“Hospital Performance Recognition with the Get with the Guidelines Program and Mortality for Acute Myocardial Infarction and Heart Failure

Paul A Heidenreich, Veterans Affairs Palo Alto Health Care System, Palo Alto, CA; William R Lewis, MetroHealth Campus, Case Western Reserve University, Cleveland, OH; Kenneth A LaBresh, RTI International, Waltham, MA; Lee H Schwamm, Massachusetts General Hospital, Boston, MA; Gregg C Fonarow, Ahmanson-UCLA Cardiomyopathy Medical Center;
Background

Many hospitals enrolled in the American Heart Association’s Get With The Guidelines (GWTG) Program achieve high levels of recommended care for heart failure, acute myocardial infarction, and stroke. However, it is unclear if outcomes are better in those hospitals recognized by the GWTG program for their processes of care.

Heidenreich PA et al. American Heart Journal 2009
Introduction

Get With The Guidelines (GWTG) is a national performance improvement initiative of the American Heart Association (AHA) to improve guidelines adherence in patients hospitalized with CAD, HF, and Stroke.

Hospitals enrolled in the GWTG program have demonstrated better processes of care than other hospitals for acute myocardial infarction.

However, it is unclear if GWTG hospitals achieving performance achievement awards provide care that is associated with lower mortality from cardiovascular disease and if there are spillover effects of quality improvement efforts.

© 2010, American Heart Association. All rights reserved.

Heidenreich PA et al. American Heart Journal 2009
Objectives

To evaluate whether risk-adjusted 30-day survival data received from CMS for HF and AMI show that the process of care for hospitals participating in the GWTG program have better outcomes for HF and AMI than non-participating hospitals in GWTG.

Heidenreich PA et al. American Heart Journal 2009
Methods

Data analyzed from hospitals participating in GWTG-CAD and utilizing the web-based patient management tool for data collection (Outcome Sciences Inc, Cambridge, MA)

We compared hospitals enrolled in GWTG and receiving achievement awards for high levels of recommended processes of care with other hospitals using data on risk-adjusted 30-day survival for heart failure and acute myocardial infarction reported by the Center for Medicare and Medicaid Services (CMS).

Hospitals were classified by hospital type (acute care vs. critical access-rural), profit status (government, private, non-profit), accreditation (yes/no), and presence of emergency services (yes/no).
Methods: Mortality

Risk-adjusted mortality data for 3909 hospitals as reported by CMS on their Hospital Compare website was used. Risk-adjusted 30-day mortality rates were reported separately for heart failure and acute myocardial infarction admissions. The risk adjustment algorithm was based on demographics, prior and concurrent diagnoses.
Methods: Performance Measures

• Hospital-specific process of care data from April 2005 to March 2006 as reported by CMS was used.

• There were 3873 of 3909 hospitals (99%) that reported data (either a complete or a random sample) for at least one quality measure.

• Hospitals reported on up to 8 measures for acute myocardial infarction, 4 for heart failure, 6 for pneumonia, and 2 for surgery.

• The performance measures are reported by hospitals based on specific criteria for eligibility that excludes patients with contraindications.

Heidenreich PA et al. American Heart Journal 2009
Methods: Cardiac Measures

The heart failure measures include the following:

1) Assessment of left ventricular function

2) Use of angiotensin-converting enzyme (ACE) inhibitor or angiotensin receptor blocker for left ventricular systolic dysfunction (defined as an ejection fraction < 40%)

3) Provision of discharge Instructions

4) Counseling for smoking cessation

Heidenreich PA et al. American Heart Journal 2009
Methods: Cardiac Measures

The acute myocardial infarction measures include:

1) use of aspirin at arrival
2) use of aspirin at discharge
3) use of ACE inhibitor or angiotensin receptor blocker for left ventricular systolic dysfunction
4) use of beta-blockers at arrival
5) use of beta-blockers at discharge
6) thrombolytic medication within 30 minutes of arrival for those treated with thrombolytics for ST elevation myocardial infarction
7) percutaneous coronary intervention within 120 minutes of arrival for those ST-elevation myocardial infarction not receiving thrombolytics
8) counseling for smoking cessation

Heidenreich PA et al. American Heart Journal 2009
Methods: Non-Cardiac Measures

The pneumonia measures include

1) a blood culture performed prior to first antibiotic received in hospital
2) use of the most appropriate initial antibiotic(s)
3) oxygenation assessment
4) use of pneumococcal vaccination
5) use of initial antibiotic(s) within 4 hours after arrival
6) smoking cessation counseling
Methods: Non-Cardiac Measures

The surgical infection prevention measures include the following:

1) Use of a preventative antibiotic(s) 1 hour before incision
2) Discontinuation of the preventive antibiotic(s) within 24 hours after surgery.

For categories of measures that showed inconsistent results between award and non-award hospitals (pneumonia and surgery), composite measures were created by averaging results for hospitals reporting on each measure in the category.

Heidenreich PA et al. American Heart Journal 2009
Results

The Guideline Achievement Awards

Among the 3909 hospitals with 30-day data reported by CMS, 355 (9%) received achievement awards.

Fifteen hospitals received awards for all three disease modules (stroke, heart failure, and coronary disease), two or more awards were received by 58 hospitals, and 282 hospitals received one award.

Awards were provided to 201 hospitals for stroke, 151 for coronary disease, and 91 for heart failure care.

© 2010, American Heart Association. All rights reserved.

Heidenreich PA et al. American Heart Journal 2009
Results

Hospital Characteristics

• Hospitals receiving any award were more likely to be acute care hospitals (99% acute care, 1% critical access/rural) vs. non-award hospitals (82% acute care, 8% critical access hospitals, P<0.0001).

• Hospital accreditation was reported for award hospitals in 98% compared to 79% for non-award hospitals (p<0.0001).

• Emergency care services were common for both award (97%) and non-award hospitals (95%, p=0.04).

• Mean income in the counties of hospitals with awards was higher than for those hospitals without awards ($39,500 vs. $32,700, p<0.0001).

• The location of award hospitals also varied significantly by census division (p<0.0001). (19% of hospitals in the New England division received GWTG achievement awards vs. 4% for the West North Central division).
Results

Mortality

Thirty-day risk-adjusted mortality was 11.2% following admission for heart failure, and 16.4% following admission for an acute myocardial infarction.

Risk-adjusted mortality for hospitals receiving GWTG achievement awards was lower for both heart failure (11.0% vs. 11.2%, p=0.0005) and acute myocardial infarction (16.1% vs. 16.5%, p<0.0001) compared to those not receiving awards.

Trends toward better survival were observed for all award types and were significant for coronary artery disease and stroke award hospitals.
Results

Mortality Adjusted for Hospital Characteristics

All baseline models are adjusted for patient characteristics. After additional adjustment for hospital characteristics the decrease in mortality at 30 days associated with award hospitals remained but was no longer significant for heart failure (-0.11%, p=0.11) but remained significant for acute myocardial infarction (-0.18%, p=0.01).

Adjustment for non-cardiac performance (pneumonia and surgical measures) had no clear effect as the 30-day mortality reduction remained at -0.11% (p=0.10) for heart failure and increased slightly to -0.19% (p=0.009) for acute myocardial infarction.

Heidenreich PA et al. American Heart Journal 2009
Results

Mortality Adjusted for Process of Care Measures

To assess whether higher performance on process of care measures in award hospitals accounted for the lower 30-day risk-adjusted mortality rates observed, mortality rates were further adjusted for these measures.

When adjustments for heart failure and acute myocardial infarction process of care were included, the mortality reduction associated with an award dropped by 28% for heart failure (to -0.08%, p=0.26) and by 43% for acute MI (to -0.08%, p=0.28) and was no longer statistically significant.

Heidenreich PA et al. American Heart Journal 2009
Limitations

Study was not a randomized trial and analysis was only limited to publicly available data.

CMS data on mortality and process of care for stroke were not available. CMS data are limited primarily to those 65 years of age and older; thus, a process-outcome link for younger patients could not be evaluated.

Could not determine what part or parts of the GWTG program have the greatest impact on both process of care and mortality. Data for multiple time points were not available so a before-after effect of enrollment in the GWTG program could not be determined.

Could not determine the type and value (cost to achieve the small mortality benefit) of any particular intervention the award hospitals may have implemented.

Future studies should examine different thresholds or composite measures to determine the metric most associated with outcome.
Conclusions

The findings suggest that hospitals receiving performance achievement awards from the GWTG program had better process of care and risk-adjusted 30-day mortality for heart failure and coronary artery disease.

While hospital characteristics explained some of this reduction in mortality, improved process of care was also an important factor, particularly for acute myocardial infarction hospitalization.

The study provides evidence that quality improvement programs that improve process of care for heart disease may also improve patient outcome.
Clinical Implications

Widespread application of GWTG could positively impact the process of care and risk-adjusted 30-day mortality for heart failure and coronary artery disease. While hospital characteristics explained some of this reduction in mortality, improved process of care was also an important factor, particularly for acute myocardial infarction hospitalization. This study provides evidence that quality improvement programs that improve process of care for heart disease may also improve patient outcomes.

Heidenreich PA et al. American Heart Journal 2009