



# Risk in Perspective

## Coronary Heart Disease

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**Coronary Heart Disease (CHD) remains a leading cause of mortality and morbidity in the United States despite recent reports of its decline.**

Coronary Heart Disease (CHD) remains a leading cause of mortality and morbidity in the United States despite recent reports of its decline. Billions of dollars are spent annually in the treatment and care of those afflicted by the disease. Many promising preventive strategies and medical technologies to combat this leading cause of illness have been and are being developed. As strategies and technologies are costly, we have developed a tool for forecasting the health benefits and economic costs and savings from programs to prevent or treat CHD. In this issue of **RISK IN PERSPECTIVE**, this tool — the Coronary Heart Disease Policy Model — is described.

### THE CORONARY HEART DISEASE POLICY MODEL

A computer simulation model of Coronary Heart Disease in the U.S. population has been developed over the course of several years at the Harvard School of Public Health. It has been designed and calibrated to reflect the current mortality, morbidity, and cost of this disease in the U.S. population. The model can simulate interventions in disease-free target populations (primary prevention), as well as groups having a history of a coronary event (secondary prevention). With further modifications it can be adapted to reflect regional populations within the United States, populations in managed care organizations, or populations of other countries, assuming data are available on the distribution of risk factors and disease in those populations.

The model has the capability to forecast CHD incidence, prevalence, mortality,

and morbidity and its associated resource costs, under varying assumptions regarding risk factors and treatments. The risk factors modeled include age, gender, serum lipids, diastolic blood pressure, smoking, and body mass index. Other risk factors can be added if data are collected to satisfy the data input needs. To date, hormone replacement and aspirin have been added to the model for specific investigations. Recent updates to the model allow for the assessment of health-related quality of life and costs associated with other diseases related to CHD risk factors (such as cancers associated with smoking, or strokes associated with hypertension).

The model is composed of three integrated submodels, the Demographic-Epidemiologic (DE) submodel for those who are 35 to 84 years of age and free of coronary disease, the Bridge submodel for those who are within 30 days of their first coronary event, and the Disease History (DH) submodel for those who have survived at least thirty days after their incident event.

Preventive interventions can be assessed within the DE submodel by adjusting the average value of risk factors within each targeted risk factor subgroup. For example, women who smoke and have a high serum cholesterol level (LDL > 160 mg/dl) can be evaluated for CHD occurrence and events in light of a treatment strategy which reduces their serum LDL level by 19%. In addition to incident CHD cases, the DE submodel also tracks non-CHD mortality and prevention costs.

