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Heart attacks declined 24 percent in northern California since 2000

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Heart attacks declined by 24 percent within a large, ethnically diverse, community-based population since 2000, and the relative incidence of serious heart attacks that do permanent damage declined by 62 percent, according to a Kaiser Permanente Division of Research study in the current issue of the *New England Journal of Medicine*.

The reductions in death after heart attack are driven in part by the decline in incidence of more severe heart attacks known as ST-elevation myocardial infarction, as well as a lower mortality rate after less severe non-ST-elevation heart attacks, explained Alan S. Go, MD, the lead investigator of the study and director of the Comprehensive Clinical Research Unit at the Kaiser Permanente Division of Research in Oakland, Calif. Go explains that ST-elevation heart attacks are diagnosed by a specific electrocardiogram finding that indicates more severe injury to the heart muscle.

This study of more than 46,000 patients in Northern California aged 30 years and older who suffered a heart attack is the first study to provide a contemporary population view of heart attack incidence in a large, diverse community. Previous studies focused on selected subgroups and/or populations with limited diversity and have not separately examined ST-elevation and non-ST-elevation heart attacks. It is also the first to examine the possible influence of widespread use of cardiac biomarkers (particularly troponin) on heart attack trends, which might be expected to lead to an increase in the reported rate of heart attacks, particularly non-ST-elevation heart attacks.

"This research provides new insights into the changing landscape of heart attack incidence and associated outcomes in the community," Go said. "Despite our ability to more easily diagnosis heart attacks using sensitive biomarkers, we found a consistent trend of fewer severe ST-elevation myocardial infarctions over the past decade—the type of heart attack we particularly want to prevent."

Heart attacks with ST-elevation are a true emergency, most often requiring an immediate procedure to open the blocked artery, noted Robert W. Yeh, MD, an interventional cardiologist at the Massachusetts General Hospital and Harvard Medical School who was the first-author of the study. "These findings are welcome news for those of us in the cardiology community. Perhaps we have turned the corner on preventing the most severe presentation of heart disease."

Researchers identified 46,086 patients aged 30 and older within Kaiser Permanente in Northern California who were hospitalized for heart attacks between 1999-2008 and found the age- and sex-adjusted incidence of heart attack increased from 274 per 100,000 in 1999 to 287 per 100,000 in 2000, then declined each year thereafter to 208 per 100,000 in 2008 (24 percent decline between 1999 and 2008). However, the age- and sex-adjusted incidence of ST-elevation myocardial infarction declined by 62 percent from 133 per 100,000 in 1999 to 50 per 100,000 in 2008. Age- and sex-adjusted incidence of non-ST-elevation myocardial infarction also declined since 2005, which followed widespread implementation of sensitive cardiac testing known as troponin I, which helps diagnose heart attacks. Thirty-day mortality was significantly lower in 2008 compared with 1999.

Because the study population is within an integrated delivery system, it provided an accurate assessment of total membership at any point in time and comprehensive identification of those hospitalized for heart attack. The population has broad age, gender, and ethnic diversity and is

highly representative of the local and statewide population. Researchers also demonstrated that the results were consistent after removing the possible effects of different types of patients joining or leaving the health plan membership over time.

Provided by Kaiser Permanente

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