteries), a previous myocardial infarction (heart attack), arrhythmia (disturbances of the heart rhythm), congestive heart failure, or hypertension (high blood pressure). Such individuals, whose conditions put them at high risk of heart attack and death, should be under the treatment of physicians and are likely to be taking

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<sup>1</sup> Fats present in the blood are usually combined with proteins to form "lipoproteins." Because the disorders considered in this document are characterized by excess lipoproteins, some authors use the term "hyperlipoproteinemia" rather than "hyperlipidemia."

medications that affect their cholesterol level. Cholesterol determinations may be important in these individuals for the purpose of monitoring rather than the detection of a risk factor. A discussion of this use of cholesterol testing is beyond the scope of this paper.

Although this paper emphasizes the effects of cholesterol on mortality, it also discusses its role in causing symptoms and diseases that result in hospitalization. The argument in favor of cholesterol screening rests upon the following premises: First, the risk factor it detects is important because it is

common. Second, the cholesterol test identifies a group of individuals at excess risk of a serious disease. Third, treatment of hypercholesterolemia is more effective in reducing overall mortality and morbidity if initiated before it causes symptoms. After critically examining these premises, the paper turns to evidence about the current utilization of cholesterol assays among Medicare recipients to discover whether liberalized reimbursement policies would increase participation in cholesterol screening programs. Finally, it addresses the implications of such changes for national health care expenditures.