

# Trend Data Shows Improvement in Massachusetts Hospitals



Trend data for the first five years of the nation's preeminent hospital quality measurement program demonstrates consistent and pronounced care improvement in Massachusetts acute care hospitals. Patients are receiving the treatments known to produce the best results more often and more reliably each year.

Massachusetts hospital performance has exceeded national norms during the period, even as national performance has improved along a similar path. As the demand for more hospital performance measurement increases, existing data offer lessons for policy makers in the design of measurement and public reporting initiatives.

**PatientCareLink ([www.patientcarelink.org](http://www.patientcarelink.org))** is the joint initiative of the Massachusetts Hospital Association and the Massachusetts Organization of Nurse Executives (MONE). Much of the data included in this report is available at [PatientCareLink.org](http://PatientCareLink.org), along with hospital-specific staffing and quality-of-care data. In subsequent issues of the Massachusetts Hospital Quality & Patient Safety series, we'll bring you trend data and other reporting to give you the most transparent view possible of the care you can expect to receive at Massachusetts hospitals.

# Quality of Care Trend Data Shows Improvement in Massachusetts Hospitals

Hospitals in Massachusetts and around the nation responded to public calls for increased transparency about the quality of hospital care through the creation of the Hospital Quality Alliance (HQA) in 2002. The HQA is a national public-private collaboration that is committed to making meaningful and easily understood information about hospital performance accessible to the public and to informing and encouraging efforts to improve quality. In addition to hospitals, HQA includes organizations that represent consumers, doctors and nurses, employers, accrediting organizations, and Federal agencies (see [www.hospitalqualityalliance.org](http://www.hospitalqualityalliance.org)).

A cornerstone of the HQA collaboration is Hospital Compare ([www.hospitalcompare.hhs.gov](http://www.hospitalcompare.hhs.gov)), a website of the U.S. Department of Health and Human Services that publicly reports on hospital performance based on consistently applied measurement and data reporting rules.

Since its roll-out in 2005, Hospital Compare has focused on process of care measures that show how often

hospitals give recommended treatments known to get the best results for patients being treated for a heart attack, heart failure, pneumonia, or patients having surgery. Hospitals voluntarily submit data from medical records about the treatments their patients receive for these conditions ([www.hospitalcompare.hhs.gov/staticpages/for-consumers/poc/process-of-care.aspx](http://www.hospitalcompare.hhs.gov/staticpages/for-consumers/poc/process-of-care.aspx)). The data covers all patients, not just patients covered by government programs such as Medicare.

All acute care hospitals in Massachusetts, and nearly all such hospitals across the nation, report performance data on Hospital Compare.

Aided by the efforts of a Commonwealth Fund website, [www.whynotthebest.org](http://www.whynotthebest.org), we can now easily combine measure data across the first five years of reporting to observe how hospital performance has changed over time.

## What are Hospital Process of Care Measures?

Process of Care measures show how often hospitals give recommended treatments known to get the best results for patients with certain medical conditions or surgical procedures. Information about these treatments are taken from the patients' records and converted into a percentage. This is one way to measure the quality of care that hospitals give.

### HOSPITAL PROCESS OF CARE MEASURES INCLUDE:

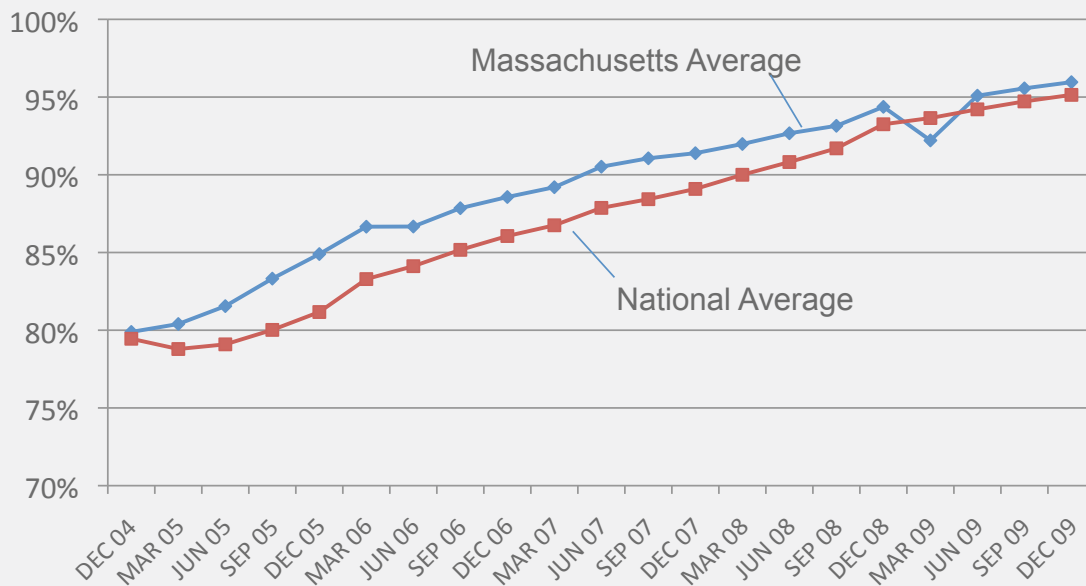
- Seven measures related to heart attack care
- Four measures related to heart failure care
- Six measures related to pneumonia care
- Nine measures related to surgical care improvement project
- Three measures related to asthma care for children only

The measures are based on scientific evidence about treatments that are known to get the best results. Healthcare experts and researchers are constantly evaluating the evidence to make sure that guidelines and measures are kept up-to-date. Sometimes, guidelines and measures are revised to reflect new evidence. The Hospital Quality Alliance expects to increase the number of measures and the types of conditions and treatments that hospitals will report over time.

*From Hospital Compare – U.S. Department of Health and Human Services*

**FIGURE 1**

Hospital Quality Alliance/Hospital Compare All Indicators Composite Scores  
Massachusetts Hospitals & All U.S. Hospitals 2004 – 2009



Source: Commonwealth Fund analysis of HQA/Hospital Compare data, at [www.whynotthebest.org](http://www.whynotthebest.org) JAN 11 2011; composite score from 25 process of care measures (excludes 3 retired measures); each date represents 4 rolling-quarters of data ending in the month displayed. Measures indicate how often hospitals delivered recommended care processes in the following four areas: heart attack, heart failure, pneumonia, and surgical care improvement. Averages based on total hospital reported numerator values divided by total hospital reported denominator values.

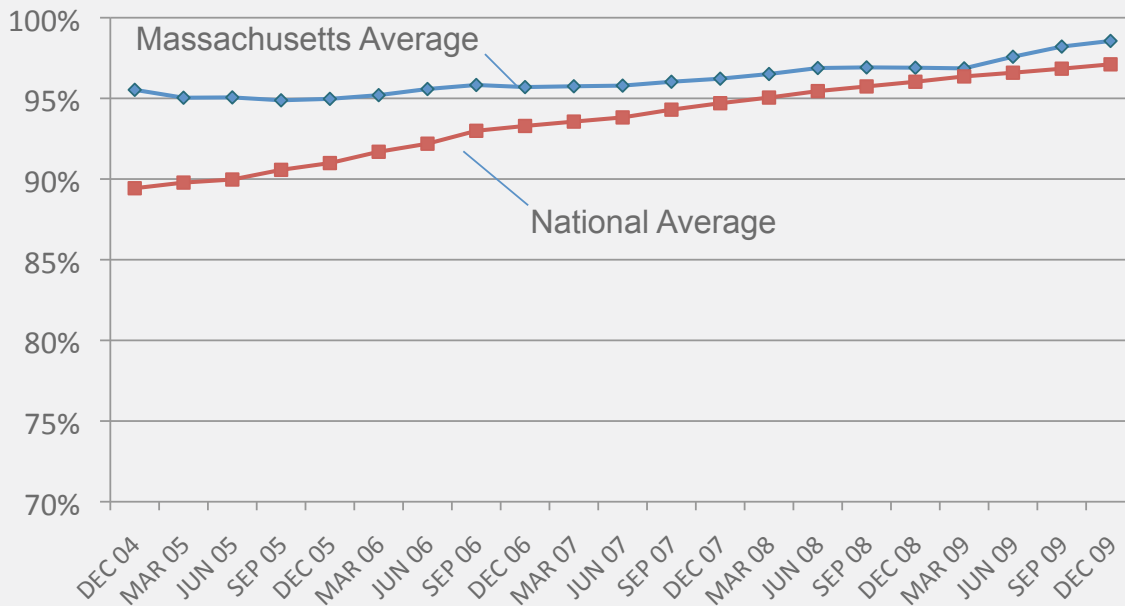
**Figure 1** displays how hospitals in Massachusetts and across the nation have performed on a composite measure that combines all of the measures. Starting at roughly the same point (recommended care processes delivered approximately 80 percent of the time), performance has steadily improved to the point at which recommended care processes are delivered 96 percent of the time in Massachusetts and at a 95 percent rate nationwide.

For nearly the entire period, Massachusetts statewide performance was better than the national rate.



**FIGURE 2**

Hospital Quality Alliance/Hospital Compare Heart Attack Composite Scores  
Massachusetts Hospitals & All U.S. Hospitals 2004 – 2009

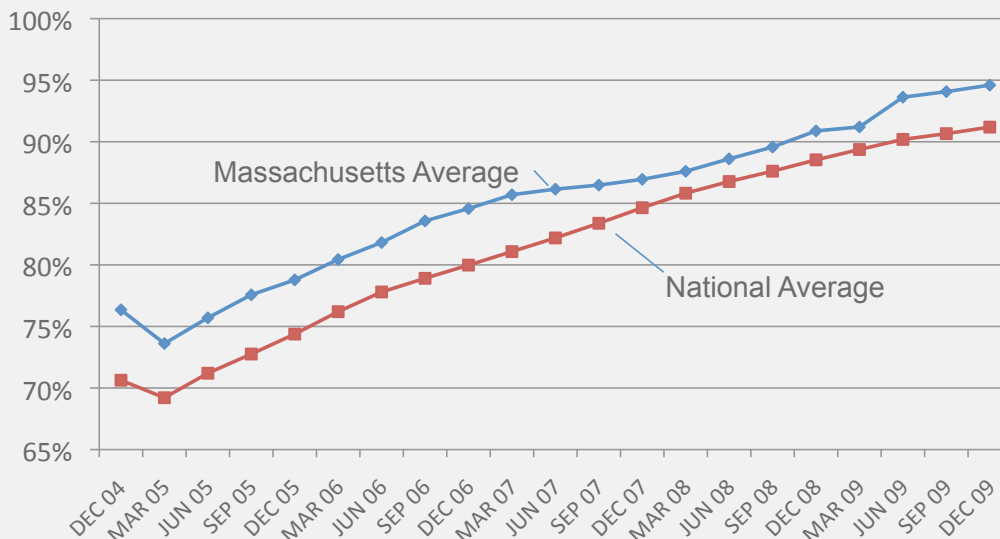


Source: Commonwealth Fund analysis of HQA/Hospital Compare data, at [www.whynotthebest.org](http://www.whynotthebest.org) JAN 11 2011; composite score from seven process of care measures; each date represents 4 rolling-quarters of data ending in the month displayed. Excludes retired measures. Averages calculated from total hospital reported numerators and denominators

**Figure 2** shows that performance on measures of care for heart attack patients began at a high rate in Massachusetts in 2004 (almost 96 percent for the composite measure score) and improved to almost 99 percent by the end of 2009. Nationwide, hospitals began at 89 percent in 2004 and improved to 97 percent by the end of 2009. The component heart attack measures look at whether appropriate medications were administered at the right times, among other recommended care processes.

**FIGURE 3**

Hospital Quality Alliance/Hospital Compare Heart Failure Composite Scores  
Massachusetts Hospitals & All U.S. Hospitals 2004 – 2009

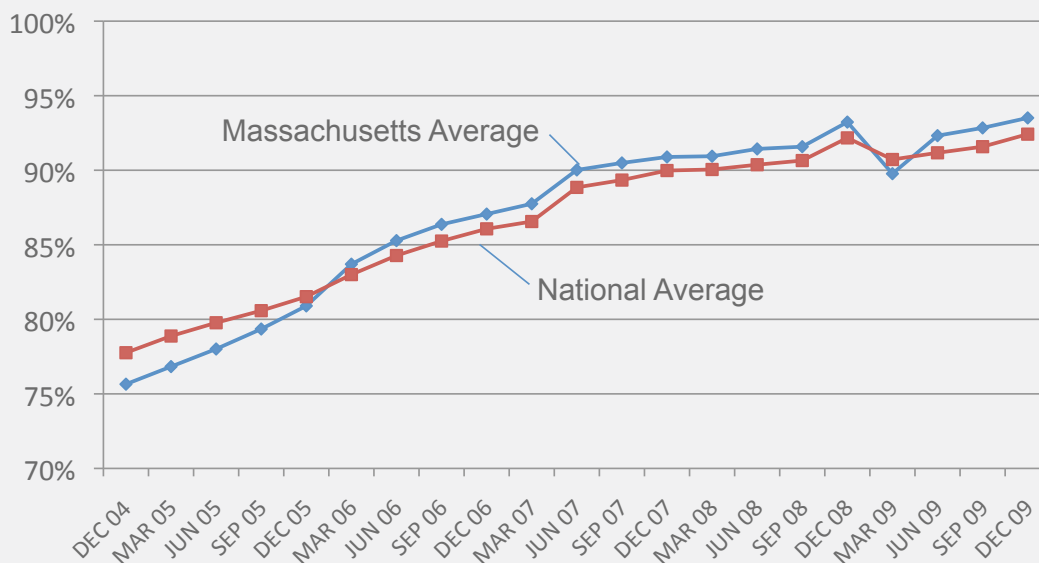


Source: Commonwealth Fund analysis of HQA/Hospital Compare data, at [www.whynotthebest.org](http://www.whynotthebest.org) JAN 11 2011; composite score from four process of care measures; each date represents 4 rolling-quarters of data ending in the month displayed. Averages calculated from total hospital reported numerators and denominators.

**Figure 3** displays trend data for heart failure care. The component heart failure measures summarized in the composite measure indicate if appropriate heart function evaluations are conducted, appropriate medications prescribed, and appropriate information and counseling are given to patients. Massachusetts hospitals improved compliance with recommended care processes from a rate of 76 percent in 2004 to almost 95 percent in 2009, and performed at a higher rate on average than the national rate for the entire period. Hospitals nationwide began at almost 71 percent and improved to just above 91 percent at the end of 2009.

**FIGURE 4**

Hospital Quality Alliance/Hospital Compare Pneumonia Composite Scores  
Massachusetts Hospitals & All U.S. Hospitals 2004 – 2009



Source: Commonwealth Fund analysis of HQA/Hospital Compare data, at [www.whynotthebest.org](http://www.whynotthebest.org) JAN 11 2011; composite score from six process of care measures; each date represents 4 rolling-quarters of data ending in the month displayed; excludes two retired measures. Averages calculated from total hospital reported numerators and denominators.

The composite measure score for pneumonia care is displayed in **Figure 4**. Massachusetts hospitals began the 5-year period trailing the national performance rate with a composite score of 76 percent. Improving care performance at nearly the same rate over five years as hospitals across the nation, Massachusetts hospitals finished the period delivering recommended care at a 94 percent rate while hospitals nationwide finished at 92 percent.

## Massachusetts Improves: Opt-Out Standing Orders for Pneumonia and Influenza Vaccination

In 2004, the MHA Board of Trustees, noting statistics that showed Massachusetts was lagging far behind the national average of providing influenza and pneumonia vaccines to adult inpatients at Massachusetts hospitals, endorsed the adoption of “opt-out standing orders” for the vaccines. Opt-out standing orders permit nurses and pharmacists, where allowed by state law and following the institution’s protocol, to administer the vaccines without the need for a physician’s exam or direct order. The patient’s physician, or patients themselves, can opt-out of receiving the vaccines.

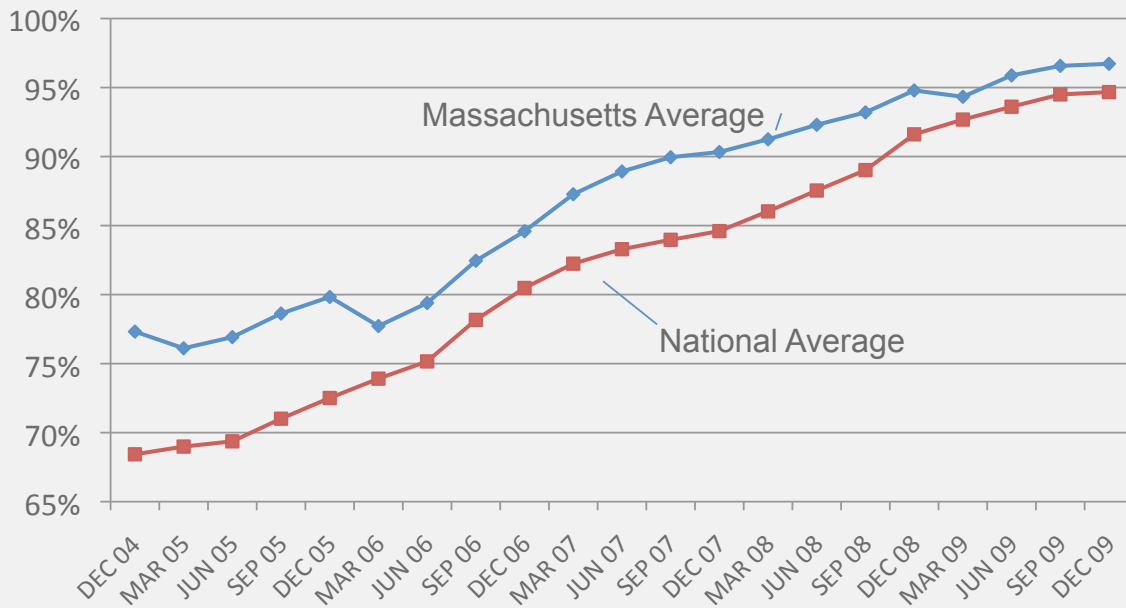
Following the Board’s adoption, which spurred Massachusetts hospitals to adopt the standing order, the Bay State’s vaccination rates went from lagging the national average to exceeding it. Such focused progress on an identified problem, addressed by using evidence-based initiatives, not only saves lives but reduces healthcare costs.

Approximately 36,000 deaths are attributed annually to influenza infection, and 90% of deaths occur among adults age 65 and over. Influenza is responsible for more than 114,000 hospitalizations annually and more than \$4 billion in short-stay hospital costs for Medicare beneficiaries alone. Pneumococcal disease accounts for an estimated 3,000 cases of meningitis, 50,000 cases of bacteremia, and 500,000 cases of pneumonia each year and is responsible for more deaths than any other vaccine-preventable disease.



**FIGURE 5**

Hospital Quality Alliance/Hospital Compare Surgical Care Composite Scores  
Massachusetts Hospitals & All U.S. Hospitals 2004 – 2009



Source: Commonwealth Fund analysis of HQA/Hospital Compare data, at [www.whynotthebest.org](http://www.whynotthebest.org) JAN 11 2011; composite score from eight process of care measures; each date represents 4 rolling-quarters of data ending in the month displayed. Averages calculated from total hospital reported numerators and denominators.

Surgical care performance is measured by eight process-of-care measures covering such care requirements as:

- the administration of antibiotics within a prescribed time period prior to surgery
- controlling patient glucose and body temperature in the perioperative period, and
- protecting against the development of blood clots.

The composite measure score for the eight measures combined is displayed in **Figure 5**. Massachusetts hospitals improved from 77 percent compliance at the start of 2004 to 97 percent compliance at the end of 2009, often exceeding national measure scores by relatively wide margins. Nationwide, hospitals improved dramatically from 68 percent to 95 percent.



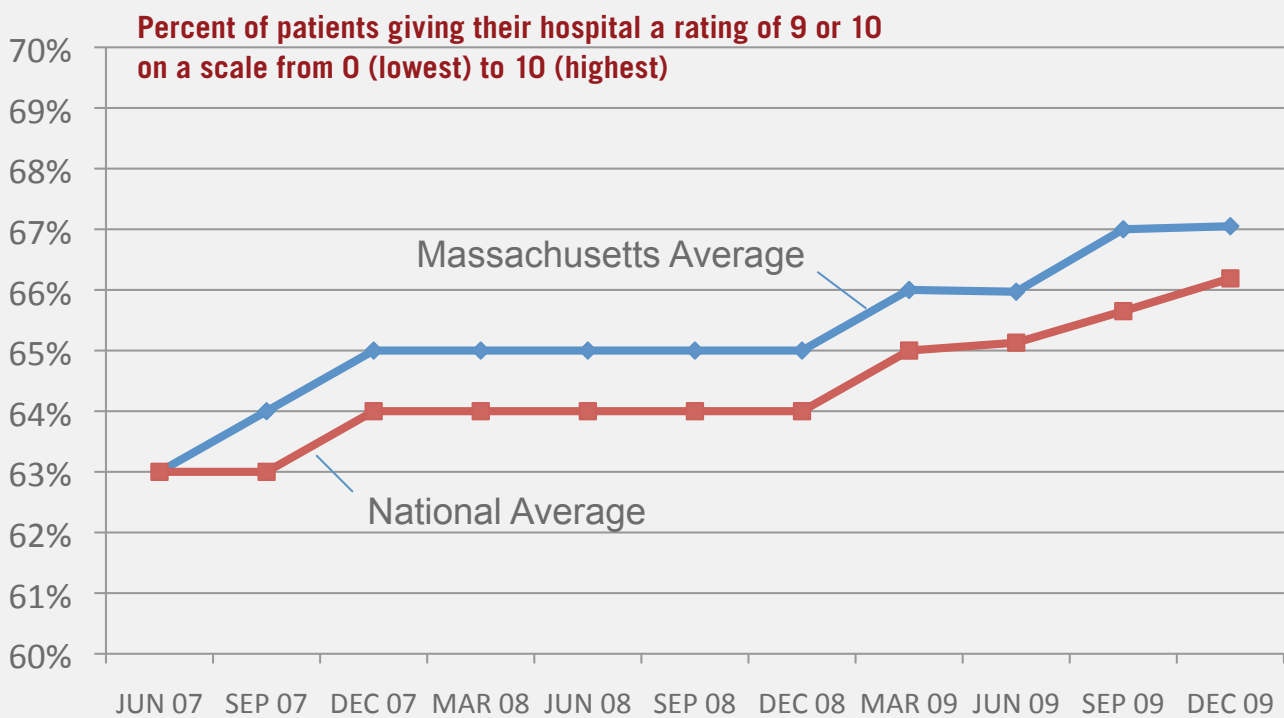
# Patients Rate Care Experiences

A little more than three years into the reporting program, measures of patients' experience with their hospital care were added to the HQA/Hospital Compare program. Two of the summary patient reported measure scores are displayed in **Figures 6** and **7**.

**Figure 6** displays scores for a measure of the percent of patients that gave the hospital where they received care a rating of 9 or 10 on a scale of zero to 10 (where "0" means "worst hospital possible" and "10" means "best hospital possible."). Hospitals in Massachusetts and nationwide began at the same level, with 63 percent of patients rating their care experience at 9 or 10. Score improvements since the start have been more stubborn than for the process of care measures, but have started to show progress recently with Massachusetts hospitals reaching 67 percent by the end of 2009 and hospitals nationwide improving to 66 percent.

**FIGURE 6**

## Hospital Quality Alliance/Hospital Compare Patient Rating Scores Massachusetts Hospitals & All U.S. Hospitals 2004 – 2009



Source: Commonwealth Fund analysis of HQA/Hospital Compare data, at [www.whynotthebest.org](http://www.whynotthebest.org) JAN 11 2011; each date represents 4 rolling-quarters of data ending in the month displayed

## Risk-Adjustment Defined

Risk adjustment is a statistical process used to identify and adjust for variation in patient outcomes that stem from differences in patient characteristics (or risk factors) across healthcare organizations. Depending on the presence of risk factors at the time of healthcare encounters, patients may experience different outcomes regardless of the quality of care provided by the healthcare organization. Comparing patient outcomes across organizations without appropriate risk adjustment can be misleading. By adjusting for the risks associated with outcomes of interest, risk adjustment facilitates a more fair and accurate inter-organizational comparison.

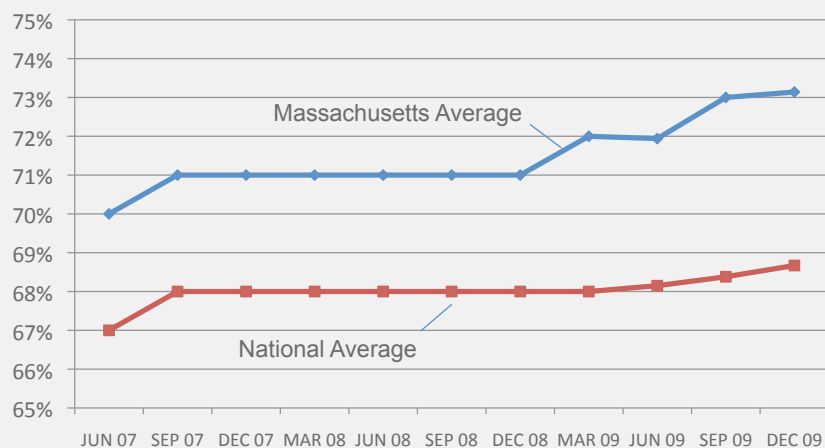
An example of risk adjusting for a particular procedure would involve assessing the patients age, or if the patient has diabetes or other "disease cohorts," among other distinguishing characteristics of a population.



## FIGURE 7

### Hospital Quality Alliance/Hospital Compare Patient Rating Scores Massachusetts Hospitals & All U.S. Hospitals 2004 – 2009

#### Percent of patients who would definitely recommend this hospital to friends and family



Source: Commonwealth Fund analysis of HQA/Hospital Compare data, at [www.whynotthebest.org](http://www.whynotthebest.org) JAN 11 2011; each date represents 4 rolling-quarters of data ending in the month displayed

**Figure 7** displays the percentage of patients who said they would definitely recommend the hospital where they received care to their family and friends. Massachusetts hospitals began at 70 percent and have slowly improved to 73 percent. Hospitals nationwide began at 67 percent and have improved to almost 69 percent.

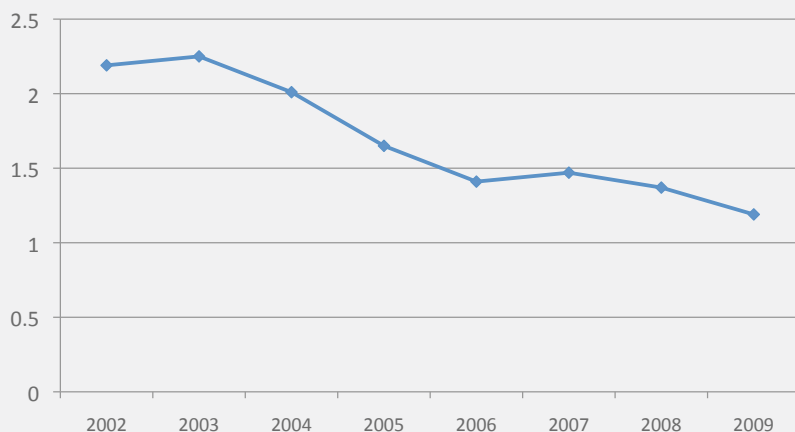
## Cardiac Surgery Mortality

At about the same time as the HQA was organized, Massachusetts hospitals began reporting data on mortality associated with cardiac surgery through the Massachusetts Department of Public Health and the Massachusetts Data Analysis Center (Mass-DAC), an affiliate of the Harvard Medical School. The measurement program follows the reporting specifications of the national Society of Thoracic Surgeons Adult Cardiac Surgery Database.

## FIGURE 8

### Cardiac Bypass Graft (CABG) Surgery Mortality Trends in Massachusetts Hospitals

#### 30-day Crude Mortality Rate for CABG



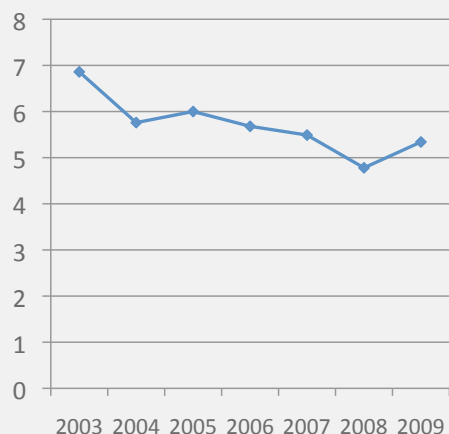
Source: Massachusetts Data Analysis Center (MASS-DAC) reports through MAR 2011 [www.massdac.org](http://www.massdac.org)

**Figure 8** displays performance by Massachusetts hospitals on 30-day crude (unadjusted) mortality rate for Coronary Artery Bypass Graft (CABG) surgery from the first measurement period in 2002 – 2009, the latest reported period. The measure dropped from 2.19 percent in 2002 to 1.19 in 2009. That amounts to a 46-percent improvement over the eight-year measurement period. This measure captures deaths following CABG surgery up to 30 days following discharge from the hospital.

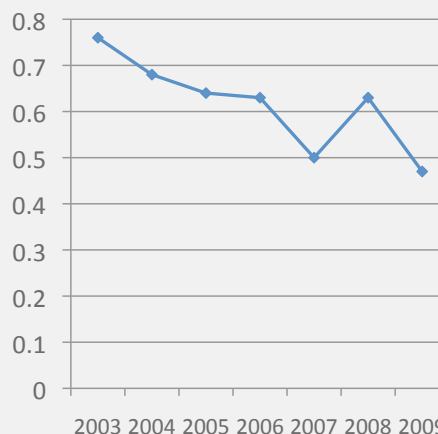
**FIGURE 9**

## Angioplasty Surgery Mortality Trends in Massachusetts Hospitals

**Percutaneous Coronary Intervention (Angioplasty)**  
In-hospital Crude Mortality Rate For PCI (Shock/STEMI)



**Percutaneous Coronary Intervention (Angioplasty)**  
In-hospital Crude Mortality Rate for PCI (No Shock/STEMI)



Source: Massachusetts Data Analysis Center (MASS-DAC) reports through MAR 2011 [www.massdac.org](http://www.massdac.org)

**Figure 9** displays performance for Percutaneous Coronary Intervention (PCI), more commonly known as angioplasty. This measure looks at mortality following the procedure but before discharge from the hospital. The measure is divided into two measures (Shock/STEMI and No shock/STEMI) that differ in the risk-of-death profile of the patients who undergo the procedure. The crude mortality rate for the higher-risk Shock/STEMI patients dropped from 6.86 in 2003 to 5.34 in 2009, an overall improvement of 22 percent. The No-shock/STEMI patient population measure fell from 0.76 in 2003 to 0.63 percent in 2009, a 38-percent improvement.

## Looking Ahead & Related Measurement Efforts

### MORTALITY

The HQA/Hospital Compare program is adding performance measures and new measure types. Comparative hospital performance data already is available for a number of these, but the evaluation of trends over time awaits additional data points. Outcome measures have been added covering risk-adjusted 30-day mortality for Medicare patients having heart attacks, heart failure, and pneumonia. In-hospital mortality data for hip fractures, abdominal aortic aneurysms, and serious surgical complications will be added soon. Risk-adjusted 30-day [readmission](#) rate data for heart attack, heart failure, and pneumonia is now available, too. Information on medical errors, such as accidental punctures or lacerations will be added, as will data on [hospital-acquired infections](#).

### INFECTIONS

As with the Massachusetts cardiac surgery mortality program, a scientifically rigorous measurement and reporting program on [hospital-acquired infections](#) (HAIs) was implemented under the direction of the Massachusetts Department of Public Health (DPH). Hospitals began reporting data in July 2008 through the National Healthcare Safety Network (NHSN) – a data collection and reporting system of the U.S. Centers for Disease Control and Prevention (CDC), which collects information on HAIs from more than 2,400 hospitals in all 50 states.

Hospital-specific HAI data was reported to the public by DPH in April 2010 on central line associated blood stream infections (CLABSI) among ICU patients and surgical site infections (SSI) for selected surgical procedures (see [www.mass.gov/Eeohhs2/docs/dph/quality/healthcare/hai\\_report.pdf](http://www.mass.gov/Eeohhs2/docs/dph/quality/healthcare/hai_report.pdf)). [The report found that Massachusetts hospital infection rates compared favorably against national rates for both CLABSI and most measures of SSIs.](#) These reports will be updated by DPH annually. The HQA/Hospital Compare program will begin reporting some of the same infection measure data obtained through the NHSN data collection system in the future.

## PATIENTCARELINK.ORG

The Massachusetts Hospital Association (MHA) and the Massachusetts Organization of Nurse Executives (MONE) have organized hospitals throughout the state in a voluntary reporting program on [pressure ulcer prevalence, patient falls, and falls with injury](#) in hospitals. Under [PatientCareLink](#), 79 acute care and specialty hospitals report quarterly data on these measures following the measures identified in the National Quality Forum’s “National Voluntary Consensus Standards for Nursing-Sensitive Care: An Initial Performance Measure Set” and further specified by The Joint Commission.

The hospital-specific measure data extends back from March 2010 for three years, and data for each hospital for the most recent reporting period may be viewed at [www.patientcarelink.org/hospital-data/performance-measures.aspx](http://www.patientcarelink.org/hospital-data/performance-measures.aspx).

[This data has been used as a foundation for collaborative efforts among hospitals to implement improvement programs and share best practices to reduce pressure ulcers and falls in hospitals.](#)

Hospital Compare measure data for Massachusetts hospitals may also be viewed at the [PatientCareLink](http://www.patientcarelink.org) website [www.patientcarelink.org](http://www.patientcarelink.org).

Under the hospital community’s recently announced [Statewide Performance Improvement Agenda](#), Massachusetts hospitals are increasing their focus on three strategic performance improvement priorities.

1. [Improve Quality](#): by reducing in-hospital mortality rates
2. [Improve Efficiency](#): by reducing hospital readmission rates
3. [Improve Safety](#): by reducing central line-associated bloodstream infections

Through the [PatientCareLink](#) website, MHA will track and report to hospitals and the public the most current data available on these goals.

## STAAR

The [State Action on Avoidable Rehospitalizations \(STAAR\)](#) initiative aims to reduce hospital readmissions by working across organizational boundaries to engage payers, state and national stakeholders, patients, families, and caregivers at multiple care sites and clinical interfaces. STAAR – which is funded by the Commonwealth Fund and is managed by the Institute for Healthcare Improvement – currently works with four states: Massachusetts, Michigan, Ohio, and Washington.

## CUSP

The [Comprehensive Unit-based Safety Program \(CUSP\)](#) is the platform for driving down the rate of central line-associated bloodstream infections via its Stop [BSI](#) program. CUSP is a national program reaching more than 1,100 hospital units in 30 states under the leadership of the American Hospital Association’s affiliated Health Research & Educational Trust and the federal Agency for Healthcare Research and Quality.

## Lessons Learned

The demonstrated success of the HQA/Hospital Compare program in improving care and the design of the related initiatives described above offer lessons for the ongoing effort to improve the quality of patient care. The best hope for success is built on a common, focused improvement agenda that is shared across all healthcare stakeholders and employs a common, science-driven, evidence-based framework for measurement. Hospitals and other healthcare providers deliver care locally, but they operate in a national policy, payment, and accreditation environment. Whether through national quality alliances such as the HQA/Hospital Compare, the efforts of the National Quality Forum to define common standardized metrics, or the CDC/National Healthcare Safety Network, we are all in a better position to align resources, benefit from the best thinking and broadest experience base, and share learning when we act together through national leadership organizations on a common agenda.



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