Prevention Measures Drive Drop in CHD Deaths

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COLORADO SPRINGS — An estimated 341,745 fewer deaths due to coronary heart disease occurred in the United States in 2000 than in 1980, with more than half of this benefit being attributable to population-wide reductions in the major risk factors achieved through behavioral and lifestyle changes, Dr. Simon Capewell said at a conference sponsored by the American Heart Association.

Put another way, the 45% decrease in age-adjusted coronary mortality between 1980 and 2000 resulted in more than 3 million life-years gained among U.S. adults aged 25-84.

Evidence-based medical and surgical therapies accounted for roughly 1 million life-years gained. Relatively modest population-wide risk factor changes—many of them the fruits of prevention-oriented public health programs—brought twice that benefit, with more than 2 million life-years gained, according to Dr. Capewell, professor and chair of clinical epidemiology at the University of Liverpool (England).

The reduction in smoking prevalence over the 2-decade period, along with a population-wide increase in physical activity and dietary changes resulting in lower average total cholesterol and blood pressure, resulted in more than 2,770,000 life-years gained. However, this impressive benefit was partially undercut by the rising tide of obesity and diabetes, which led to an estimated 715,000 life-years lost.

Introduction of more effective public health measures that would curb the obesity and diabetes epidemics and consolidate the gains already achieved in the other major coronary risk factors would pay off enormously, he said in an interview. He noted that the really impressive gains in smoking cessation have occurred only after banning smoking in public places. A similar legislative approach could profitably be applied to other major coronary risk factors, such as, for example, limiting the amount of sodium in processed foods, he argued.

Secondary preventive therapies accounted for about 11% of the CHD mortality decrease between 1980 and 2000. Initial treatments for acute MI and unstable angina were responsible for another 10%, heart failure therapies 9%, antihypertensive medications 7%, and statins for primary prevention about 5%. Interestingly, percutaneous and surgical revascularization for chronic angina, despite their enormous cost, accounted for only about 5% of the mortality reduction, according to Dr. Capewell.

He and his coinvestigators at the Centers for Disease Control and Prevention generated their estimates by applying the previously validated IMPACT statistical model to data obtained from the National Hospital Discharge Survey, the National Registry of MI, the Behavioral Risk Factor Surveillance System, the CRUSADE registry, the National Health and Nutrition Examination Survey, and other major sources. The new findings presented at the conference expand upon a project the investigators published last year (N. Engl. J. Med. 2007;356:2388-98).

In 2000, only 30%-60% of eligible CHD patients received appropriate evidence-based medical and surgical therapies. Collectively, these treatments resulted in an estimated 171,700 fewer deaths in 2000. The investigators calculated that by increasing the provision of specific therapies so as to consistently reach 60% of eligible patients, an additional 130,000 deaths would have been avoided or at least postponed for more than 12 months.

For example, in 2000 only about 40% of acute MI survivors were discharged on aspirin. Fewer than half of patients with heart failure were on an ACE inhibitor or angiotensin receptor blocker. Similarly, only 29% of eligible MI survivors were on a β-blocker. That therapy, which numerous studies show decreases mortality by 23%, resulted in roughly 6,750 fewer deaths in 2000; had the proportion of eligible post-MI patients on a β-blocker been 60%, the number of deaths avoided or at least postponed would have climbed to 13,865.

Thirty-three percent of the mortality reduction achieved by reaching 60% of eligible patients with evidence-based therapies would come from increased application of heart failure therapies, 31% from secondary prevention, and 19% from wider use of therapies for acute coronary syndrome. In marked contrast to these gains, a 60% increase in revascularization procedures for chronic angina would yield a mere 1% mortality bonus, said Dr. Capewell. His study was self-funded and he disclosed no financial conflicts of interest. ■