



Published in final edited form as:

Int J Cardiovasc Res. ; 2(2): . doi:10.4172/2324-8602.1000e111.

Maintaining the Benefit of Cardiovascular Disease Prevention Programs: The Challenge for Future Generations

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Cardiovascular diseases (CVD) account for 1 in every 3 deaths in the United States at an annual cost of \$149 billion dollars or 17% of total medical expenditure [1,2]. Over the next 20 years, the prevalence of CVD will increase by 10% with a 3-fold increase in cost [3]. CVD has emerged as a leading cause of mortality in both males and females in the United States. Over 2,150 Americans die of CVD each day, an average of 1 death every 40 seconds [2].

Although medical and surgical interventions have yielded significant reductions in cardiovascular-related mortality over the last 50 years, lifestyle modifications remain vital for the prevention of CVD. While significant successes have been realized with lifestyle modifications in several studies, barriers remain in translating findings into long-term sustainable outcomes.

Scientific data supports a strong relationship between the way a person or population lives and their risk for developing or dying from CVD. Successful prevention programs aim to reduce CVD by reducing risk factors in whole communities. Not smoking, being physically active, and following a healthful diet are the major components of effective CVD programs. For example, the nearly 80% decline in coronary mortality in Finland through the North Karelia project is attributed to the long-term maintenance of a CVD prevention and healthful lifestyle promotion program at the national level [4].

The North Karelia Project conducted in Finland was a project whose principle prevention strategy involved a community-based approach in which the preventative intervention was not limited to people living with CVD, or even at high-risk for CVD. The aim of the program was to transform the environment of North Karelia by promoting the prevention of CVD and disseminating the program nationwide. An integrated approach was taken, which involved targeting the main behavioral risk factors leading to CVD: unhealthful diet, smoking, and physical inactivity.

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Over a course of 35 years, significant decreases in unhealthful behaviors and other risk factors were observed. From 1972 to 2007, the amount of men aged 30–59 years who engaged in smoking dropped from 52% to 31%, although there was a slight increase in the percentage of women who engaged in smoking. The serum cholesterol for men dropped from 6.9 to 5.4 mmol/l and dropped from 6.8 to 5.2 mmol/l in women. A significant decrease in blood pressure also was observed in both men and women (men: 149/92 to 138/83 mmHg; women: 153/92 to 134/78 mmHg). Overall, a 79% drop in the rates of CVD-related mortality was observed in men.

The experience in Finland is a major demonstration that premature mortality caused by CVD can be greatly reduced through community-based CVD prevention and health promotion activities. Attempts should be made to replicate and validate similar programs in the United States—targeting whole populations instead of specific subpopulations.

A key challenge will be to secure funding for the expansion and maintenance of CVD prevention programs in the future. Educating legislators and decision makers regarding the importance of these programs aimed at reducing the burden of CVD will facilitate the appropriate allocation of funding.

Innovative models potentially will help sustain the long-term benefits of CVD prevention programs. For example, targeting providers and patients using pay-for-outcomes models may be a viable means for maintaining decreases in unhealthful behaviors and other risk factors. Additionally, implementing incentive-based taxation models need to be further explored.

Acknowledgments

Special thanks to Lloyd Novick, MD (Department of Public Health, Brody School of Medicine) for technical advice and encouragement. Dr. Efirid was supported in part by NIH Grant 3P20MD000173-09S1 to examine comparative effectiveness research (CER) approaches to eliminate cardiometabolic disparities.

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