

Improvement in coronary heart disease risk factors linked to lower rate of CHD death

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From 1994 to 2005 in Ontario, Canada, there was a 35 percent decrease in the rate of deaths from coronary heart disease (CHD), with about half of this reduction associated with improvements in traditional CHD risk factors such as total cholesterol levels and systolic blood pressure, according to a study in the May 12 issue of *JAMA*.

"[Coronary heart disease](#) remains the most common cause of death worldwide and generates a large economic burden. Rates of CHD mortality have decreased substantially over the last 3 decades. Identifying the underlying factors associated with this decline is critical for planning future health policy, and prioritizing strategies for primary and secondary prevention," the authors write.

Harindra C. Wijeyesundera, M.D., of the Sunnybrook Health Sciences Centre, Toronto, Ontario, Canada, and colleagues conducted a study to determine the association of CHD prevention and treatment strategies with the decline in CHD mortality in Ontario. The study, which included individuals ages 25 to 84 years, used a model that integrates data on population size, CHD mortality, risk factors and changes in the use of treatments. The researchers analyzed the relative risks and quantified the relationship between CHD mortality and (1) evidence-based therapies in 8 distinct CHD subpopulations (acute [myocardial infarction](#) [AMI; heart attack], acute coronary syndromes, secondary prevention post-AMI, chronic coronary artery disease, heart failure in the hospital vs. in the community, and primary prevention for hyperlipidemia or hypertension) and (2) population trends in 6 risk factors (smoking, diabetes mellitus,

systolic blood pressure, plasma cholesterol level, exercise, and obesity).

The researchers found that between 1994 and 2005, the age-adjusted CHD mortality rate in Ontario decreased by 35 percent, from 191 to 125 deaths per 100,000 inhabitants, translating to an estimated 7,585 fewer CHD deaths in 2005. The decrease was concentrated in older patients ages 75 to 84 years. Risk factor changes were associated with 48 percent of the total mortality decrease (accounting for an estimated 3,660 fewer CHD deaths), and new medical and surgical treatments were associated with 43 percent of the decrease (and an estimated 3,280 of the total deaths prevented or delayed).

The most substantial contributions regarding new medical and surgical treatments came from the management of patients with chronic stable coronary artery disease (1,305 fewer deaths; 17 percent of total). In 1994, 8 percent of patients with chronic stable [coronary artery disease](#) were taking statins compared with 78 percent in 2005. Improvements in the treatment of patients with heart failure in the community were associated with approximately 750 fewer deaths (10 percent of total). In 1994, 29 percent of patients were taking beta-blockers compared with 67 percent in 2005. Improvements in the treatment of AMI patients represented 8 percent of the overall deaths prevented or delayed.

Over the study period, there was a reduction in the average total cholesterol level of the Ontario population, with 1,730 CHD deaths being prevented or delayed associated with this reduction, representing 23 percent of the overall reduction in CHD mortality. There was also a decrease in average systolic blood pressure from 1994 to 2005 for this population, which was associated with 1,545 fewer deaths (20 percent of total) after subtracting deaths prevented due to advances in pharmacological therapies.

The authors add that increasing diabetes prevalence and body mass index

had an inverse relationship associated with higher CHD mortality of 6 percent and 2 percent, respectively.

"Although our study was not designed to establish a causal relationship between these trends and mortality, these results may inform decision making at all levels with the goal of ensuring that the gains in CHD mortality reduction during the previous decade are not lost in the next decade."

More information: JAMA. 2010;303[18]:1841-1847.

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