



## Strategies to Reduce AMI Mortality Rates



Survival rates after acute myocardial infarction (AMI) vary markedly across US hospitals. From 2006 to 2009, 30-day risk-standardised mortality rates (RSMR) after AMI varied from 13.2 percent to 18.4 percent at the 5th and 95th percentiles of hospitals, respectively. Although substantial efforts have been made to improve hospital performance, there is a notable lack of contemporary evidence about changes in hospital strategies and features of organisational culture that might contribute to reducing hospital AMI mortality rates.

A new study published in *BMC Cardiovascular Disorders* sought to describe the current use of several strategies and features of organisational culture linked to AMI mortality in a national sample of hospitals and examined changes in use between 2010 and 2013. The findings can help clinicians, policy makers and researchers seeking to improve quality of care to identify what has improved and where additional gaps in practice may persist and require greater attention.

### Cross-Sectional and Longitudinal Surveys

Researchers conducted a cross-sectional analysis of 378 hospitals (reflecting a 70 percent response rate among 543 eligible hospitals surveyed between January and November 2013), and a longitudinal analysis of a subsample of 72 hospitals (reflecting a 67 percent response rate among the 107 hospitals that had also responded to a survey between April and December 2010).

For the 2013 survey, the respondents comprised hospitals that were part of the American College of Cardiology's Acute Coronary Treatment and Intervention Outcomes Network (ACTION) registry and which had treated at least 12 patients with ST-segment elevation AMI per year. The 72 hospitals previously surveyed did not differ statistically from the other respondent hospitals in the full sample with respect to teaching status, number of staffed beds, census region, urban/rural location, ownership type, or multi-hospital affiliation. Researchers used the sub-sample of hospitals to explore changes in hospital strategies and organisational culture characteristics between 2010 and 2013.

Measures included a set of strategies (e.g., employing quality improvement teams focused on post-hospital mortality, physician and nurse champions, pharmacist rounding) as well as features of organisational culture (e.g., communication and coordination across departments, creative problem solving). Variables included hospital size (total number of hospital beds), teaching status (Council of Teaching Hospitals (COTH)/has accredited residency program/non-teaching), ownership (for-profit/nonprofit/government) and multi-hospital affiliation (yes/no).

The investigators generated frequencies to describe hospital characteristics among their overall and sub-sample

of hospitals. They generated frequencies of hospital strategies used among the sub-sample of hospitals for 2010 and 2013 and compared these differences using McNemar's chi-square tests. A complete case analysis was conducted because only a low proportion of data was missing. The authors used a significance threshold of  $P\text{-value} < 0.01$  given the multiple comparisons.

### AMI Care Quality Improvements

Between 2010 and 2013, the use of many strategies increased but only three increased significantly; the percentage of hospitals that had a quality improvement team to improve post-discharge mortality in patients with AMI increased from 23.6 percent to 43.5 percent ( $P\text{-value} = 0.024$ ), and the percentage of hospitals providing training to EMS providers about AMI care at least monthly or quarterly increased from 36.1 percent to 60.9 percent ( $P\text{-value} < 0.001$ ). The percentage of hospitals using computerised assisted physician order entry increased from 33.3 percent to 82.6 percent ( $P\text{-value} < .001$ ).

### Declines in Communication and Coordination

A couple of features of organisational culture worsened, notably coordination among different departments and cross-departmental communication. 4.2 percent to 16.2 percent of hospitals reported they never, rarely, or sometimes (versus usually or always) had good coordination ( $P\text{-value} = 0.012$ ). 5.6 percent to 17.9 percent of hospitals reported they never, rarely, or sometimes (versus usually or always) had good coordination ( $P\text{-value} = 0.035$ ).

Given the relatively small size of the longitudinal sample, the researchers said that they were only able to detect changes of a large magnitude. The authors also noted that the time period covered by the study, 2010–2013, was fairly short and may not have been sufficient for hospitals to implement some strategies such as monthly meetings with EMS providers.

### Conclusions

The study found an overall trend toward greater adoption of strategies that have been found to be associated with lower 30-day AMI mortality rates, although most changes were modest in size and non-significant, and cross-departmental communication and coordination remain challenging for a small but notable group of hospitals. Improvements may be due in part to extensive previous efforts within the ACTION registry, from which the sample of hospitals was drawn, to improve quality of AMI care. The findings nonetheless highlight important areas for future improvement. Several evidence-based strategies showed low levels of adoption which, if adopted more widely, could help close remaining performance gaps in AMI mortality among hospitals.

Image Credit: Wikipedia

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