

# Increase in evidence-based treatments followed by decreased risk of death in heart attack patients

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In an analysis of data from a coronary care registry in Sweden, between 1996-2007 there was an increase in the prevalence of use of evidence-based invasive procedures and pharmacological therapies for treatment of a certain type of heart attack, and a decrease in the rate of death at 30 days and one year after a heart attack for these patients, according to a study in the April 27 issue of *JAMA*.

Although recent population-based studies indicate a reduction in incidence, ST-elevation [myocardial infarction](#) (STEMI; a certain pattern on an [electrocardiogram](#) following a [heart attack](#)) is still a major health issue worldwide. Over the last 15 years a series of large-scale prospective randomized trials have documented the efficacy and safety of several new treatments available for patients with heart attack. "Over the years, several generations of international and national guidelines have been presented to support the implementation of these evidence-based treatments in clinical practice," the authors write. "However, only limited information is available on the speed of implementation of these new treatment strategies and its association with long-term survival in real-life health care."

Tomas Jernberg, M.D., Ph.D., of Karolinska University Hospital, Stockholm, Sweden, and colleagues conducted a study to examine the adoption of new treatments for STEMI and short- and long-term survival. The study included data from the Register of Information and

Knowledge about Swedish Heart Intensive Care Admission, which records baseline characteristics, treatments, and outcome of patients with [acute coronary syndrome](#) admitted to almost all hospitals in Sweden. This study included 61,238 patients with a first-time diagnosis of STEMI between 1996 and 2007. The authors examined the proportions of patients treated with different medications and invasive procedures and the mortality rate over this time period.

The researchers found that of evidence-based in-hospital treatments known to influence outcomes, use of reperfusion treatment (i.e., thrombolysis or primary percutaneous coronary intervention [PCI; procedures such as balloon angioplasty or stent placement used to open narrowed coronary arteries]) showed an increase from 66 percent to 79 percent, primary PCI from 12 percent to 61 percent, any revascularization (i.e., PCI or bypass surgery) within 14 days from 10 percent to 84 percent and average use of glycoprotein IIb/IIIa inhibitors from 0 percent to 55 percent. However, large variations existed between hospitals regarding speed of implementation of new treatments.

The estimated use of aspirin, clopidogrel, beta-blockers, statins, and ACE inhibitors or angiotensin receptor blockers (ARBs) all continuously increased over the study period, clopidogrel from 0 percent to 82 percent, statins from 23 percent to 83 percent, and ACE inhibitor or ARB from 39 percent to 69 percent. There was also variation between hospitals in the implementation of these medications.

The authors also found that over the 12 years, in-hospital complications continuously decreased. The estimated proportion of patients experiencing a new MI during hospitalization decreased from 4 percent at the start of the study period to 1 percent at the end.

Regarding mortality, from 1996 to 2007 the estimated in-hospital, 30-day and 1-year mortality decreased from 12.5 percent to 7.2 percent,

from 15.0 percent to 8.6 percent, and from 21.0 percent to 13.3 percent, respectively. The 12-year survival analyses also showed that the decrease in mortality was sustained over time.

"The first finding of this study, in a nearly complete nationwide cohort of patients with STEMI, is that the adoption of evidence-based and guideline-recommended treatments was gradual. The initial large variation in treatments between hospitals gradually decreased with an increase in equality of care over time. The second finding is that this increase in adherence to treatment guidelines is associated with a gradual lowering of both short- and long-term mortality, which could not be explained by changes in baseline characteristics. From 1996 to 2007, the 30-day mortality has been more than halved with an absolute reduction of almost 8 percent. The improvements in survival tended to be greater in the latter part of this 12-year period," the authors write.

The researchers add that the improvement of survival outcome can be expressed as an average gain of at least 2.7 years of life in [patients](#) with STEMI in 2007 compared with 12 years earlier.

**More information:** *JAMA*. 2011;305[16]1677-1684.

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