Coronary heart disease (CHD) is a chronic, progressive disease widely prevalent in industrial societies, including the United States. More than 3,400 Americans suffer myocardial infarctions each day, incurring an annual estimated economic cost of $60 billion. A first step in the prevention of this disease has been the identification of characteristics, or risk factors, that are present in individuals prone to develop CHD. Epidemiological studies have found these factors to include a family history of heart disease, elevations in blood pressure and serum cholesterol, cigarette smoking, obesity, a sedentary lifestyle, and the Type A behavior pattern.

Those factors that have been associated with the development of initial CHD events may be less important once the disease has developed. For example, the Coronary Drug Project Research Group (1980) reported that traditional risk factors for initial CHD events were only weakly related to subsequent mortality in patients after myocardial infarction (MI). The primary determinants of survival in patients with CHD appear to be the extent of coronary atherosclerosis, the degree of impairment of left ventricular function, and the presence and type of clinical symptoms (Burggraaf & Parker, 1975; Harris, Harrell, Lee, Beher, & Rosati, 1980; Taylor et al., 1980). Therefore, strategies to reduce risk for initial CHD events may be neither relevant nor effective for reducing risk of recurrent CHD events. The purpose of this chapter will be to describe attempts to reduce risk for...
initial CHD events (primary prevention) and reduce risk for subsequent events in patients who have clinical CHD (secondary prevention). Intervention efforts in four key areas will be addressed: (a) weight and cholesterol, (b) activity and physical exercise, (c) cigarette smoking, and (d) Type A behavior.

1. Weight and Cholesterol

Obesity is a major health problem in the United States. Estimates of the prevalence of obesity range from 15% to 50% (Bray, 1976), and appear even greater for certain ethnic groups (Stunkard, 1975). It is unclear whether obesity is an independent risk factor for CHD, because it is often associated with other risk factors, such as hypertension, hyperlipidemia, and diabetes (Andres, 1980; Keys, 1980). Recent epidemiological surveys have yielded inconsistent results. For example, Keys (1979, 1980) studied over 12,000 men in seven countries and found no relationship between weight and CHD, except at the extreme ends of the weight distribution. The Framingham Study found that men who were slightly overweight had the lowest risk for CHD and that increased risk occurred only as men exceeded 20% of their ideal weight (Sorlie, Gordon, & Kannel, 1980). However, because obesity is associated with other risk factors, and because reductions in weight are associated with lowered cholesterol (Brownell & Stunkard, 1980) and lowered blood pressure (Reisen et al., 1978; Stunkard, Craighead, & O’Brian, 1980; Tuck, Sowers, Dornfeld, Kledzik, & Maxwell, 1981), most intervention efforts are directed at achieving a target weight at a level considered normal for the individual’s sex, age, and height.

1.1. Primary Prevention

Obesity at an early age is related to elevations in blood pressure (Rames, Clarke, Connor, Reiter, & Lauer, 1978) and blood lipid levels (Laskorzewski et al., 1980). The importance of these findings of risk for CHD in later life is highlighted by the strong relationship between infant, adolescent, and adult obesity (Charney, Goodman, McBride, Lyon, & Pratt, 1976). Abraham and Nordsieck (1960) and Abraham, Collins, and Nordsieck (1971) found that 80% of obese adult women and 15% of obese adult men were obese as adolescents. Obese children are also likely to have obese parents, whether the child is natural or adopted (Horty, Geifer, & Rimm, 1977). This latter observation suggests that childhood obesity is not solely a result of heredity, but is also a result of learned eating and dietary habits acquired by children from their parents.

Dietary considerations also are important for modifying blood pressure, blood lipids, and total body weight. A number of dietary guidelines have been proposed for optimal nutrition (Committee on Nutrition, 1983). Dietary restriction appears to be effective in reducing lipid levels in children. For example, blood lipid levels have been found to vary with the fat content of the infant formula, and children’s serum cholesterol levels have been reduced by limiting fat content and by increasing the ratio of unsaturated to saturated fats (cf. Glueck, 1983). Obesity among adults can also be reduced by dietary management. Compliance with a diet high in polyunsaturated fats, low in saturated fats, and low in cholesterol has been shown to reduce cholesterol from 15% to 30% (Ahrens, Blankenhorn, & Tsaltas, 1954).

Several recent reviews in this area (Brownell, 1982; Brownell & Stunkard, 1978; Coates & Thoresen, 1978) indicate that behavior modification techniques may be the