

Does Guideline Compliance Accurately Predict Acute Coronary Syndrome Outcomes?

Peterson ED, Roe MT, Mulgund J, et al. Association between hospital process performance and outcomes among patients with acute coronary syndromes. *JAMA* 2006;295:1912–20.

Study Overview

Objective. To measure hospital compliance with guideline-recommended care for hospitalized patients with non-ST-segment elevation acute coronary syndromes (NSTEMI) and to determine whether compliance is associated with in-hospital mortality.

Design. Observational cohort study.

Setting and participants. National sample of 350 hospitals and 64,775 patients voluntarily participating in a quality monitoring and improvement initiative (CRUSADE; Can Rapid Risk Stratification of Unstable Angina Patients Suppress Adverse Outcomes With Early Implementation of the ACC/AHA Guidelines) and presenting with NSTEMI.

Main outcome measures. Compliance with each of 9 therapies recommended by the American College of Cardiology/American Heart Association (ACC/AHA) guidelines as well as a composite measure of adherence (defined as the number of instances of correct care divided by the total number of opportunities to deliver such care). The 9 recommended therapies included the immediate (within 24 hours) provision of aspirin, β -blockers, heparin, and intravenous glycoprotein IIb/IIIa inhibitors as well as the use of aspirin, β -blockers, clopidogrel, angiotensin-converting enzyme inhibitors, and lipid-lowering medications at discharge. The association of both individual process measures and composite adherence with in-hospital mortality were also assessed and compared.

Main results. Appropriate care consistent with guideline recommendations was delivered in 74% of opportunities; however, this rate was variable, ranging from a median of 63% in the lowest quartile hospitals (ie, quartile 1) to a median of 82% in the highest quartile hospitals (ie, quartile 4). Variance among hospitals was also observed when measuring compliance with individual drugs, with more significant variation seen among newer therapeutic recommendations (eg, clopidogrel, glycoprotein IIb/IIIa inhibitors, lipid-lowering agents). Patients who received care at higher performing hospitals

were younger, white, and had fewer comorbid conditions. Hospital characteristics associated with better performance were availability of cardiac catheterization facilities on site and treatment by a cardiologist. Composite adherence was significantly related to in-hospital mortality; highest performing hospitals demonstrated an adjusted mortality rate of 4.2% compared with 6.3% among the lowest performing hospitals ($P < 0.001$). Each 10% increase in composite adherence score was associated with a 10% relative decrease in in-hospital mortality (odds ratio, 0.90 [95% confidence interval, 0.84–0.97]; $P < 0.001$).

Conclusion. While the majority of treatment decisions for acute coronary syndromes are consistent with guideline recommendations, substantial variability exists among hospitals. Process measures of care are strongly associated with in-hospital outcomes.

Commentary

Performance measurement is a cornerstone for many programs that seek to improve health care quality, and many programs rely on more easily measured and more common process measures as opposed to less common but more important outcome measures. Over the past several years, there has been dramatic increase in the link between performance measurement and both public reporting and physician reimbursement [1,2]. These programs have substantially increased the stakes for quality measurement and have created a need to validate the use of process measures as a proxy for patient outcomes.

Hospitals are increasingly involved in performance measurement [3]. Peterson et al's study provides timely information regarding the intricacies of assessing care across multiple hospitals and multiple quality measures as well as the utility of these measures for identifying hospitals with better patient outcomes. While care was delivered according to guideline recommendations in the majority of cases, the variability across hospitals is a striking reminder of the poor quality of care for acute coronary syndromes on a national level. The consistent finding of an inverse association between quality of care and mortality is promising and suggests that it is

appropriate to use these process measures to assess overall quality and to direct quality improvement efforts.

Despite this study's national scope and consistent statistical findings, future work will be needed to address important limitations. Because hospital participation was voluntary, care for acute coronary syndromes may substantially differ in nonparticipating hospitals. In addition, this study only addresses inpatient treatment of a single condition, and it is unclear whether the findings are generalizable to other settings or conditions where performance measurement is being undertaken (eg, the outpatient management of chronic disease).

Applications for Clinical Practice

Performance measurement is an integral component of

many initiatives to improve health care in the United States. This study provides strong evidence to support the use of such measurement to guide quality improvement initiatives within health care organizations.

—Review by *Thomas D. Sequist, MD, MPH*

References

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