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**Hospital Responses to
Public Reporting of
Quality Data to CMS:
2005 Survey of Hospitals**

Final Report

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*Mary Laschober
Myles Maxfield
Meredith Lee
Martha Kovac
Frank Potter
Suzanne Felt-Lisk*

Submitted to:

Delmarva Foundation
7240 Parkway Drive, Suite 400
Hanover, MD 21076
(410) 763-6239

Public Reporting & Special Projects Leader:
Roxanne Rodgers

Submitted by:

Mathematica Policy Research, Inc.
600 Maryland Ave. S.W., Suite 550
Washington, DC 20024-2512
Telephone: (202) 484-9220
Facsimile: (202) 863-1763

Project Director:
Myles Maxfield

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CONTENTS

Chapter	Page
EXECUTIVE SUMMARY	XV
I INTRODUCTION	1
II HOSPITALS' EXPERIENCE WITH HQA AND SECTION 501(B)	5
A. PARTICIPATION IN HQA/SECTION 501(B) REPORTING.....	5
B. EXPERIENCE WITH THE REPORTING PROCESS.....	6
C. VIEW OF THE DATA AND WEBSITE.....	9
D. LINKAGE WITH OTHER QUALITY REPORTING EFFORTS	13
III REACTION TO HQA/SECTION 501(B) DATA FROM OUTSIDE THE HOSPITAL.....	15
IV CHANGES IN HOSPITAL QUALITY IMPROVEMENT PROGRAMS AND MANAGEMENT	19
A. OVERALL AGGRESSIVENESS OF CHANGES AND LEVEL OF STAFF EFFORT REQUIRED	19
1. Staff Effort Required for Quality Improvement and Reporting.....	19
2. Business Case for Quality	21
3. New or Enhanced Quality Improvement Initiatives	22

Chapter	Page
B. FACTORS AFFECTING QUALITY PERFORMANCE.....	23
1. Improvement in Performance.....	23
2. Decline in Performance.....	25
C. USE OF OUTSIDE RESOURCES FOR QUALITY IMPROVEMENT.....	25
D. CHANGE IN HOSPITAL LEADERSHIP’S ATTENTION TO QUALITY	28
E. HEALTH INFORMATION TECHNOLOGY AND RELATIONSHIP TO QUALITY... 31	
V PAY-FOR-PERFORMANCE PROGRAMS, POTENTIAL ADDITIONAL QUALITY MEASURES, AND CMS’S ROLE IN FUTURE QUALITY IMPROVEMENT EFFORTS	39
A. HOSPITAL LEADERSHIP VIEWS ON PAY FOR PERFORMANCE	39
B. HOSPITAL LEADERSHIP VIEWS ON POTENTIAL FUTURE MEASURES FOR PUBLIC REPORTING.....	47
C. HOSPITAL LEADERSHIP VIEWS OF CMS’S ROLE IN FUTURE QUALITY IMPROVEMENT ACTIVITIES	49
VI CONCLUSION	51
A. WHAT WERE HOSPITALS’ EXPERIENCES WITH THE HQA AND SECTION 501(B) PUBLIC REPORTING PROGRAMS?	51
B. HOW HAVE ORGANIZATIONS, SUCH AS THE MEDIA, PAYERS, AND PURCHASERS, REACTED TO THE HOSPITALS’ PUBLICLY REPORTED DATA?.....	51
C. HOW HAVE HOSPITALS’ QUALITY IMPROVEMENT EFFORTS CHANGED AS A RESULT OF PUBLIC REPORTING?	52
D. WHAT IS HOSPITAL LEADERSHIP’S VIEW OF PAY-FOR-PERFORMANCE PROGRAMS, POTENTIAL NEW QUALITY MEASURES, AND CMS’S ROLE IN FUTURE QUALITY IMPROVEMENT PROGRAMS?	53

Page

APPENDIX A: SAMPLE DESIGN AND RESPONSE RATE TABLES A-1

**APPENDIX B: PRO QUO SURVEY: SENIOR QUALITY EXECUTIVE
QUESTIONNAIRE B-1**

**APPENDIX C: PRO QUO SURVEY: QUALITY IMPROVEMENT DIRECTOR
QUESTIONNAIRE C-1**

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T A B L E S

Table	Page
II.1 PROBLEMS WITH CART/PROBLEMS WITH PRIVATE DATA ENTRY OR ABSTRACTION VENDOR	9
IV.1 TOP FIVE QUALITY IMPROVEMENT EFFORTS INFLUENCING INCREASES IN HOSPITAL COMPARE INDICATORS (AS A PERCENT OF QI DIRECTORS (69%) AND SENIOR EXECUTIVES (71%) WHO REPORTED IMPROVED HOSPITAL COMPARE INDICATORS AND WHO ATTRIBUTED THE IMPROVEMENT TO NEW OR ENHANCED QUALITY IMPROVEMENT EFFORTS)	24
IV.2 INDICATORS OF INCREASED ATTENTION/KNOWLEDGE OF QUALITY AMONG HOSPITAL ADMINISTRATIVE LEADERSHIP AND STAFF (AS A PERCENT OF QI DIRECTORS (93%) AND SENIOR EXECUTIVES (87%) WHO REPORTED INCREASED HOSPITAL LEADERSHIP ATTENTION TO QUALITY OVER THE PAST TWO YEARS).....	29
IV.3 HEALTH INFORMATION TECHNOLOGY (HIT) EXPENDITURES (SENIOR EXECUTIVES (62%) WHOSE HOSPITAL PURCHASED NEW COMPUTER HARDWARE OR SOFTWARE IN THE PAST TWO YEARS THAT SUPPORTS QUALITY REPORTING)	32
IV.4 REASONS MOTIVATING PURCHASE OF NEW HARDWARE/SOFTWARE FOR QUALITY IMPROVEMENT OR REPORTING ACTIVITIES (AS A PERCENT OF SENIOR EXECUTIVES (55%) WHOSE HOSPITAL PURCHASED NEW COMPUTER HARDWARE OR SOFTWARE IN THE PAST TWO YEARS THAT SUPPORTS QUALITY REPORTING AND WHOSE PURCHASE WAS RELATED TO QUALITY IMPROVEMENT OR REPORTING).....	32
IV.5 HOSPITAL CLINICIANS' USE OF ELECTRONIC HEALTH RECORD CAPABILITIES (AS A PERCENT OF ALL SENIOR EXECUTIVES).....	33

Table	Page
IV.6	IMPACTS OF ROUTINE SHARING OF HOSPITAL COMPARE DATA WITH HOSPITAL MANAGEMENT AND STAFF (AS A PERCENT OF SENIOR EXECUTIVES (95%) WHOSE HOSPITAL REGULARLY SHARES HOSPITAL COMPARE DATA WITH MANAGEMENT AND STAFF) 34
IV.7	NEW DATA COLLECTION OR ABSTRACTION ACTIVITIES FOR QUALITY MEASUREMENT 35
V.1	REASONS FOR SENIOR EXECUTIVE SUPPORT OF PUBLIC REPORTING OF PATIENT PERCEPTIONS OF HOSPITAL QUALITY (AS A PERCENT OF SENIOR EXECUTIVES (28%) WHO STRONGLY FAVOR INCLUSION OF PATIENT EXPERIENCES IN HOSPITAL PUBLIC REPORTS)..... 47
V.2	SENIOR EXECUTIVE VIEWS ON PUBLIC REPORTING OF MEASURES ENDORSED OR PROPOSED BY CMS, THE JOINT COMMISSION, NQF, OR THE LEAPFROG GROUP (AS A PERCENT OF ALL SENIOR EXECUTIVES) 48
V.3	TOP 5 ADDITIONAL MEASURES SUGGESTED FOR FUTURE HOSPITAL PUBLIC REPORTING (AS A PERCENT OF ALL SENIOR EXECUTIVES) 49
V.4	ACTIVITIES RELATED TO QUALITY IMPROVEMENT IN WHICH CMS/QIOS SHOULD PLAY A MAJOR ROLE (AS A PERCENT OF ALL QI DIRECTORS)..... 50
A.1	SAMPLE DESIGN, RESPONSE, AND UNWEIGHTED AND WEIGHTED RESPONSE RATES FOR QI DIRECTORS AND SENIOR EXECUTIVES BY INDIVIDUAL SAMPLING STRATA A-3
A.2	SAMPLE DESIGN, RESPONSE, AND UNWEIGHTED AND WEIGHTED RESPONSE RATES FOR QI DIRECTORS AND SENIOR EXECUTIVES BY MAJOR SAMPLING STRATA A-4

FIGURES

Figure		Page
II.1	IMPORTANCE OF SECTION 501(B) OF MMA IN INFLUENCING HOSPITALS' DECISION TO SUBMIT DATA (AS A PERCENT OF ALL NONCRITICAL ACCESS HOSPITAL QI DIRECTORS AND SENIOR EXECUTIVES).....	6
II.2	CLEAR COMMUNICATION ON CMS/HQA REPORTING PROCESS (AS A PERCENT OF ALL QI DIRECTORS).....	7
II.3	COLLECTING AND SUBMITTING HQA DATA (AS A PERCENT OF ALL QI DIRECTORS).....	7
II.4	HOSPITAL REVIEW AND APPROVAL OF HQA PUBLISHED DATA (AS A PERCENT OF ALL QI DIRECTORS)	7
II.5	ASPECTS OF QUALITYNET EXCHANGE THAT ARE DIFFICULT [AS A PERCENT OF QI DIRECTORS WHO REPORTED DIFFICULTY WITH USING QUALITYNET (42%)]	8
II.6	VIEW ON HOW ACCURATELY THE HOSPITAL'S PERFORMANCE IS REPRESENTED BY HQA DATA (AS A PERCENT OF QI DIRECTORS (98%) AND SENIOR EXECUTIVES (95%) WHOSE HOSPITAL SUBMITS HQA DATA).....	10
II.7	VIEW ON HOW ACCURATELY THE HOSPITAL'S PERFORMANCE IS REPRESENTED IN SECTION 501(B) DATA (AS A PERCENT OF QI DIRECTORS (1.7%) AND SENIOR EXECUTIVES (3.0%) WHOSE HOSPITAL ONLY SUBMITS SECTION 501(B) DATA)	10
II.8	REASONS HOSPITAL COMPARE DATA REPRESENT THE HOSPITAL'S QUALITY PERFORMANCE SOMEWHAT ACCURATELY/NOT ACCURATELY AT ALL (AS A PERCENT OF QI DIRECTORS (59%) AND SENIOR EXECUTIVES (65%) WHO SAID HOSPITAL COMPARE DATA ARE NOT ENTIRELY ACCURATE).....	11

Figure	Page
II.9	TYPES OF HQA MEASURES ELICITING CLINICAL CONCERNS (AS A PERCENT OF QI DIRECTORS (32%) AND SENIOR EXECUTIVES (30%) WHO SAID HOSPITAL COMPARE DATA IS NOT ENTIRELY ACCURATE AND WHO EXPRESSED CLINICAL CONCERNS ABOUT ITS ACCURACY) 12
II.10	REASONS THAT THE FIVE PERCENT OF HOSPITALS DID NOT REVIEW THEIR HOSPITAL COMPARE DATA 12
II.11	SUBMISSION OF SIMILAR DATA FOR OTHER QUALITY REPORTING EFFORTS (AS A PERCENT OF ALL QI DIRECTORS)..... 13
III.1	SOURCE OF PUBLICITY OR ATTENTION (AS A PERCENT OF SENIOR EXECUTIVES (23%) WHOSE HOSPITAL RECEIVED PUBLICITY IN RESPONSE TO HOSPITAL COMPARE REPORTING)..... 16
III.2	TONE OF PUBLICITY OR ATTENTION (AS A PERCENT OF SENIOR EXECUTIVES WHO RECEIVED PUBLICITY FROM EACH SOURCE IN RESPONSE TO HOSPITAL COMPARE REPORTING)..... 17
III.3	SOURCES OF FEEDBACK OTHER THAN PUBLICITY (AS A PERCENT OF SENIOR EXECUTIVES (15%) WHO RECEIVED FEEDBACK, OTHER THAN PUBLICITY, IN RESPONSE TO HOSPITAL COMPARE REPORTING)..... 18
IV.1	NUMBER OF STAFF (FTEs) DEVOTED TO QUALITY IMPROVEMENT AND REPORTING OF QUALITY DATA (AS A PERCENT OF ALL QI DIRECTORS)..... 20
IV.2	TYPES OF RETURN ON INVESTMENTS IN QUALITY IMPROVEMENT (AS A PERCENT OF SENIOR EXECUTIVES (40%) WHOSE QUALITY IMPROVEMENT/REPORTING STAFF HAS INCREASED IN THE PAST TWO YEARS AND WHO BELIEVE THAT THE COST ASSOCIATED WITH THE INCREASE WILL HAVE POSITIVE RETURNS)..... 22
IV.3	FOCUS ON NEW OR ENHANCED QUALITY INITIATIVES (AS A PERCENT OF QI DIRECTORS (95%) WHOSE HOSPITAL IMPLEMENTED NEW QUALITY IMPROVEMENT INITIATIVES IN THE PAST TWO YEARS)..... 23
IV.4	REASONS FOR HOSPITAL COMPARE MEASURE IMPROVEMENTS (AS A PERCENT OF QI DIRECTORS (75%) AND SENIOR EXECUTIVES (81%) WHO REPORTED SIGNIFICANT IMPROVEMENT IN AT LEAST ONE HOSPITAL COMPARE INDICATOR OVER THE PREVIOUS REPORTING PERIOD)..... 24
IV.5	SOURCE OF QUALITY IMPROVEMENT ASSISTANCE FROM OUTSIDE THE HOSPITAL (AS A PERCENT OF QI DIRECTORS (79%) WHO RECEIVED QUALITY IMPROVEMENT ASSISTANCE FROM OUTSIDE THE HOSPITAL)..... 26

Figure	Page
IV.6	SOURCE OF ASSISTANCE ON HQA AND SECTION 501(B) REPORTING (AS A PERCENT OF QI DIRECTORS (54%) WHO RECEIVED DATA REPORTING/VALIDATION ASSISTANCE FROM OUTSIDE THE HOSPITAL)..... 27
IV.7	CHANGE IN HOSPITAL LEADERSHIP’S ATTENTION TO HOSPITAL QUALITY, AS PERCEIVED BY SENIOR EXECUTIVES 28
IV.8	CHANGE IN HOSPITAL LEADERSHIP’S ATTENTION TO HOSPITAL QUALITY, AS PERCEIVED BY QI DIRECTORS 29
IV.9	CHANGE IN HOSPITAL BOARD’S ATTENTION TO HOSPITAL QUALITY, AS PERCEIVED BY SENIOR EXECUTIVES 30
IV.10	REASONS FOR INCREASED HOSPITAL BOARD ATTENTION TO HOSPITAL QUALITY NOT DUE TO HOSPITAL COMPARE REPORTING, AS PERCEIVED BY SENIOR EXECUTIVES 31
IV.11	PARTIES WITH WHOM HOSPITAL COMPARE DATA ARE ROUTINELY SHARED (AS A PERCENT OF ALL QI DIRECTOR AND SENIOR EXECUTIVES) 34
IV.12	BARRIERS TO IMPROVING HOSPITAL COMPARE MEASURES (AS A PERCENT OF QI DIRECTORS (66%) AND SENIOR EXECUTIVES (57%) WHOSE HOSPITAL COMPARE DATA HAD AT LAST ONE MEASURE BELOW THE 50 TH PERCENTILE BENCHMARK) 36
IV.13	MAJOR BARRIERS TO IMPROVING HOSPITAL COMPARE MEASURES (AS A PERCENT OF QI DIRECTORS (66%) AND SENIOR EXECUTIVES (57%) WHOSE HOSPITAL COMPARE DATA HAD AT LEAST ONE MEASURE BELOW THE 50 TH PERCENTILE BENCHMARK) 37
V.1	PARTICIPATION IN PAY-FOR-PERFORMANCE (P4P) PROGRAMS OR DEMONSTRATIONS (AS A PERCENT OF ALL QI DIRECTORS AND SENIOR EXECUTIVES) 40
V.2	MOST IMPORTANT REASON FOR PARTICIPATION IN P4P PROGRAM OR DEMONSTRATION (AS A PERCENT OF SENIOR EXECUTIVES (20%) WHOSE HOSPITAL PARTICIPATES IN PAY-FOR-PERFORMANCE PROGRAMS, BESIDES THE SECTION 501(B) PROGRAM) 41
V.3	EFFECT OF HOSPITAL QUALITY DATA ON COMPENSATION (AS A PERCENT OF QI DIRECTORS (23%) WHOSE HOSPITAL’S QUALITY PERFORMANCE INDICATORS AFFECT MANAGEMENT AND STAFF COMPENSATION) 42

Figure	Page
V.4	QUALITY MEASURES ON WHICH COMPENSATION IS BASED (AS A PERCENT OF QI DIRECTORS (22%) WHOSE HOSPITAL'S QUALITY PERFORMANCE INDICATORS AFFECT SENIOR MANAGEMENT COMPENSATION) 43
V.5	SUPPORT FOR A CMS PAY-FOR-QUALITY INITIATIVE, BY PARTICIPATION IN P4P PROGRAMS OR DEMONSTRATIONS 43
V.6	SUPPORT FOR A CMS PAY-FOR-QUALITY INITIATIVE, BY PREMIER PARTICIPATION 44
V.7	FOR A CMS P4P INITIATIVE, THE CURRENT 10-MEASURE "STARTER SET" [AS A PERCENT OF MMA SECTION 501(B) PARTICIPATING HOSPITALS (99.5% OF NON-CRITICAL ACCESS HOSPITALS)]..... 45
V.8	MEASURES SENIOR EXECUTIVES WOULD ELIMINATE FROM HQA STARTER SET FOR A CMS P4P INITIATIVE (AS A PERCENT OF NON-CAH SENIOR EXECUTIVES (16%) WHO BELIEVE A CMS P4P INITIATIVE SHOULD NOT USE ALL 10 STARTER SET MEASURES) 45
V.9	MEASURES SENIOR EXECUTIVES WOULD ADD TO HQA STARTER SET FOR A CMS P4P INITIATIVE (AS A PERCENT OF NON-CAH SENIOR EXECUTIVES (16%) WHO BELIEVE A CMS P4P INITIATIVE SHOULD USE DIFFERENT MEASURES FROM THE 10 STARTER SET)..... 46
V.10	COMMENTS IN THE APPROPRIATENESS OF THE CURRENT PREMIER DEMONSTRATION PROGRAM MEASURE SET FOR A CMS P4P INITIATIVE [AS A PERCENT OF PREMIER HOSPITAL QUALITY INCENTIVE DEMONSTRATION PARTICIPANTS (20% OF SURVEY RESPONDENTS)] 47

EXECUTIVE SUMMARY

This report presents an assessment of how public reporting in general has impacted hospitals, and particularly the impacts of the Health Quality Alliance (HQA) and section 501 (b) of the Medicare Prescription Drug, Improvement and Modernization Act (MMA) public reporting programs.¹ Specifically, the assessment addresses the following questions:

- What were hospitals' experiences with the HQA and section 501(b) public reporting programs? (Chapter II)
- How have organizations, such as the media, payers, and purchasers, reacted to hospitals' publicly reported data on Hospital Compare? (Chapter III)
- How have hospitals' quality improvement efforts changed as a result of public reporting? (Chapter IV)
- What are hospital leadership views of CMS's role in future quality improvement programs, including pay-for-performance initiatives? (Chapter V)

The assessment is based on a nationally representative survey of senior hospital executives (typically the vice president of medical affairs or the chief medical officer) and directors of hospital quality improvement (QI) departments. In the sampling design, we stratified on hospital size (bed size 1-99, 100-299, 300 or more), whether the hospital was or was not accredited by the Joint Commission for Accreditation of Health Organizations, and whether the hospital does or does not participate in CMS's Premier Hospital Quality

¹ In December 2003, section 501(b) of the MMA (PL 108-173) stipulated that CMS would reduce by 0.4 percent the annual percentage increase in Medicare reimbursement rates for hospitals that do not submit the HQA 10-measure Starter Set of hospital quality data to CMS. To qualify for the 0.4 percent increase, hospitals submitted quality data by August 1, 2004.

Incentive Demonstration. We conducted interviews by telephone over a nine-week period, from mid-June through mid-August 2005, completing 1,291 interviews (653 with QI directors and 638 with senior executives involved in quality improvement). The QI director survey had a weighted response rate of 96 percent and the senior executive survey had an 89 percent weighted response rate (where the weighted response rate is a measure of the potential for nonresponse bias). The unweighted response rates were higher than the weighted response rates for both surveys—98 percent for the QI director survey and 96 percent for the senior executive survey (where the unweighted response rate is a measure of the success of the data collection effort). Unless noted, all statistics provided in this report are based on weighted survey responses.

EXPERIENCE WITH PUBLIC REPORTING OF QUALITY MEASURES (CHAPTER II)

Participation in the HQA/Section 501(b) Initiatives:

- Nearly all hospitals (98 percent) have submitted quality data to CMS under the HQA, and virtually all non-critical access hospitals (99 percent) have submitted quality measures to CMS under section 501(b) of the MMA.
- Nearly all QI directors and senior executives (over 90 percent) from non-critical access hospitals said the financial incentive provision of section 501(b) was important in influencing their decision to provide quality data for public reporting.

Experience with the reporting process

- Most hospitals had a positive experience with the CMS/HQA reporting process. Approximately 7 in 10 said there was often or always clear communication from CMS about what the hospital needed to do to participate in HQA and section 501(b). The same number reported that collection, processing, and review of the publicly-reported data was very or somewhat easy to do. One-quarter of respondents, though, had a more negative experience.
- In contrast, 4 of 10 QI directors found QualityNet difficult to use. The most frequently cited difficulties were site navigation and ease of use, difficulty obtaining feedback from CMS, and data uploading and transmission of data.

Validity of the quality data

- Nine of 10 respondents whose hospitals submit data under the HQA believe the data represent accurately or somewhat accurately the hospital's quality performance for the measured conditions.
- Those who said the data were not entirely accurate felt the set of measures for the conditions reported was too small, the sample sizes were too small, one or

more of the measures was not be clinically up to date, or their hospital's data abstraction process was not accurate.

- The very small number of hospitals that report only section 501(b) data under the MMA were more likely than others to be skeptical of the data's validity. In these hospitals, 36 percent of senior executives and 16 percent of QI directors stated that the data published for their hospital's quality performance did not represent their hospital accurately at all.
- Nearly all QI directors and senior executives (95 percent) said they or colleagues regularly review the data posted on CMS's Hospital Compare website and compare their hospital's quality performance to that of other hospitals and to the site's benchmarks.

Interaction with other quality reporting efforts

- Among hospitals that submit data to other quality programs, 57 percent said that the multiple public reporting programs reinforce each other. Among the 20 percent of hospitals that said they interfere with each other, the most frequent problems cited were that the programs: use different measure specifications or measure definitions (52 percent), lack standardization (29 percent), represent a duplication of effort (25 percent), or use different timeframes in their measure specifications that causes confusion (17 percent).

REACTION TO HQA/SECTION 501(B) DATA FROM OUTSIDE THE HOSPITAL (CHAPTER III)

- Approximately one-quarter of senior executives and QI directors reported that the hospital received any publicity or attention as a result of the quality data published by CMS on Hospital Compare. Less than one-half (44 percent) felt the publicity was positive, 30 percent felt the publicity was neutral, and 26 percent felt it was negative.
- Among hospitals receiving publicity, by far the most common source of publicity was local print or broadcast media, with three-fourths reporting this type of publicity.
- Nearly one-half of senior executives reported that feedback other than publicity from outside the hospital reinforced and encouraged their on-going quality improvement efforts. In contrast, almost one in five said that the feedback had little or no effect.

CHANGES IN HOSPITAL QI PROGRAMS AND MANAGEMENT (CHAPTER IV)

QI programs and the level of staff effort required

- Nearly all QI directors (96 percent) reported that their hospital devoted at least some staff resources to reporting quality data and to quality improvement activities. Hospitals varied widely, however, in the number of full time equivalent (FTE) staff devoted to these two functions. On average, hospitals devoted 4.82 FTEs to quality improvement (up from 4.36 FTEs two years ago) and 2.47 FTEs to reporting quality data (up from 1.90 FTEs two years ago).
- Of QI directors who reported an increase in staff devoted to quality data reporting, two-thirds indicated that the HQA and section 501(b) programs were a major cause for that increase. Less, at one-half of QI directors who reported an increase in staff devoted to quality improvement, indicated that the HQA and section 501(b) reporting was a major cause for that increase.
- Three-quarters of senior executives with an increase in hospital staff devoted to quality improvement and reporting believe there is a business case for quality. Further, among these respondents, almost 9 of 10 anticipate that investments in quality improvement lower costs.
- Nearly all QI directors (95 percent) reported that their hospital implemented either new or enhanced quality improvement initiatives over the past two years. Most often, these initiatives focused on care for pneumonia and heart failure, but many hospitals also implemented projects to prevent surgical infections and improve care for heart attack patients.
- Over the same time period, almost 2 of 10 hospitals dropped or reduced some quality improvement activities, perhaps delaying them until later. This most frequently occurred in the clinical areas of ICU care, surgical infection prevention, or obstetrics.

Causes of improved quality performance

- Seventy-five percent of QI directors and 81 percent of senior executives reported that their hospital's performance on one or more of the HQA or section 501(b) measures had improved significantly over the previous reporting period.
- Approximately 9 of 10 QI directors and senior executives whose Hospital Compare measures had increased over the previous reporting period attributed these increases to new or enhanced quality improvement efforts. These efforts most often involved feedback and dissemination of results to physicians and staff, staff and physician education of the hospital's new quality improvement

initiatives, and a specific focus on the new quality initiatives among all hospital staff.

- Among the 5 percent of senior executives reporting a decline in one or more of the Hospital Compare scores, 85 percent initiated new efforts to improve performance on the measures that had declined.

Impact on hospital leadership's attention to quality

- A very high percentage of senior executives (87 percent), and an even higher percentage of QI directors (93 percent) declared that over the past two years their hospital had experienced an increase in CEO and other top administration leadership attention to hospital quality or knowledge of quality performance.
- Among those reporting an increased attention to quality, approximately 6 of 10 said that participation in the HQA or section 501(b) programs played a major role in generating that increased leadership attention to quality issues.
- Eight-five percent of senior executives asserted that their hospital's board of directors paid more attention to quality matters compared with two years ago. Three-fourths of the respondents gave at least partial credit to the HQA and section 501(b) initiatives for this change.
- Seventy-four percent of senior executives attributed to public reporting an increase in attention to hospital quality by hospital-employed or affiliated physicians.

Adoption of health information technology (HIT)

- Approximately 6 of 10 senior executives reported that their hospital purchased new computer hardware or software within the past two years that has enhanced the hospital's quality measurement and reporting efforts.
- Many hospitals currently have selected electronic health records (EHR) capabilities. For example, 88 percent of all respondents have electronic viewing of lab results that are nearly always accompanied by decision support tools, such as highlighting results that are out of normal range (95 percent); 59 percent have an electronic clinical notes system; and 50 percent have electronically stored images available throughout the hospital. However, only 21 percent have computerized physician order entry (CPOE) systems.

Internal production and use of performance data

- Nearly all hospitals (95 percent) routinely distribute Hospital Compare data to senior management, as well as to physicians and nurses involved in the measured clinical areas and their hospital's board.

- Six in ten hospitals generate physician-level data on the Hospital Compare measure set. Virtually all respondents at these hospitals feel that physician-level reporting is important for improving hospital performance.

Efforts to improve data collection and documentation

- A large number of QI directors (85 percent) reported that their hospital has undertaken new data collection or abstraction activities for quality measurement purposes, most frequently to better document care for surgical infection prevention services.
- Nearly three-fourths of QI directors said their hospital's participation in the HQA or section 501(b) program had enhanced documentation of care in many clinical areas.

USE OF OUTSIDE RESOURCES FOR QUALITY IMPROVEMENT ASSISTANCE AND BARRIERS TO IMPROVEMENT

- Almost 8 of 10 QI directors reported receiving advice from outside the hospital on how to improve the hospital's performance on pneumonia, heart failure, heart attack, or surgical infection prevention. Among those reporting outside assistance, the two most common sources of that assistance were the hospital's Quality Improvement Organization (QIO) and the Institute for Healthcare Improvement (IHI).
- Of hospitals for which at least one Hospital Compare measure has been below the 50th percentile benchmark, the most commonly reported barrier to improving the measure is inaccurate documentation (90 percent), which causes the hospital's published score not to reflect care actually provided by the hospital. The second, third, and fourth most commonly reported barriers among both senior executives and QI directors were lack of physician involvement (76-83 percent), insufficient financial resources (70-76 percent), and lack of sufficient QI staff (64 percent each).

HOSPITAL LEADERSHIP VIEWS ON PAY-FOR-PERFORMANCE PROGRAMS, POTENTIAL NEW MEASURES, AND CMS'S ROLE (CHAPTER V)

Pay-for-performance programs

- One-fifth of senior executives and QI directors reported that their hospital is involved in some type of pay-for-performance (P4P) program (besides the section 501(b) program under the MMA). Among those involved, 20 percent said they participate in CMS's Premier Hospital Quality Incentive Demonstration and 50 percent take part in various Blue Cross Blue Shield P4P initiatives.

-
- Senior executives most frequently reported participating in P4P programs to take advantage of the potential for additional reimbursement and to increase focus on the hospital services subject to the incentive payments in order to stimulate quality improvement for these particular services.
 - Similar to the percentage of hospitals that participate in external P4P programs, about one-fourth of QI directors said their hospital's performance on internally- or externally-reported quality indicators influences the compensation of their hospital's management or staff.
 - Nearly all senior executives (93 percent) said their hospital's leadership would support future CMS efforts to reward hospitals financially for improved clinical quality.
 - Slightly more than 4 of 10 senior executives believe the HQA 10-measure Starter Set is an appropriate way for CMS to reward hospital quality. An equal proportion favor expanding the measure set for pay-for-performance programs.
 - Slightly more than 4 of 10 hospitals participating in the Premier Hospital Quality Incentive Demonstration believe the demonstration measure set is the appropriate one for a broader CMS P4P initiative, while an equal proportion felt it should be expanded to include additional measures.

Potential future measures for public reporting

- Nearly 8 of 10 senior hospital executives expressed support for adding patient-survey-based measures of hospital quality to public reports.
- Approximately 8 of 10 respondents favored adding risk-adjusted outcome measures such as mortality rates, hospital-acquired infection rates, and post-operative adverse events for specific procedures or conditions to public reports.

The role of CMS in future quality improvement activities

- Approximately 9 of 10 QI directors believe that CMS and their hospital's state QIO should take a major role in future quality improvement programs. The strongest support was for CMS and QIOs to provide print and web-based information on how to improve hospital performance in specific clinical areas.

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CHAPTER I

INTRODUCTION

In November 2001, the Centers for Medicare & Medicaid Services (CMS) launched the Quality Initiative, a series of projects that involve the public reporting of comparative health care quality indicators. The initiative has two goals: (1) to give consumers access to information they can use to make more informed health care decisions, and (2) to provide health care organizations with comparative performance information they can use to monitor and improve the quality of care and services they provide.

In December 2002, the American Hospital Association (AHA), the American Association of Medical Colleges (AAMC), and the Federation of American Hospitals (FAH) launched a national public hospital quality-reporting program called the Hospital Quality Alliance (HQA) (formerly named the National Voluntary Hospital Reporting Initiative). CMS, in consultation with HQA and several other affiliated organizations (the National Quality Forum [NQF], the Agency for Healthcare Research and Quality [AHRQ], and the Joint Commission for Accreditation of Healthcare Organizations [the “Joint Commission”]), selected 10 hospital quality measures in three clinical areas for its first hospital public reporting effort—acute myocardial infarction (AMI), chronic heart failure (CHF), and pneumonia. The 10 measures were referred to as the “Starter Set,” signaling CMS’s intent to expand the measure set in the future. In October 2003, CMS posted the HQA data on its web site, www.cms.hhs.gov.

In December 2003, section 501(b) of the Medicare Prescription Drug, Improvement and Modernization Act (MMA) (PL 108-173) stipulated that CMS would reduce by 0.4 percent the annual percentage increase in Medicare reimbursement rates for hospitals that do not submit Starter Set data to CMS. To qualify for the 0.4 percent increase, hospitals submitted quality data by August 1, 2004. At approximately the same time, the HQA Starter Set was expanded to include seven additional quality measures for the AMI, CHF, and pneumonia areas.

On April 1, 2005, CMS and the HQA participants launched the Hospital Compare web site for consumers. At that time, hospitals could voluntarily submit quality data on up to 17 measures. Approximately 4,200 hospitals across the country (3,777 acute care hospitals and

423 critical access hospitals) currently disclose their scores publicly for some or all of the 17 measures on Hospital Compare. The Hospital Compare website parallels CMS's other ongoing public reporting programs for consumers, including Nursing Home Compare, Home Health Compare, Dialysis Compare, and the Medicare Personal Plan Finder.

This report presents an assessment of the impact of hospital public reporting in general, and the hospital public reporting programs outlined above in particular, on hospitals. Specifically, the assessment addresses the following questions:

- What were hospitals' experiences with the HQA and section 501(b) public reporting programs? (Chapter II)
- How have organizations, such as the media, payers, and purchasers, reacted to the hospitals' publicly reported data? (Chapter III)
- How have hospitals' quality improvement efforts changed as a result of public reporting? (Chapter IV)
- What is hospital leadership's view of pay-for-performance programs, potential future quality measures, and CMS's role in future quality improvement programs? (Chapter V)

The study is based on a nationally representative survey of senior hospital executives (typically the vice president of medical affairs or the chief medical officer) and directors of quality improvement (QI) departments. We conducted interviews by telephone over a nine-week period, from mid-June through mid-August 2005, completing 1,291 interviews (653 with QI directors and 638 with senior executives involved in quality improvement). Interviews with the QI directors averaged 31 minutes in length, and those with the senior executives averaged 21 minutes.

The target population was short-term acute care general and critical access hospitals in the 50 states and the District of Columbia that submitted hospital quality data for Hospital Compare publication in 2005. The study population excluded hospitals in Puerto Rico, the Virgin Islands, and the other trust territories; children's hospitals; hospitals classified by the AHA as mental, psychiatric, behavioral, rehabilitation, and long-term care hospitals; and hospitals not certified by the Medicare program. The sampling frame was based on two databases: the AHA 2003 Annual Survey database and the CMS Hospital Compare database. The combined databases included 3,856 hospitals of which 98 percent (3,778 hospitals) were in both databases.

The target sample size of completed interviews with QI directors and senior executives was 560. We selected a stratified random sample based on three stratification factors:

- Hospital size, using the number of beds (1-99 beds, 100-299 beds, 300+ beds, unknown)

-
- Hospital participation in the Premier Hospital Quality Incentive Demonstration
 - Hospital accreditation by the Joint Commission on Accreditation of Healthcare Organizations

We strove for an 80 percent response rate, but understood from prior similar surveys that a 70 percent response rate could occur and released an original sample of 800 hospitals. During the data collection, we realized the response rate exceeded 90 percent. During the last month of data collection, we selected subsamples (a subsample for QI directors and a separate subsample for the senior executives) within the original sampling strata.

The final sample for the QI directors was 680 and 664 responded or were determined as eligible, resulting in an unweighted response rate of 98 percent and a weighted response rate of 95 percent. For the senior executives, the final sample was 679 and 650 responded or were determined eligible, yielding an unweighted response rate of 96 percent and a weighted response rate of 89 percent.² The sampling strata, sampling frame counts, and sample sizes are presented in Appendix A. Unless noted, all statistics provided in this report are based on weighted survey responses.

² The difference between the unweighted and weighted response rates is caused by the differential sampling rates used in the sampling strata. The unweighted response rate can be viewed as a measure of the operational portion of the survey and data collection (that is, we obtained data on 664 of the 680 QI directors in the sample). On the other hand, the weighted response rate can be viewed as a measure of the potential for nonresponse bias (that is, the data collected represents 94.6 percent of the full population of 3,856 QI directors in the sampling frame before adjusting for nonresponse).

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CHAPTER II

HOSPITALS' EXPERIENCE WITH HQA AND SECTION 501(B)

A. PARTICIPATION IN HQA/SECTION 501(B) REPORTING

Nearly all (98 percent) of the hospitals included in the survey said that they currently submit quality data to CMS under the HQA³ and virtually all hospitals (99 percent) that are not critical access hospitals (CAHs) also submit quality data to CMS under section 501(b) of the Medicare Modernization Act. Additionally, nearly all hospitals (95 percent) reported that they submit data for all 10 measures of the HQA Starter Set published on Hospital Compare, and about 4 in 10 (44 percent) submit data on additional HQA measures. Among hospitals that submit data on additional measures, over half (56 percent) provide statistics on surgical infection prevention measures.

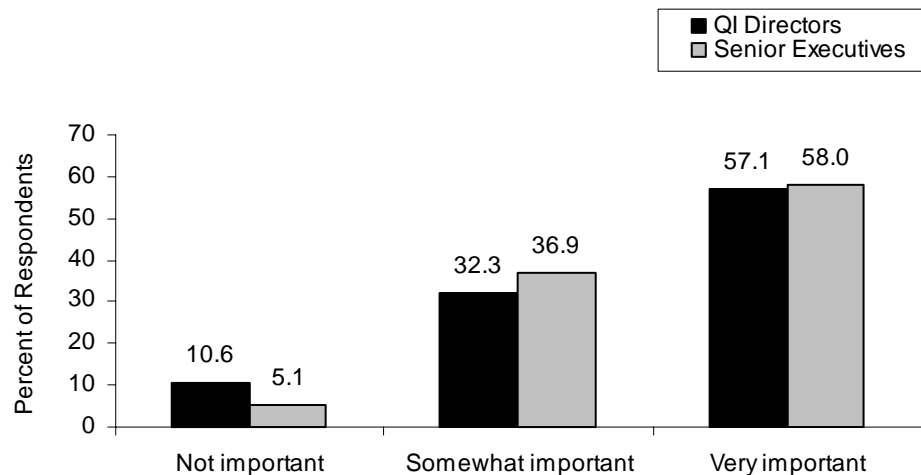
These survey responses regarding Hospital Compare data submissions vary from CMS's statistics on Hospital Compare reporting. In April 2005, about 13 percent of hospitals that report data on the Website submitted fewer than the 10 Starter Set measures, higher than the survey's 5 percent figure. The difference is primarily because 48 percent of CAHs that submitted Hospital Compare data in July 2005 reported fewer than the 10 measures, while only 22 percent of CAHs included in the survey said they report data for less than the 10 measures. In addition, a much higher percent of hospitals actually submitted data to Hospital Compare on more measures than the Starter Set in April 2005 (70 percent) than stated this on the survey (56 percent). About one-half of non-CAH hospital respondents and about one-third of CAH hospitals respondents said they currently submit data for more than the 10 measure Starter Set.

³ None of the few hospitals that do not currently participate in the HQA is a critical access hospital. These hospitals are distributed among small, medium and large hospitals, although slightly less than one-half (unweighted) are small hospitals with 1-99 beds.

Of the 5 percent of hospitals that do not currently submit data for all of the HQA Starter Set measures,⁴ the most frequent reasons were: (1) the hospital lacks sufficient resources to do so (36 percent); (2) the hospital does not want their results for the HQA measures publicly reported (23 percent); and, (3) the hospital is small with only a low volume of patients who have conditions related to Starter Set measures (11 percent). Other infrequently cited reasons include: reporting burden, intent to report in the future, concern with the measure selected or its definition, or the voluntary nature of the measures.

We asked non-CAH QI directors and senior executives about the influence of the section 501(b) market basket update provision on their hospital's decision to provide quality data for Hospital Compare. Nearly all said it was either very or somewhat important in influencing their decision (Figure II.1), although QI directors were a bit less likely to say this. These results suggest that the financial implications of the section 501(b) program were a strong, but clearly not the only, motivation for hospitals to publicly report quality data.

Figure II.1. Importance of Section 501(b) of MMA in Influencing Hospitals' Decision to Submit Data (as a percent of all noncritical access hospital QI directors and senior executives)



B. EXPERIENCE WITH THE REPORTING PROCESS

Most QI directors reported fairly positive experiences with the CMS/HQA reporting process. About three-fourths (73 percent) said there was often or always clear communication from CMS about how to sign up, what to do, and when to do it (Figure II.2). Nearly as many (67 percent) said that the overall process of collecting and submitting the necessary hospital data for these programs was very or somewhat easy (Figure II.3). In the same range, three-fourths of QI directors (73 percent) said that the process of reviewing and approving draft HQA data from CMS was very easy or somewhat easy to do (Figure II.4).

⁴ Of the 28 hospitals (unweighted) that said they do not currently submit data for all 10 HQA Starter Set measures, 60 percent are critical access hospitals. Additionally, nearly 80 percent of these 28 hospitals are small, with 1 to 99 beds.

Figure II.2. Clear Communication on CMS/HQA Reporting Process (as a percent of all QI Directors)

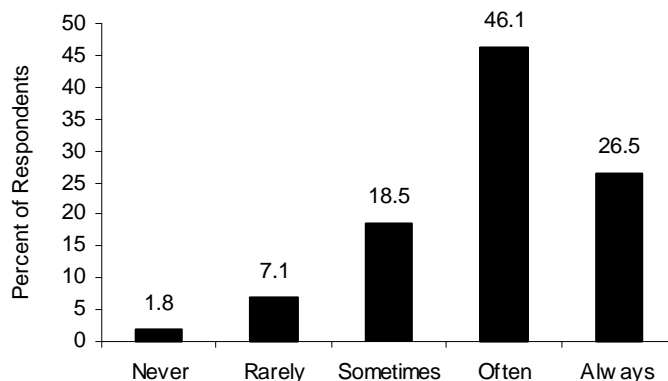


Figure II.3. Collecting and Submitting HQA Data (as a percent of all QI directors)

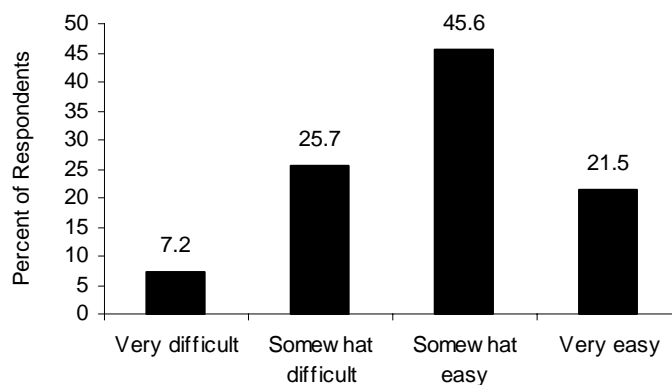
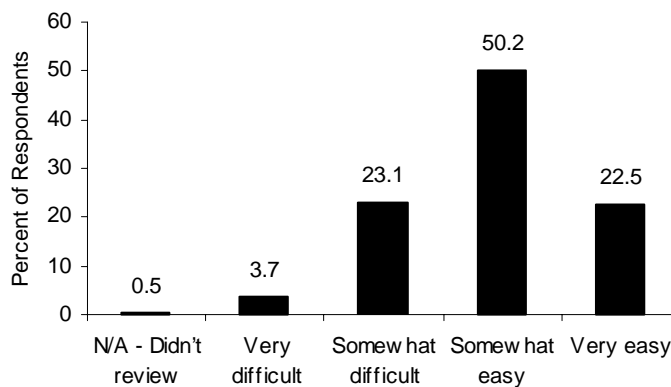
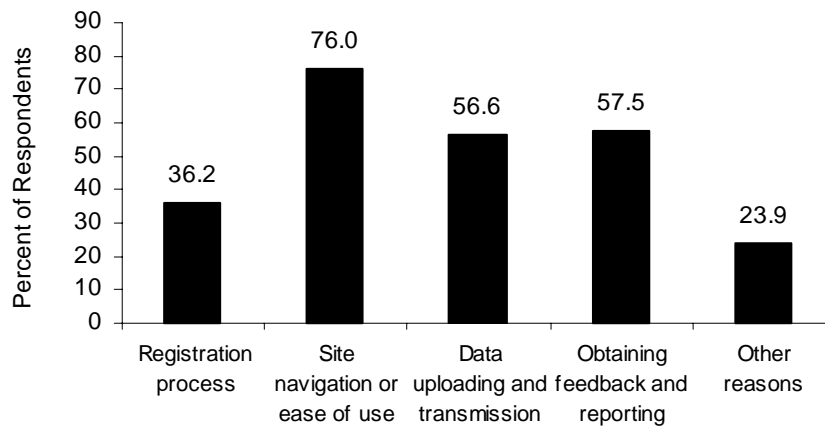


Figure II.4. Hospital Review and Approval of HQA Published Data (as a percent of all QI directors)



To submit quality data to CMS, hospitals are required to use QualityNet for secure communications. Four of ten QI directors (42 percent) said they found QualityNet to be somewhat or very difficult to use. The most frequently cited difficulty was site navigation and ease of use, with over three-quarters of QI directors who expressed difficulty (76 percent) reporting this problem (Figure II.5). Additionally, 57 percent said they experienced difficulty with obtaining feedback from CMS and reporting the measures as well as with data uploading and transmission. Others reported problems with the registration process and a few reported other difficulties, such as lack of user friendliness or software difficulties.

Figure II.5. Aspects of QualityNet Exchange that are Difficult [as a percent of QI directors who reported difficulty with using QualityNet (42%)]



To extract quality data from medical records, many hospitals use CMS's Abstraction and Reporting Tool (CART) or a private vendor. About one-third (37 percent) of hospitals use CART to prepare their Hospital Compare data, with the remaining two-thirds (63 percent) using a private vendor. Among QI directors using CART, 27 percent felt it was very easy to use and 54 percent said it was somewhat easy to use. However, 20 percent of QI directors said they had at least some difficulty with using CART. Among those citing some difficulty with CART, data entry or abstraction problems were cited most often (Table II.1). Among QI directors who use a vendor, only 6 percent expressed problems with their vendor's service, the most frequent difficulty involved communications between the hospital and the vendor.

Table II.1. Problems with Cart/Problems with Private Data Entry or Abstraction Vendor

Problems with CART	Percent of Hospitals That Use CART (37%) Citing Difficulty
Data entry or abstraction	80.6%
Installation or setup	50.5%
Data export or the case complete routine	45.5%
Obtaining feedback and reporting	43.5%
XML file layout	22.5%
Data entry	9.4%
Validation process	4.9%
Inconsistent/change too frequently	4.4%
Software glitches	3.8%
Appeals slow/lack of feedback	3.3%
Frequency with which passwords need to be changed	1.6%
Not user friendly	1.6%
Instructions not clear	1.2%

Problems with Private Data Entry or Abstraction Vendor	Percent of Hospitals That Use Private Vendor (63%) Citing Difficulty
Communication problems	31.0%
Not up to date w/tool or knowledge	19.9%
Submission problems	18.3%
Timeliness of data feedback	17.5%
Software not user friendly	7.6%
Timeliness of follow-up to questions/fix of problems	4.9%

C. VIEW OF THE DATA AND WEBSITE

We asked QI directors and senior executives whose hospitals submit data under the HQA about their perceptions of the accuracy of the published data. There was general agreement between the two sets of respondents that HQA data accurately represent the hospital's quality performance for the measured conditions, with more than nine of ten asserting its accuracy (Figure II.6).

Respondents in the very small subgroup of hospitals that only report quality data under the section 501(b) provision were less likely to feel that publicly reported data accurately reflect quality at their hospital. More than one in three senior executives at these hospitals (36 percent) as well as 16 percent of QI directors stated that the data published for their hospital's quality performance does not represent their hospital accurately at all (Figure II.7).

Among all respondents who believe the published Hospital Compare data only represent the hospital's quality performance somewhat or not accurately at all, approximately two-thirds felt the set of measures for the conditions reported was too small to represent quality, and approximately one-half said they had clinical concerns regarding one or more of the measures (Figure II.8 and Figure II.9).

Figure II.6. View on How Accurately the Hospital's Performance is Represented by HQA Data (as a percent of QI directors (98%) and senior executives (95%) whose hospital submits HQA data)

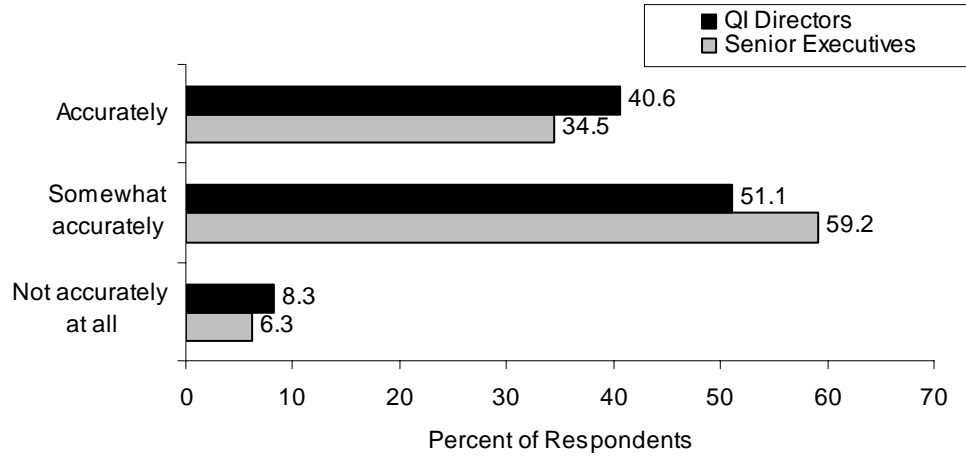


Figure II.7. View on How Accurately the Hospital's Performance is Represented in Section 501(B) Data (as a percent of QI directors (1.7%) and senior executives (3.0%) whose hospital only submits section 501(b) data)

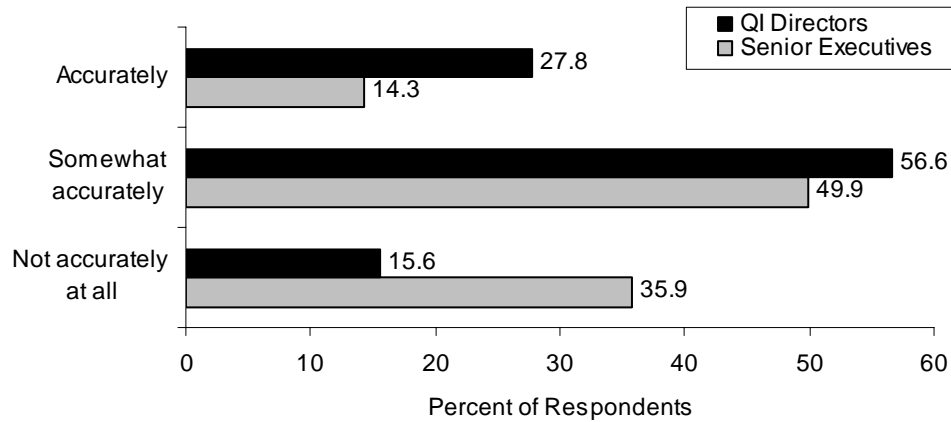
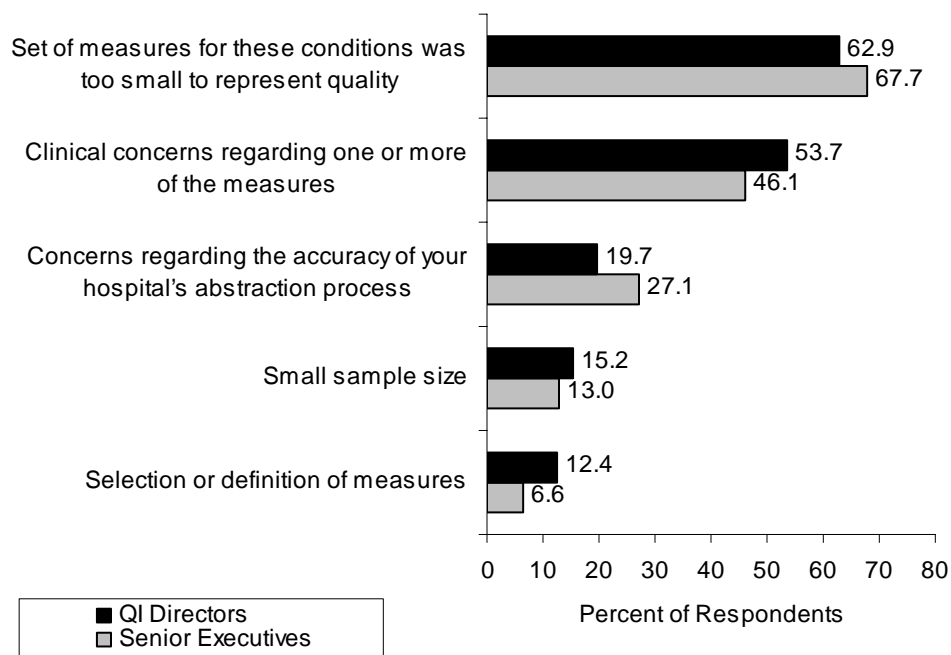


Figure II.8. Reasons Hospital Compare Data Represent the Hospital's Quality Performance Somewhat Accurately/Not Accurately at All (as a percent of QI directors (59%) and Senior Executives (65%) who said Hospital Compare data are not entirely accurate)



Nearly all (95 percent) of QI directors and senior executives said they or colleagues at their hospital regularly review the data posted on CMS's Hospital Compare website, and nearly all again (90-95 percent) said they compare their hospital's quality performance to both that of other hospitals and to the site's benchmarks. Eight in ten compare their hospital's performance to other hospitals in their area and to hospitals similar in type. Another 13 percent compares performance only with hospitals in their market area, while 4 to 5 percent compare only similar types of hospitals.

When asked why the few hospitals did not review their Hospital Compare data, there was considerable disagreement in responses between senior executives and QI directors. Slightly over two-thirds of the senior executives said it was because they already knew how the hospital compared to other hospitals through other data sources. In comparison, only one-fourth of QI directors cited this reason. Additionally, 28 percent of senior executives said it was because they were too busy to review the data compared with 44 percent of QI directors; and a lower percentage of senior executives (35 percent) compared with QI directors (48 percent) said it was because they had reviewed data during the preview period so there was no need to examine the published data (Figure II.10).

Figure II.9. Types of HQA Measures Eliciting Clinical Concerns (as a percent of QI directors (32%) and senior executives (30%) who said Hospital Compare data is not entirely accurate and who expressed clinical concerns about its accuracy)

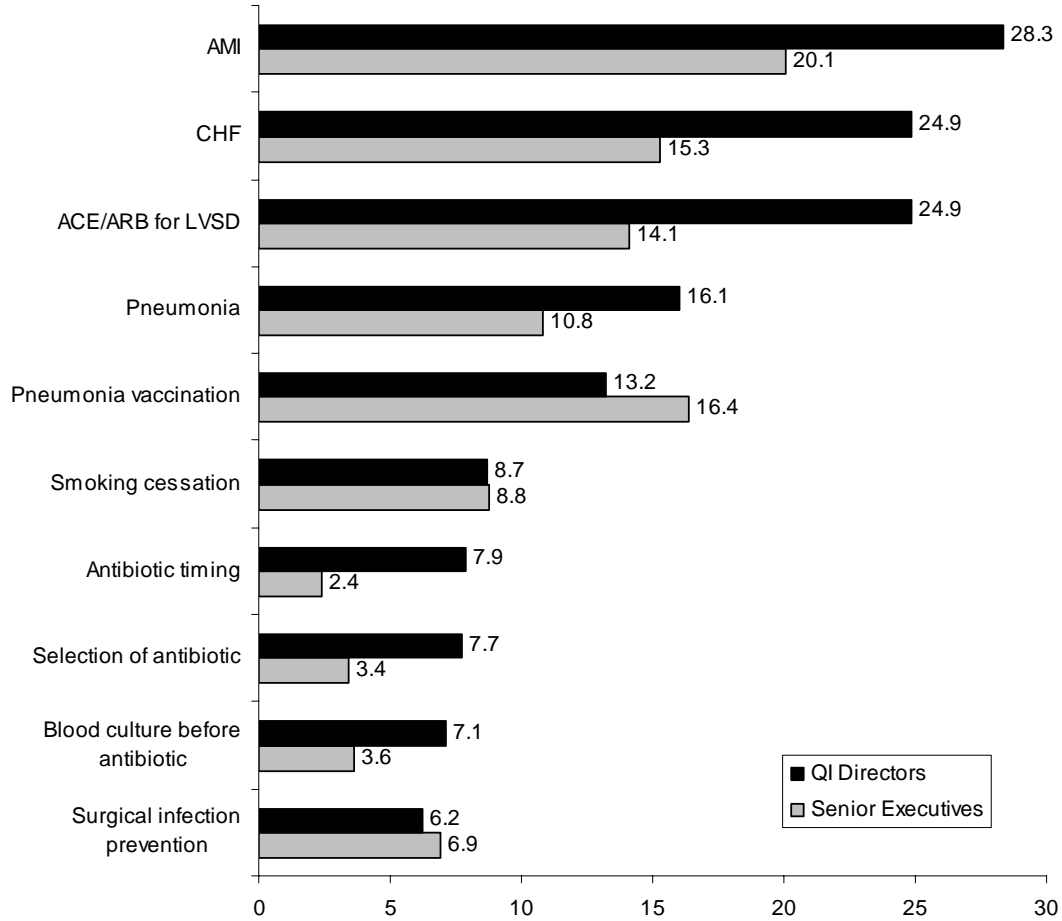
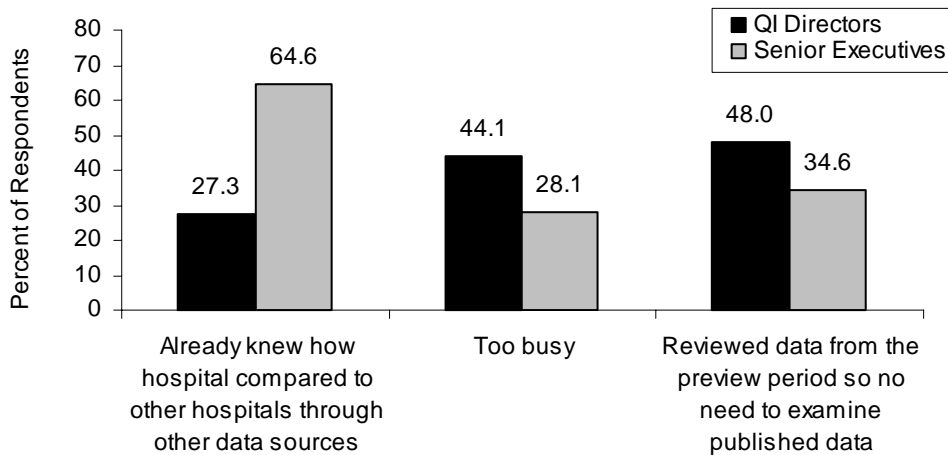


Figure II.10. Reasons That the Five Percent of Hospitals Did Not Review Their Hospital Compare Data

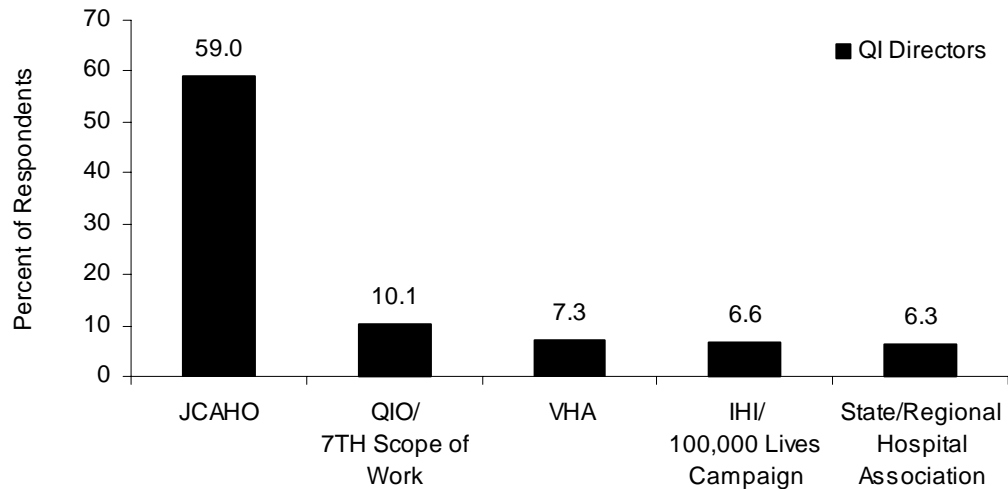


D. LINKAGE WITH OTHER QUALITY REPORTING EFFORTS

Nearly 6 of 10 hospitals (59 percent) submit quality data on heart failure, heart attack, pneumonia, and or/surgical infection prevention to the Joint Commission. A few hospitals also report data to the other four public reporting programs shown in Figure II.11.

Among hospitals that submit quality data to another program (except for the Joint Commission), 57 percent of QI directors said that the multiple public reporting programs reinforce each other. However, 20 percent said the multiple public reporting requirements interfere with each other, and that the most frequent problem is that the programs use different measure specifications or measure definitions (52 percent). Other reasons were a lack of standardization (29 percent), duplication of effort (25 percent), or use of different timeframes in their measure specifications that causes confusion (17 percent).

Figure II.11. Submission of Similar Data for Other Quality Reporting Efforts (as a percent of all QI directors)



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CHAPTER III

REACTION TO HQA/SECTION 501(B) DATA FROM OUTSIDE THE HOSPITAL

Less than one-quarter of senior executives (23 percent) and QI directors (22 percent) reported that the hospital received any publicity or attention as a result of the quality data published by CMS on Hospital Compare. Among QI directors reporting publicity, less than one-half (44 percent) felt the publicity was positive, while slightly over one-half felt the publicity was neutral (30 percent) or negative (26 percent).

Among those senior executives reporting such publicity, by far the most common source of publicity was local print or broadcast media, with three-fourths reporting this type of publicity (Figure III.1).

According to senior executives, the tone of the publicity varied substantially by source (Figure III.2). While publicity from national and local trade press was overwhelmingly positive, the tone of national and local media coverage was more mixed (48 percent positive, 43 percent mixed, and 9 percent negative for local media coverage; and 43 percent positive and 57 percent mixed for national media coverage).

Approximately one in seven (15 percent) senior executives said they received feedback other than publicity as a result of the publication of their hospital's quality data. About 60 percent of respondents who received feedback, or approximately 9 percent of all surveyed hospitals, received comments on their Hospital Compare data from individual consumers (Figure III.3). However, many also said that much of this feedback came from sources inside their hospital: nearly three-quarters reported receiving feedback from their board of directors or trustees and another 45 percent received feedback from senior staff in their hospital system's corporate office, accounting for approximately 18 percent of all surveyed hospitals (Figure III.3). Together with the figures presented in Figure III.1, these findings indicate that public reporting is likely to affect hospitals more through the local media and internal hospital leadership and less through external sources such as payers, consumers, or national or local organizations.

Figure III.1. Source of Publicity or Attention (as a percent of senior executives (23%) whose hospital received publicity in response to Hospital Compare reporting)

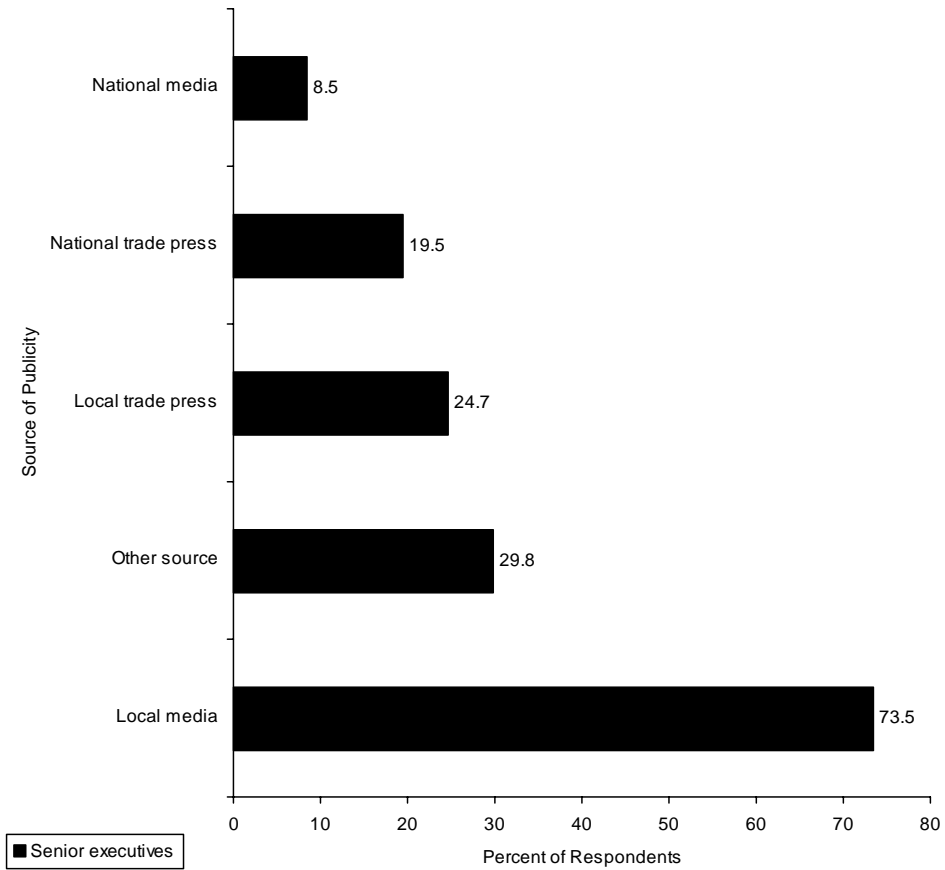


Figure III.2. Tone of Publicity or Attention (as a percent of senior executives who received publicity from each source in response to Hospital Compare reporting)

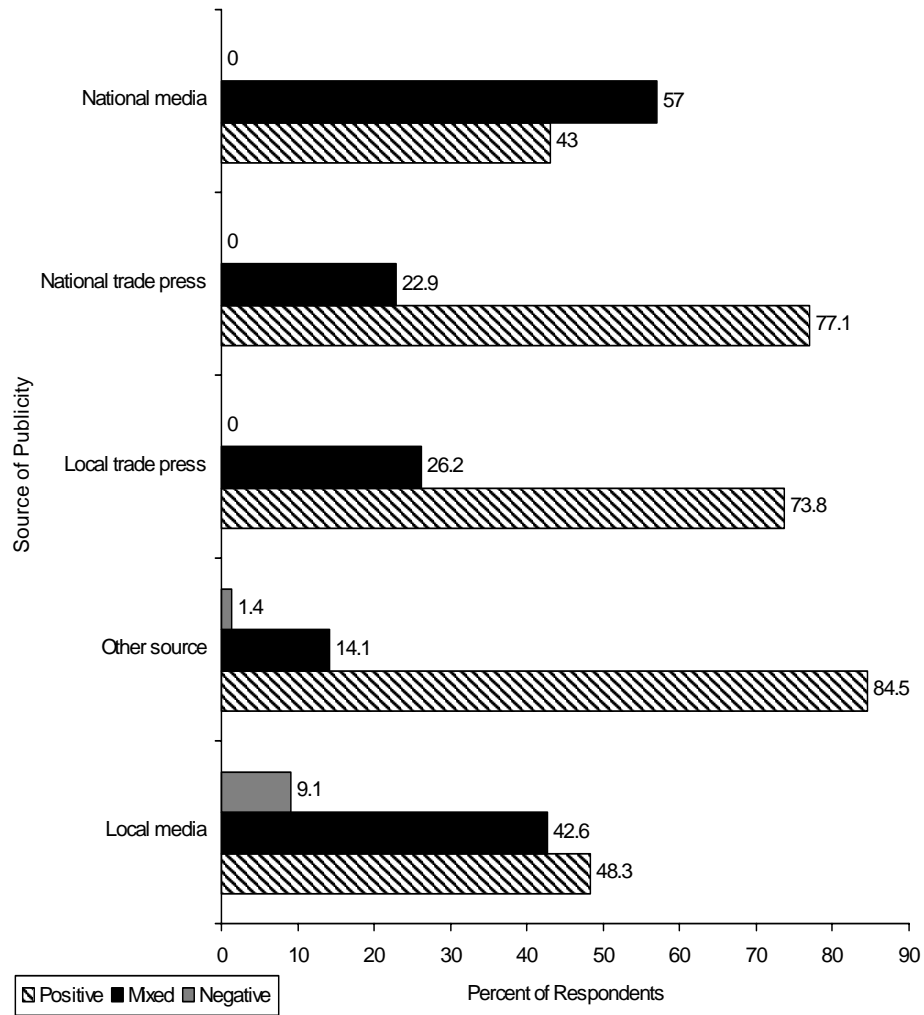
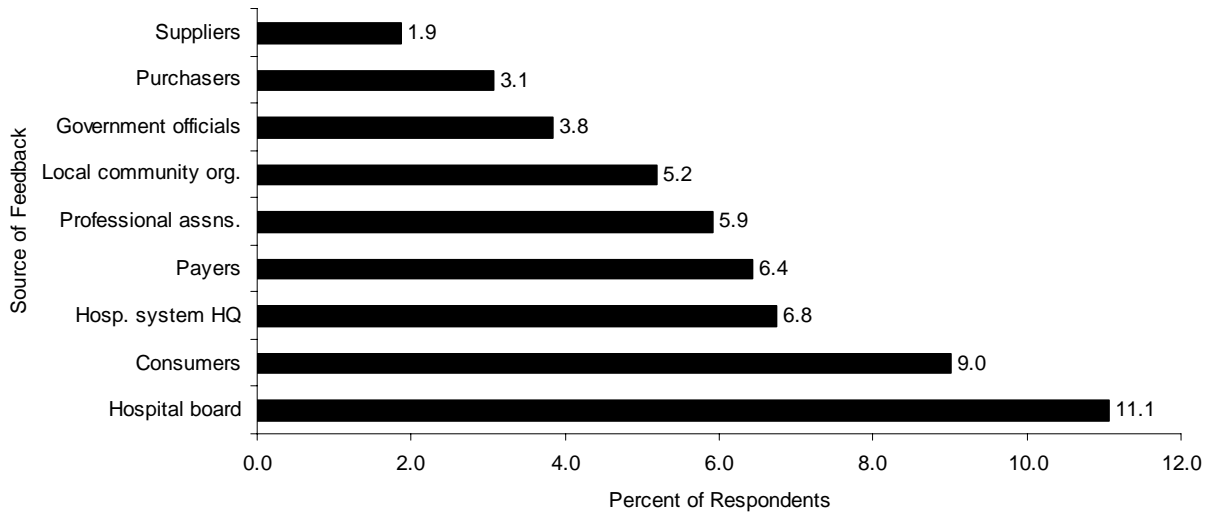


Figure III.3. Sources of Feedback Other Than Publicity (as a percent of all senior executives)



We asked an open-ended question of senior executives who reported feedback other than publicity about the impact the feedback had on their hospitals' quality improvement activities. Nearly one-half (45 percent) reported that the feedback reinforced and encouraged their on-going quality improvement efforts, and another one-fourth (25 percent) said the feedback had other positive effects. In contrast, almost one in five (19 percent) reported the feedback having little or no effect. All other responses were limited to small numbers of senior executives.

CHAPTER IV

CHANGES IN HOSPITAL QUALITY IMPROVEMENT PROGRAMS AND MANAGEMENT

A. OVERALL AGGRESSIVENESS OF CHANGES AND LEVEL OF STAFF EFFORT REQUIRED

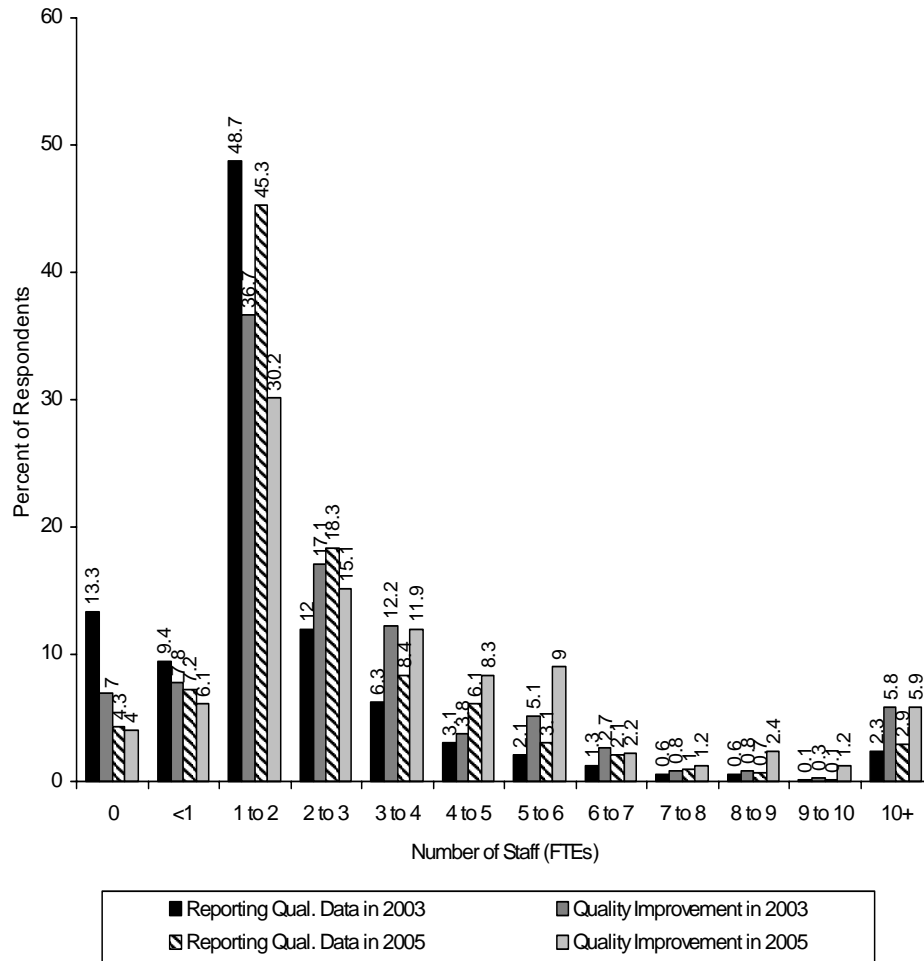
1. Staff Effort Required for Quality Improvement and Reporting

Nearly all QI directors reported that their hospital devoted at least some staff resources to reporting quality data (96 percent) and to quality improvement activities (96 percent). Hospitals varied widely, however, in the number of full time equivalent (FTE) staff devoted to these two functions (Figure IV.1). The modal hospital devoted one to two staff to reporting data and an equal number to quality improvement. However, on average, hospitals devoted much more staff to quality improvement (4.82 staff) than to reporting quality data (2.47 staff).

Slightly over one-half (53 percent) of senior executives reported that the number of staff dedicated to reporting quality data and quality improvement in their hospital has increased over the past two years. According to QI directors, the mean number of staff devoted to reporting quality data increased from 1.9 in 2003 to 2.5 in 2005, and the mean number of staff devoted to quality improvement increased from 4.4 in 2003 to 4.8 in 2005.

Two-thirds (67 percent) of the QI directors who reported an increase in staff devoted to submission and reporting of quality data indicated that the HQA and section 501(b) programs were a major cause for the increase. A similar proportion (66 percent) said that other public reporting requirements were also major causes for the increase. In contrast to activities involving the reporting of quality data, much fewer (51 percent) of QI directors indicated that the HQA and section 501(b) reporting was a major cause of the increase in staff devoted to quality improvement.

Figure IV.1. Number of Staff (FTEs) Devoted to Quality Improvement and Reporting of Quality Data (as a percent of all QI directors)



In addition to increased staff sizes, QI directors reported increased workload over the past two years for staff devoted to quality reporting and quality improvement activities. Specifically, two-thirds of these QI directors said such staff experienced major increases in workload, and the other one-third reported a minor increase in workload.

We distinguished between staff effort devoted to reporting quality data and improving quality in the clinical areas covered by HQA, section 501(b), and other public and private reporting efforts, and clinical areas in which the hospital is not currently doing any public reporting. We found that the large majority of QI directors felt that staff effort increased substantially over the past two years in both types of clinical areas.

Beginning with those clinical areas for which the hospital currently reports quality measures, 93 percent of QI directors asserted that the staff effort devoted to these areas increased over the past two years and virtually no hospital said staff effort had declined. Three-quarters of the respondents (75 percent) reported that the increased allocation of staff

to these clinical areas was major. Among QI directors who reported increased staff, six in ten felt that HQA and section 501(b) requirements were major causes for the increase, with an additional three in ten saying that HQA and 501(b) were minor causes. However, HQA and 501(b) were not the only reasons for increased allocation of staff in publicly reported clinical areas. One-half (50 percent) of QI directors felt that quality data reporting requirements other than HQA or 501(b) were also major contributors to the increased workload of the QI staff, and nearly three quarters (74 percent) felt that increased attention to quality improvement in general within their hospital was a major contributor.

Compared with publicly reported clinical areas, fewer QI directors—but still a relatively high percentage (78 percent)—reported increased staff effort devoted to quality data and improvement in clinical areas for which they are not currently publicly reporting quality measures. A slightly higher percentage, but again very few (5 percent), said they had shifted staff effort away from non-reported areas. Among those who reported increased staff, over two-thirds (68 percent) felt the higher allocation of staff effort was major. Of these, nearly all felt that the increase resulted from new quality improvement programs (98 percent) and expansion of on-going quality improvement programs (94 percent).

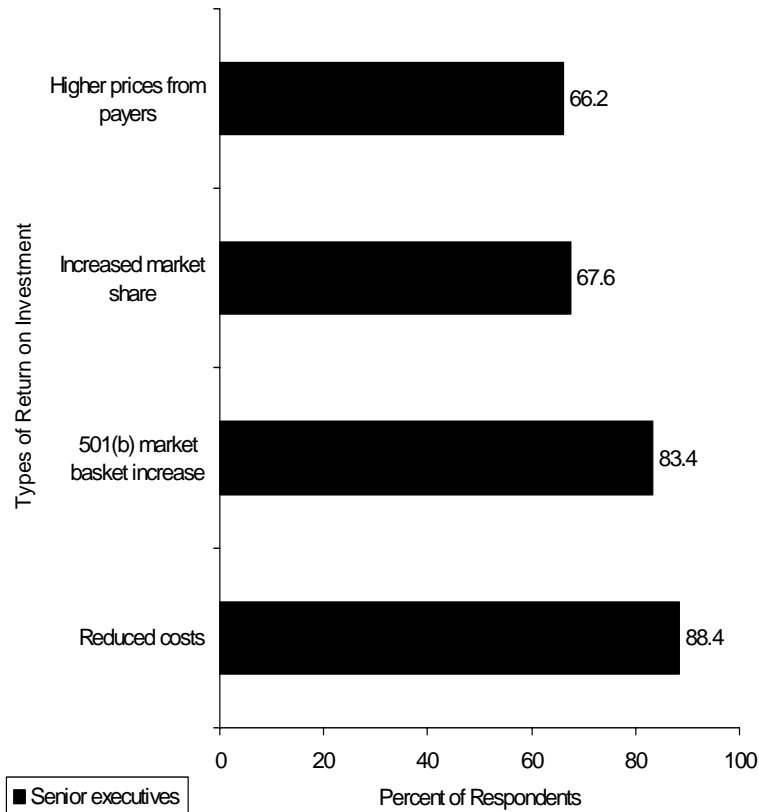
2. Business Case for Quality

As noted above, slightly more than one-half of senior executives reported that the number of full-time equivalent staff devoted to quality improvement and to reporting quality measures increased over the past two years. Viewing staff increases as an investment in quality improvement, we asked these senior executives whether they believe there is a business case for quality, that is, whether the senior executive anticipates the hospital will realize a financial return on this investment within the next five years. Three-quarters (75 percent) of such senior executives believe there is a business case for quality.

Among senior executives who have seen their quality improvement staff grow and who believe there is a business case for quality, almost nine of ten anticipate that investments in quality improvement lower costs (Figure IV.2). Although we did not ask about what types of costs would be lowered, senior executives have told us anecdotally that such investments avoid the increased length of stay associated with post-surgical infections and adverse events, as well as reduce the costs associated with malpractice claims. Under Medicare's DRG payment system, costs of increased length of stay are born by the hospital.

Nearly as many senior executives who have seen their quality improvement staff grow and believe there is a business case for quality view the full market basket update to Medicare rates, specified in section 501(b) of the MMA, as a return on investment in public reporting. Section 501(b) stipulates CMS will reduce the market basket update to Medicare prospective payment reimbursement rates for hospitals that do not report the ten HQA “starter set” quality measures. This figure indicates that more than eight out ten such senior executives view getting the full market basket update, as opposed to a fraction of that update, as a financial return on their investments in quality reporting.

Figure IV.2. Types of Return on Investments in Quality Improvement (as a percent of senior executives (40%) whose quality improvement/reporting staff has increased in the past two years *and* who believe that the cost associated with the increase will have positive returns)

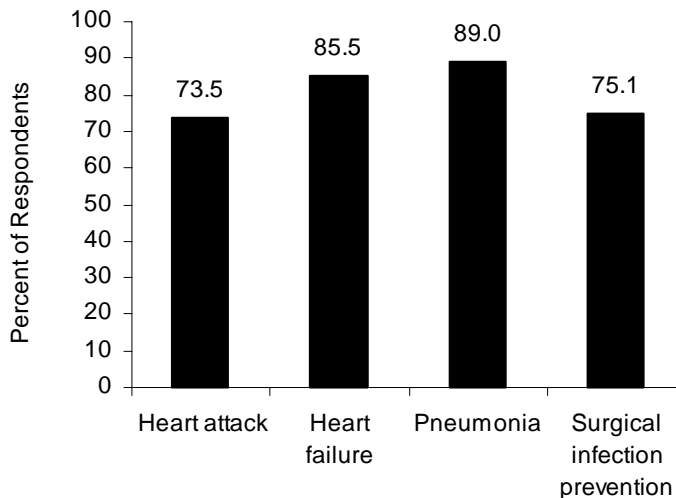


Approximately two-thirds of such senior executives also anticipate a return on investment in quality in the form of increased market share (68 percent), and in the form of payers being willing to pay higher reimbursement rates for high-quality health care (66 percent).

3. New or Enhanced Quality Improvement Initiatives

Almost all QI directors (95 percent) reported that their hospital implemented either new or enhanced quality improvement initiatives over the past two years. Most often, these initiatives focused on care for pneumonia and heart failure, but many hospitals also implemented projects to prevent surgical infections and improve care for heart attack patients (Figure IV.3). When asked to list other than the survey-provided clinical areas that have received particular quality improvement attention over the past two years, a good number of respondents named ICU care (32 percent), patient safety (14 percent), and the Institute for Health Improvement's (IHI) 100,000 Lives Campaign targets (17 percent). Five in ten said HQA or section 501(b) participation had a major influence in their instituting or enhancing such initiatives, while four in ten said the programs played a minor role. The same percentages stated that the hospital's public reporting activities in the aggregate influenced their quality improvement activities in this same way.

Figure IV.3. Focus on New or Enhanced Quality Initiatives (as a percent of QI directors (95%) whose hospital implemented new quality improvement initiatives in the past two years)



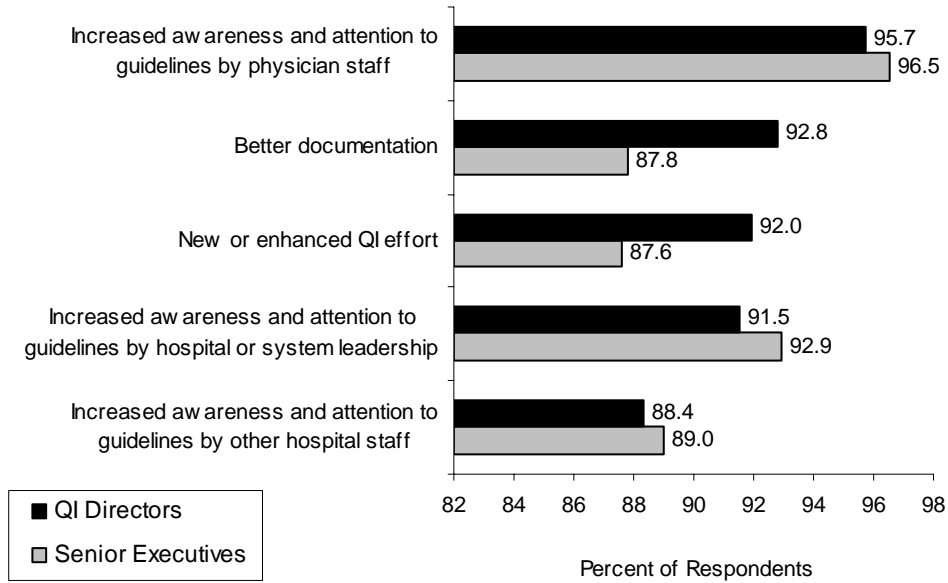
Although most hospitals have implemented new quality initiatives over the past two years, almost one in five (17 percent) have also dropped or reduced some quality improvement activities during the period. This most frequently occurred in the clinical areas of ICU care (16 percent), surgical infection prevention (9 percent), obstetrics (7 percent), and “many or all” clinical areas (7 percent).

B. FACTORS AFFECTING QUALITY PERFORMANCE

1. Improvement in Performance

Three of four QI directors (75 percent) and an even higher proportion of senior executives (81 percent) reported that their hospital’s performance had improved significantly on one or more of the HQA or section 501(b) hospital quality indicators over the previous reporting period. Nearly nine of ten of both types of respondents attributed these improvements to all of the five reasons specifically asked about in the survey (Figure IV.4), with increased awareness and attention to guidelines by physician staff slightly leading the list for both types of respondents. Very few attributed the improvements to factors other than those suggested (e.g., less than 2 percent attributed improvements to payment or financial expectations or to electronic medical record adoption).

Figure IV.4. Reasons for Hospital Compare Measure Improvements (as a percent of QI Directors (75%) and Senior Executives (81%) who reported significant improvement in at least one Hospital Compare indicator over the previous reporting period)



As noted in the figure above, 92 percent of QI directors and 88 percent of senior executives with improved hospital performance attributed it to new or enhanced quality improvement efforts. Through an open-ended question, these respondents pointed to feedback and dissemination of results, staff and physician education on the hospital’s new quality improvement initiatives, and a specific focus on the new initiatives among all hospital staff as reasons for the improvements (Table IV.1).

Table IV.1. Top Five Quality Improvement Efforts Influencing Increases in Hospital Compare Indicators (as a percent of QI directors (69%) and senior executives (71%) who reported improved Hospital Compare indicators and who attributed the improvement to new or enhanced quality improvement efforts)

Types of New or Enhanced Quality Improvement Efforts	Top 5 Efforts Cited by QI Directors	Top 5 Efforts Cited by Senior Executives
Staff education/physician education	20.9%	18.0%
Data feedback/scorecard/dissemination of results	17.8%	16.6%
Forms (including discharge instructions)	17.1%	
Focus/attention on the particular measure	17.0%	18.2%
Standing orders	12.0%	
Structural (e.g., establish new quality mgmt., service line chief)		12.5%
Clinical protocols/pathways (tie)		12.1%
Tools (tie)		12.1%

2. Decline in Performance

Only 5 percent of senior executives said that any of their hospital's published HQA or section 501(b) measures had declined significantly over the previous reporting period. Of the few respondent hospitals that reported declines, more than one-quarter (28 percent) attributed it to documentation problems and another 13 percent said it was due to a few bad outlier cases. Other various reasons were reported by only one or two respondents.

Encouragingly, a very high number of these hospitals with measure declines—85 percent—initiated new efforts to improve performance on the measures that had declined. New activities included staff education (95 percent), improvement in the measure's documentation (82 percent), and a new or enhanced quality improvement intervention aimed specifically at improving the measure (73 percent). These findings suggest that hospitals do pay attention to publicly reported data and proactively take steps to improve performance when quality indicators fall.

C. USE OF OUTSIDE RESOURCES FOR QUALITY IMPROVEMENT

Almost eight of ten QI directors reported receiving advice from outside the hospital on how to improve the hospital's performance on pneumonia, heart failure, heart attack, or surgical infection prevention. Among those reporting outside assistance, the two most common sources of that assistance have been the hospital's QIO and the IHI (Figure IV.5). Well over one-half (58 percent) reported receiving assistance from their QIO, and almost one in six (16 percent) reported receiving assistance from IHI. Among those who were assisted by their QIO, nearly one-half (47 percent) reported that the assistance was substantial, and nearly all felt it was helpful: 43 percent felt the assistance was very helpful, 52 percent felt it was somewhat helpful, and only 5 percent felt it was not helpful.

Over one-half (54 percent) of QI directors reported receiving assistance from outside the hospital specifically on reporting and validating quality data under the HQA or section 501(b) programs. Among those reporting this type of assistance, about one-half (52 percent) received the assistance from the hospital's QIO, and one in ten (11 percent) received the assistance from their ORYX vendor—the performance measurement program of the Joint Commission (Figure IV.6).

Four of ten QI directors who reported receiving this type of assistance from their QIO felt the assistance was substantial, while nearly five in ten felt they received some, but not substantial, assistance. Over one-half (55 percent) felt the QIOs' assistance was very helpful, and another 41 percent felt it was somewhat helpful. Only 4 percent felt it was not helpful.

Figure IV.5. Source of Quality Improvement Assistance from Outside the Hospital (as a percent of QI directors (79%) who received quality improvement assistance from outside the hospital)

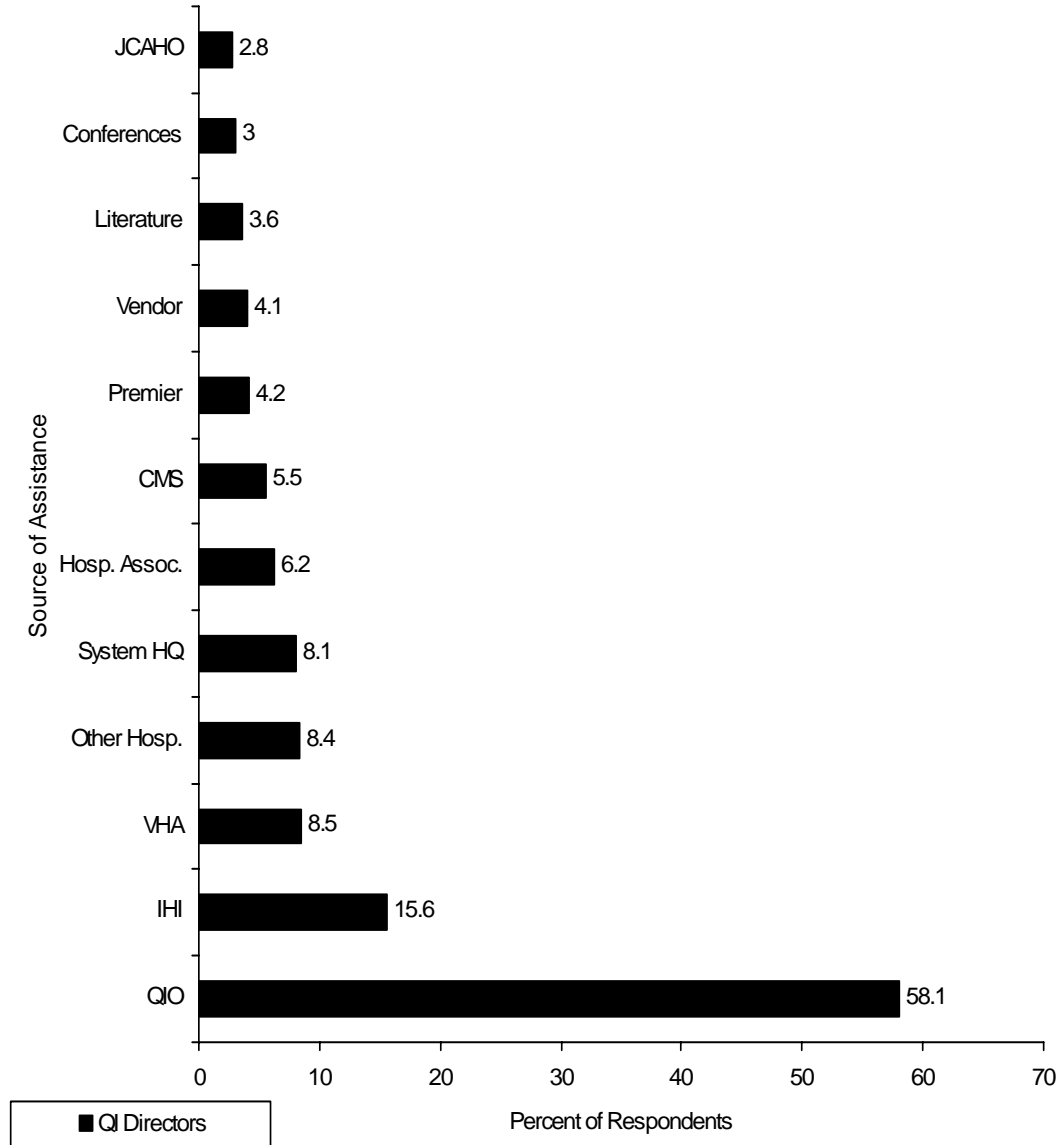
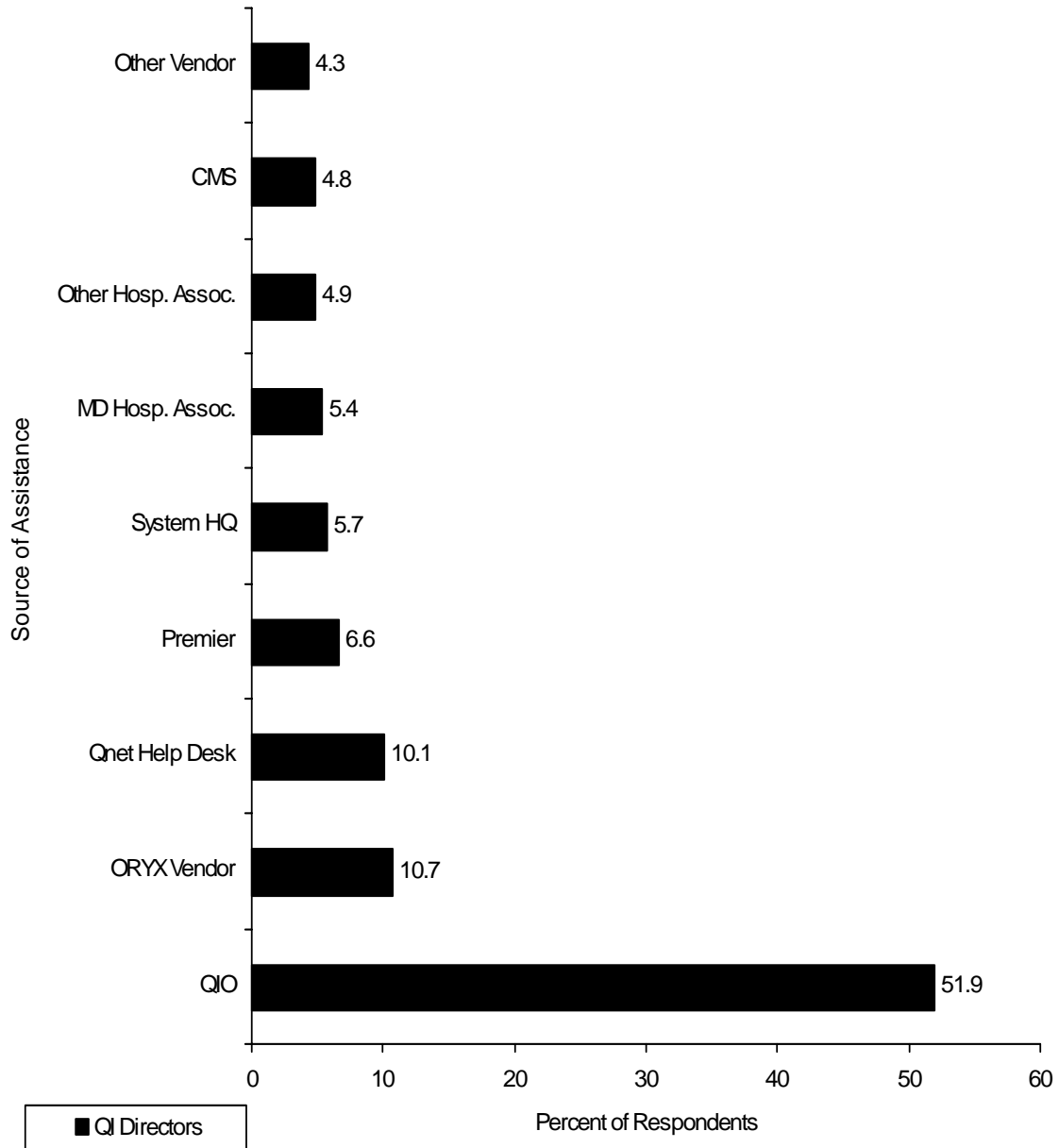


Figure IV.6. Source of Assistance on HQA and Section 501(b) Reporting (as a percent of QI directors (54%) who received data reporting/validation assistance from outside the hospital)



D. CHANGE IN HOSPITAL LEADERSHIP’S ATTENTION TO QUALITY

A very high percentage of senior executives (87 percent) and an even higher percentage of QI directors (93 percent) declared that their hospital had experienced an increase in CEO and other top administration leadership attention to hospital quality or knowledge of quality performance over the past two years (Figures IV.7 and IV.8). Almost no one said leadership attention had declined over that period. Many, but not all, also said that participation in the HQA or section 501(b) programs played a major role in generating greater hospital leadership attention to and knowledge of quality issues.

Several indicators of this increased hospital leadership attention to quality within the past two years are the very high numbers of both QI directors and senior executives who said their hospital had more frequent internal hospital staff requests for quality performance information, more discussion of quality performance in strategic planning meetings, and heightened attention to quality improvement by a greater number of hospital staff (Table IV.2). Although QI directors and senior executives were interviewed separately at each hospital, their responses to this question are remarkably the same.

Figure IV.7. Change in Hospital Leadership’s Attention to Hospital Quality, as Perceived by Senior Executives

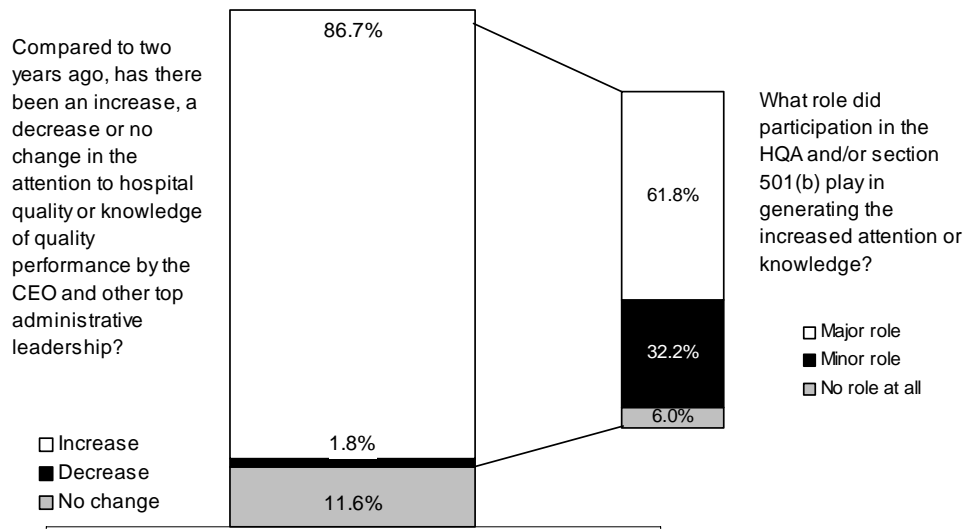


Figure IV.8. Change in Hospital Leadership’s Attention to Hospital Quality, as Perceived by QI Directors

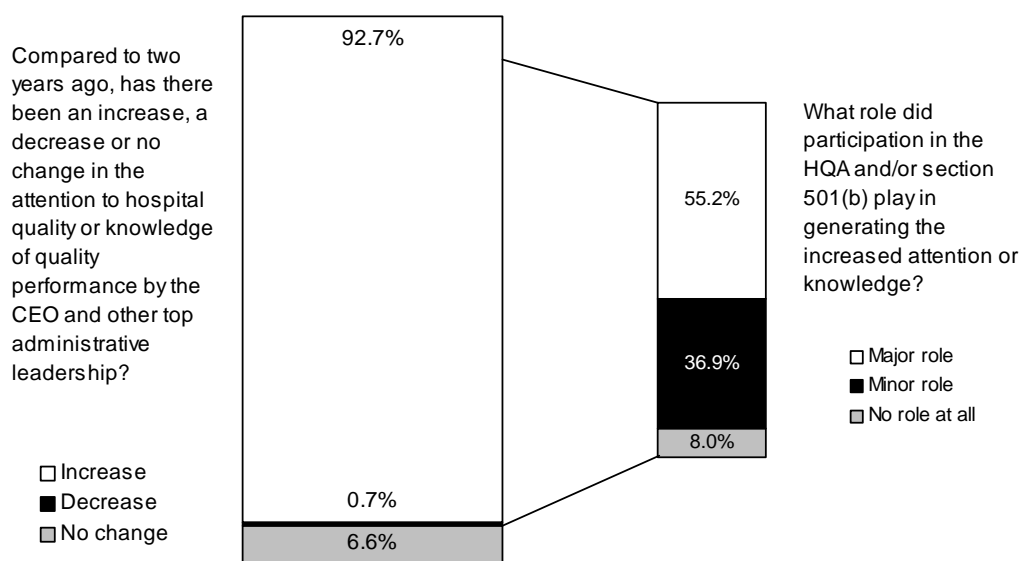


Table IV.2. Indicators of Increased Attention/Knowledge of Quality Among Hospital Administrative Leadership and Staff (as a percent of QI directors (93%) and senior executives (87%) who reported increased hospital leadership attention to quality over the past two years)

Indicators of Increased Attention/ Knowledge of Quality	Percent of QI Directors Responding Yes	Percent of Senior Executives Responding Yes
More frequent internal requests for information about quality performance from:	82.2%	85.8%
Medical staff leadership	88.1	88.2
Other physicians	74.5	77.6
Board members	81.0	84.9
Senior executives	98.2	96.8
Others specified (top two answers):		
Nursing staff	20.2	16.0
Department managers and “middle” managers	27.1	15.8
More discussion of quality performance in hospital's strategic planning process	91.2	93.6
Heightened attention to improving quality by a larger group of hospital staff	95.8	96.5

Similar to increased attention to quality among hospital administrative leaders, a very high percentage of senior executives (85 percent) asserted that their hospital's board of directors paid more attention to quality matters compared with two years ago (Figure IV.9). Almost no respondent said there had been a decline in attention. Indicators of increased board attention include nearly all senior executives saying their board has become more familiar with quality issues and their hospital's performance on quality measures over the past two years, and about three-fourths saying their board now has a larger role in quality oversight activities.

Three-fourths of senior executives gave at least partial credit to the HQA and section 501(b) initiatives for increasing their hospital board's attention to quality issues. One-fourth instead reported other reasons for their board's increased involvement: the two most frequently cited attributions were because the hospital leadership and management had made a concerted effort to educate the board on quality issues (e.g., provide additional information, improved explanation of quality data, creation of dashboards for board presentation) (22 percent), and/or because they had brought quality matters consistently and repeatedly to the board's attention (19 percent) (Figure IV.10).

Figure IV.9. Change in Hospital Board's Attention to Hospital Quality, as Perceived by Senior Executives

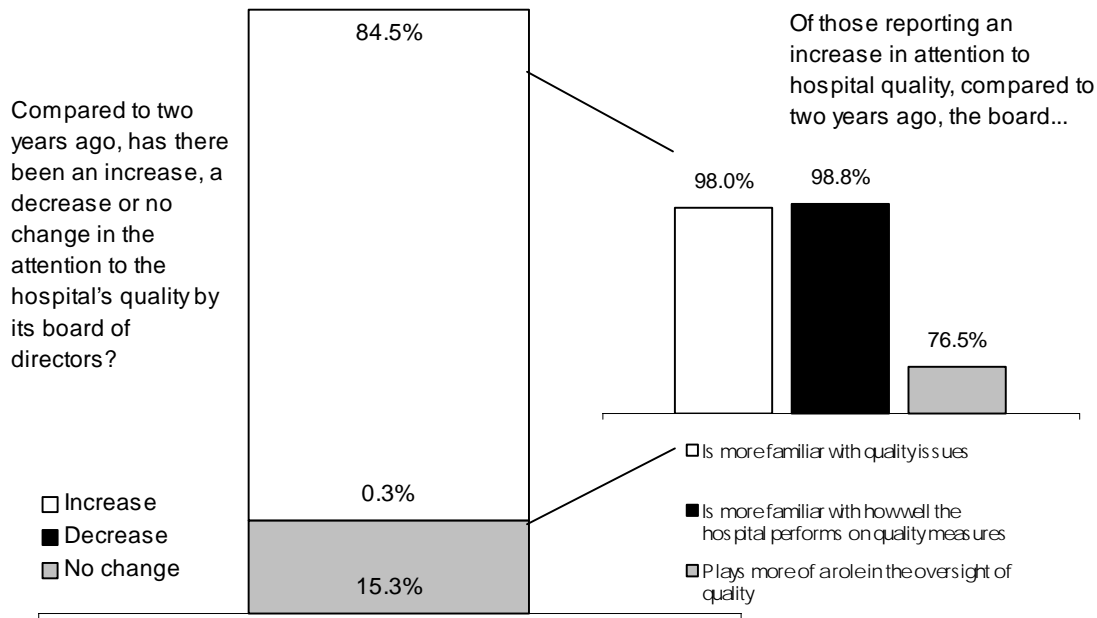
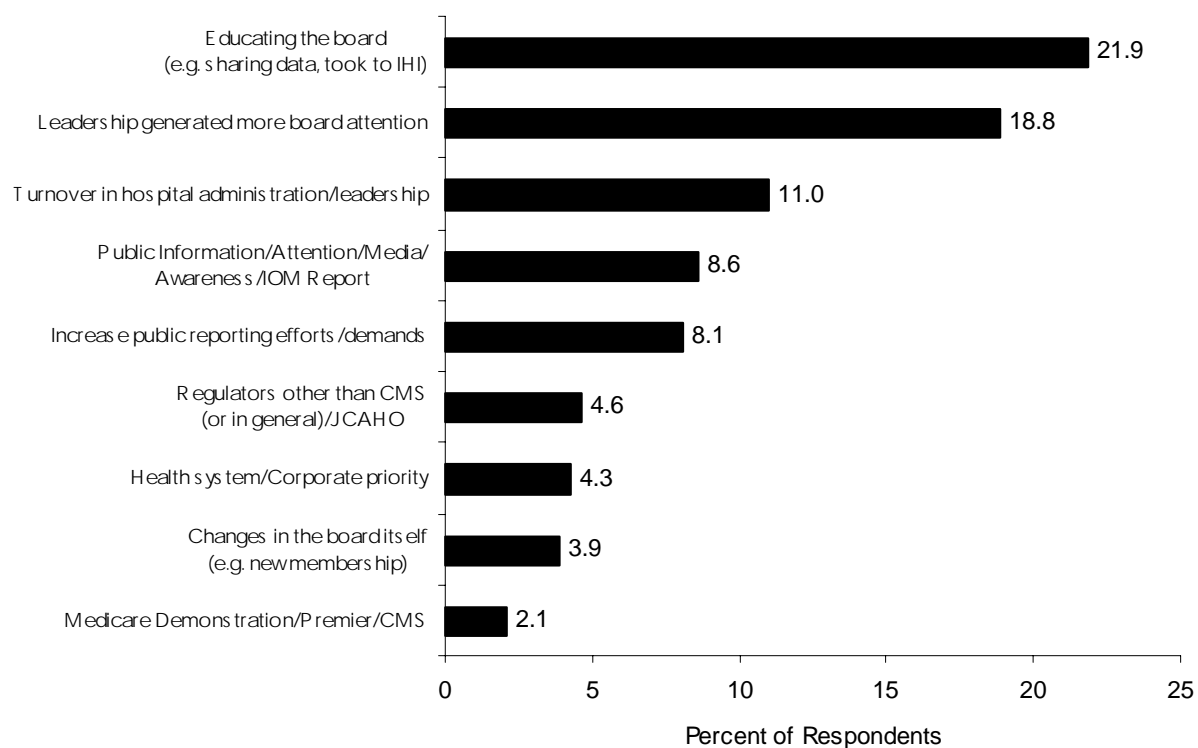


Figure IV.10. Reasons for Increased Hospital Board Attention to Hospital Quality Not Due to Hospital Compare Reporting, as Perceived by Senior Executives



Although a relatively high proportion of senior executives (74 percent) reported an increase in attention to hospital quality or knowledge by hospital-employed or affiliated physicians due to public reporting, this is fewer than those who reported the same for their hospital's leadership staff (87 percent) or hospital board (84 percent). One-fourth said they had not seen any changes in physician attention to quality matters, although virtually none reported a decline in attention.

E. HEALTH INFORMATION TECHNOLOGY AND RELATIONSHIP TO QUALITY

Public reporting of hospital quality and new or enhanced quality efforts must necessarily be financed from new resources or by shifting resources away from other hospital activities. The survey reveals significant new hospital investments in health information technologies (HIT). About six of ten (62 percent) senior executives reported hospital purchases of new computer hardware or software within the past two years that have enhanced the hospital's quality measurement and reporting efforts. Half of the expenditures were \$100,000 or less, and three-quarters spent up to \$600,000 on HIT (Table IV.3). Although the primary reason for the purchase was not necessarily to support quality measurement and reporting, a very high number of senior executives (88 percent) said the HIT purchase helped improve their hospital's quality or reporting activities. The most frequently cited motivation for the purchase was to improve the hospital's accuracy of measuring quality and the least important was to reduce routine labor costs for quality measurement and reporting (Table IV.4).

Table IV.3. Health Information Technology (HIT) Expenditures (Senior executives (62%) whose hospital purchased new computer hardware or software in the past two years that supports quality reporting)

Percentile of HIT Expenditure Distribution	Dollar Amount of HIT Purchase
10 th percentile	\$5,000
25 th percentile	\$25,000
Median (50 th percentile)	\$100,000
75 th percentile	\$600,000
90 th percentile	\$5,000,000

Table IV.4. Reasons Motivating Purchase of New Hardware/Software for Quality Improvement or Reporting Activities (as a percent of senior executives (55%) whose hospital purchased new computer hardware or software in the past two years that supports quality reporting and whose purchase was related to quality improvement or reporting)

Reason for New Hardware/Software Purchase	Percent Reporting Very Important	Percent Reporting Somewhat Important	Percent Reporting Not Important
To help meet public reporting requirements	41.9%	47.5%	10.6%
To reduce routine labor costs for quality measurement and reporting	35.5	44.5	20.0
To enhance the sophistication of quality measurement	64.0	29.6	6.4
To improve accuracy of quality measurement	76.1	20.0	3.9
To allow the hospital to measure more clinical areas and/or indicators	63.1	28.7	8.2

Many hospitals possess selected EHR capabilities. The most common EHR functionality allows for electronic viewing of lab results (88 percent) that is nearly always accompanied by decision support tools such as highlighting results that are out of normal range (95 percent) (Table IV.5). This was also the EHR capability that senior executives in hospitals with this function most frequently reported as being an important factor in improving quality at their hospital. The least adopted EHR functionality is the ability for clinicians to electronically input prescription orders and transmit them to the pharmacy (21 percent). In turn, senior executives with this capability see it as least important to quality improvement.

We asked senior executives with any of the selected EHR capabilities their views as to what is the single most important way they have affected hospital quality. A one-half said it improved the timeliness of transmission, broader access to patient data, and results that allow for more immediate and prompt clinical decision-making. Only about one in ten said the single most important factor has been to reduce medical errors or improve patient safety, or to improve communication among the patient's healthcare team in the same or different locations.

Table IV.5. Hospital Clinicians' Use of Electronic Health Record Capabilities (as a percent of all senior executives)

Electronic Health Record Capabilities	Percent of Hospitals That Have the Capability	Percent of Hospitals That Said EHR Capability Is Important to QI
Electronic input and transmission of prescription orders	20.6%	18.8%
Electronic prescription order system from row above that includes decision support functions	84.7	17.6
Electronic input and transmission of lab orders	48.6	45.9
Electronic viewing of lab results	87.7	N/A
Electronic lab results system from row above that includes decision support functions	95.1	81.9
Electronic clinical notes system	59.0	52.6
Electronic reminders for guideline-based interventions and/or screenings	23.9	22.7
Electronically stored images throughout the hospital available (e.g., CT, MRI, PET)	49.9	58.8

Senior executives who currently have computerized prescription entry and order, lab orders, lab results, clinical notes, or wide access to stored images were asked whether any of these EHR capabilities reduce labor effort required to abstract chart data for HQA or section 501(b) measures. Four in ten respondents said they did reduce labor effort, with the majority (69 percent) saying the reduction amounted to 20 to 80 percent of their total labor effort for this type of work and another 5 percent saying it was more than 80 percent. But another one-fourth said the labor reduction was only around 20 percent or less. Six in ten said the EHR capabilities do not reduce chart abstraction efforts for Hospital Compare data.

F. INTERNAL PRODUCTION AND USE OF PERFORMANCE DATA

An important indicator of the use and potential impact of Hospital Compare data is its distribution among hospital management and staff. Nearly all hospitals (about 95 percent) said this is done on a routine basis. Virtually all share the data quarterly with hospital senior management, physicians and nursing staff involved in care for the measured conditions, and the hospital board (Figure IV.11). About one-fifth of hospitals said they routinely share the data with all of their hospital's staff as well as with ancillary staff (e.g., lab and radiology). Senior executives were asked a follow-up question about several specific impacts of sharing Hospital Compare data among the hospital's management and staff, and their answers indicate that routine distribution of such data has a number of highly desirable effects (Table IV.6).

Figure IV.11. Parties with Whom Hospital Compare Data Are Routinely Shared (as a percent of all QI director and senior executives)

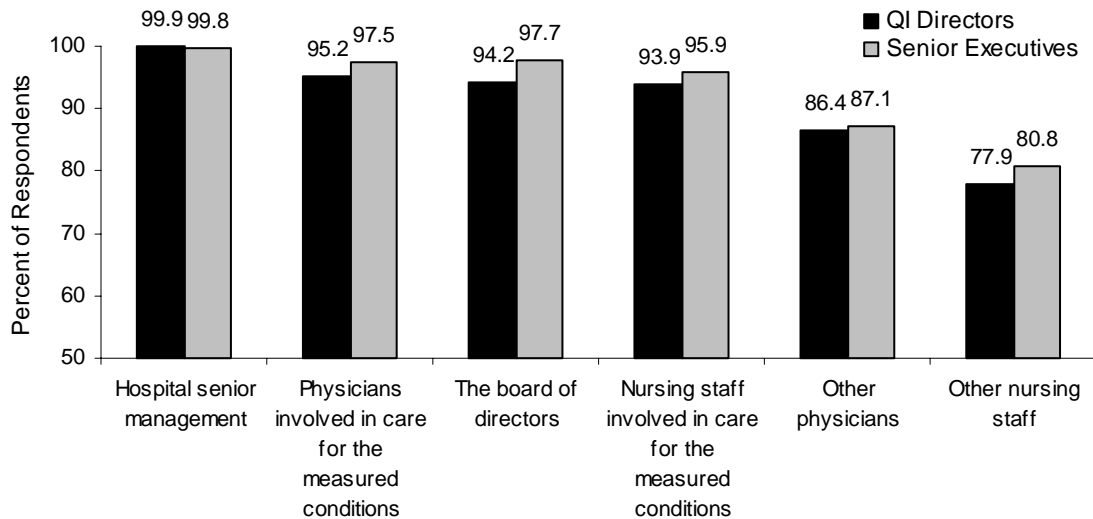


Table IV.6. Impacts of Routine Sharing of Hospital Compare Data with Hospital Management and Staff (as a percent of senior executives (95%) whose hospital regularly shares Hospital Compare data with management and staff)

Impacts	Percent of Senior Executives Saying Impact Has Occurred
Heightened awareness of guidelines among staff	97.2%
Improved hospital processes to create better support for meeting guidelines (e.g., patient chart reminders)	94.8%
Improved staff documentation of procedures	88.9%
Staff practices that are more consistent with guidelines	96.2%

The six in ten hospitals that also generate physician-level data from the Hospital Compare measures almost unanimously said this is a very (80 percent) or somewhat (20 percent) important step to take to improve hospital performance. On the other hand, over one-half of the hospitals that provide this finer level of detailed data said creating physician-level data from the Hospital Compare measures constitutes a major burden and another one-third of these hospitals said it is a minor burden.

G. EFFORTS TO IMPROVE DOCUMENTATION

A large number of QI directors (85 percent) reported that within the past two years their hospital has undertaken new data collection or abstraction activities for quality measurement purposes. Of the clinic areas listed on the survey, new data collection efforts

have been initiated most frequently to better document care for surgical infection prevention services (Table IV.7). Of the clinical areas not specifically listed in the survey, one-quarter said they were newly collecting data to assess care in the ICU. Not all, but somewhat over one-half (56 percent), said these new efforts were prompted at least in part by the hospital's participation in the HQA or section 501(b) programs. However, slightly more than four in ten QI directors said their program participation had no influence on their decision to initiate new quality measurement activities.

Table IV.7. New Data Collection or Abstraction Activities for Quality Measurement

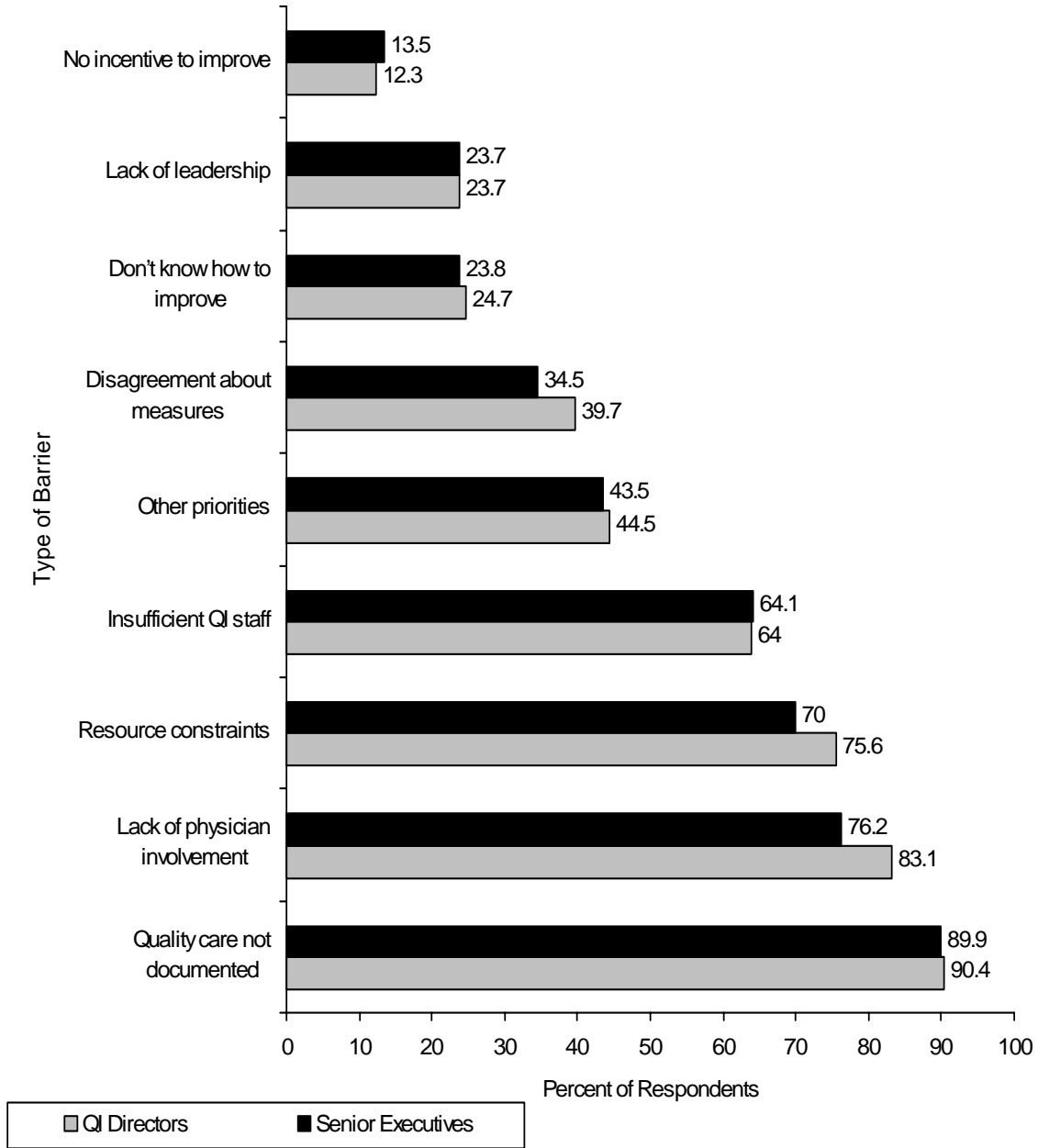
Clinical Area	Hospital has Initiated New Data Collection or Abstraction Activities (of hospitals that have initiated these new activities (85%))	Hospital has Initiated New Efforts to Improve Documentation of Care (of all hospitals)
Heart Attack	66.6%	90.0%
Heart Failure	67.3	94.5
Pneumonia	69.0	93.5
Surgical Infection Prevention	78.0	74.3
Other Clinical Areas		
Stroke (CVA)	9.3	7.4
ICU	25.2	10.4
Patient Safety	11.7	5.2
All Clinical Areas	7.3	12.6

In contrast to new data collection efforts, a larger number (nearly three-fourths) of QI directors said their hospital's participation in the HQA or section 501(b) program had enhanced documentation of care in many clinical areas. Additionally, a very high percentage reported efforts to more thoroughly document the treatment they provide for heart attack, heart failure, pneumonia, and, less so, for surgical infection prevention (Table IV.7 above). Although not specifically listed in the survey, several respondents reported other areas of documentation improvement, including global enhancement of documentation for all clinical areas and specifically for stroke and ICU care.

H. BARRIERS TO QUALITY IMPROVEMENT

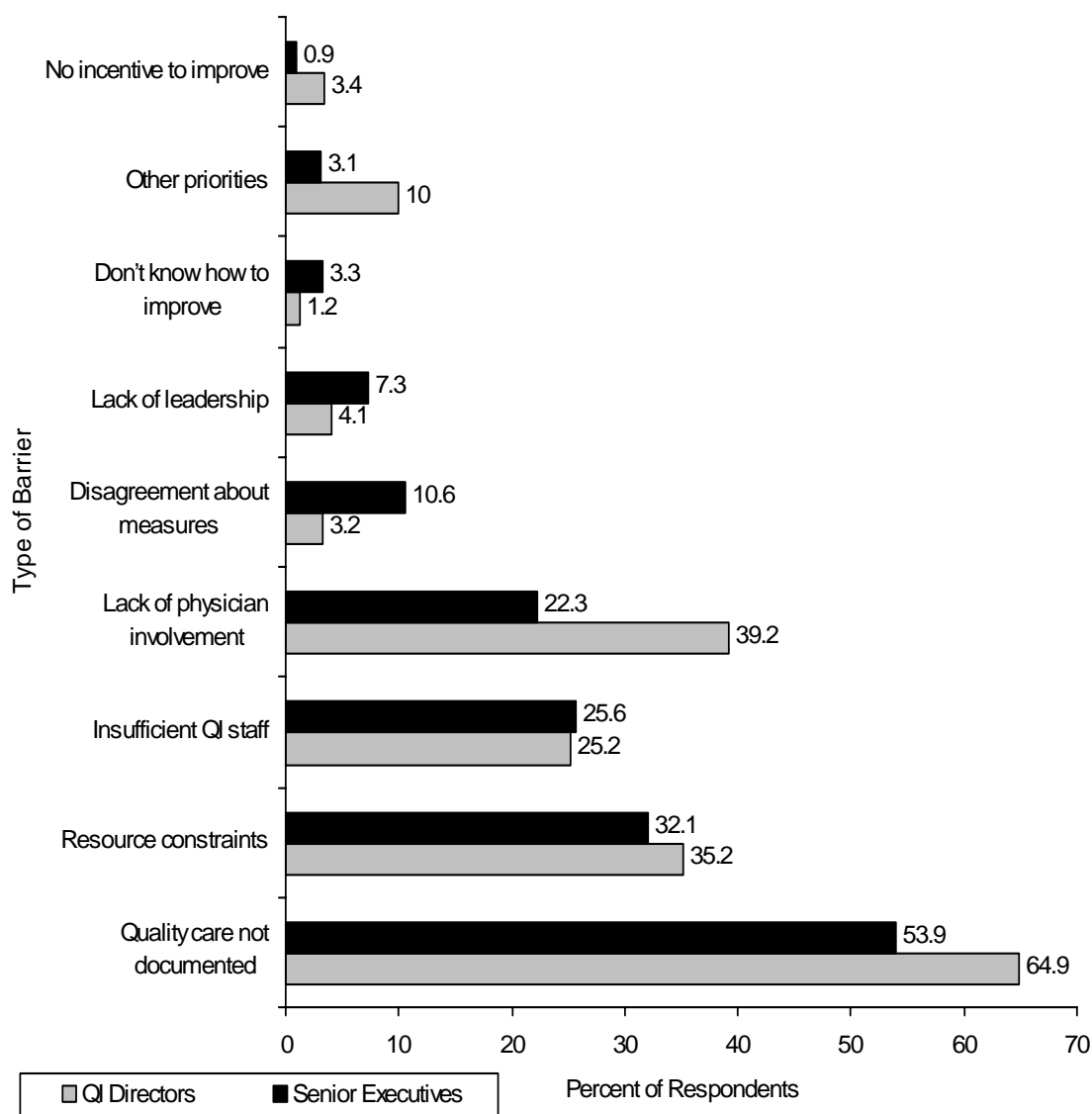
Of hospitals for which at least one Hospital Compare measure has been below the 50th percentile benchmark, the most commonly reported barrier to improving the measure is inaccurate documentation, which causes the hospital's published score not to reflect care actually provided by the hospital (Figure IV.12). The second, third, and fourth most commonly reported barriers are lack of physician involvement, resource constraints other than lack of enough QI staff, and lack of sufficient QI staff. QI director and senior executive responses are remarkably similar.

Figure IV.12. Barriers to Improving Hospital Compare Measures (as a percent of QI directors (66%) and senior executives (57%) whose Hospital Compare data had at last one measure below the 50th percentile benchmark)



When asked about major barriers to improving Hospital Compare measures, QI directors and senior executives reported the same top four barriers (Figure IV.13). In contrast, relatively few of either type of respondent reported as barriers disagreements about QI measures, not knowing how to improve quality, lack of senior leadership commitment, or a lack of incentives to improve. Relative to senior executives, more QI directors reported as major barriers poor documentation of care (65 percent) and lack of physician interest and commitment (39 percent). On the other hand, QI directors were much less likely to see as major barriers disagreements with measure definitions (3 percent), lack of senior leadership (4 percent), and a lack of understanding about how to improve quality (1 percent). In many hospitals, these three potential barriers fall within the responsibility of the QI director.

Figure IV.13. Major Barriers to Improving Hospital Compare Measures (as a percent of QI directors (66%) and senior executives (57%) whose Hospital Compare data had at least one measure below the 50th percentile benchmark)



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CHAPTER V

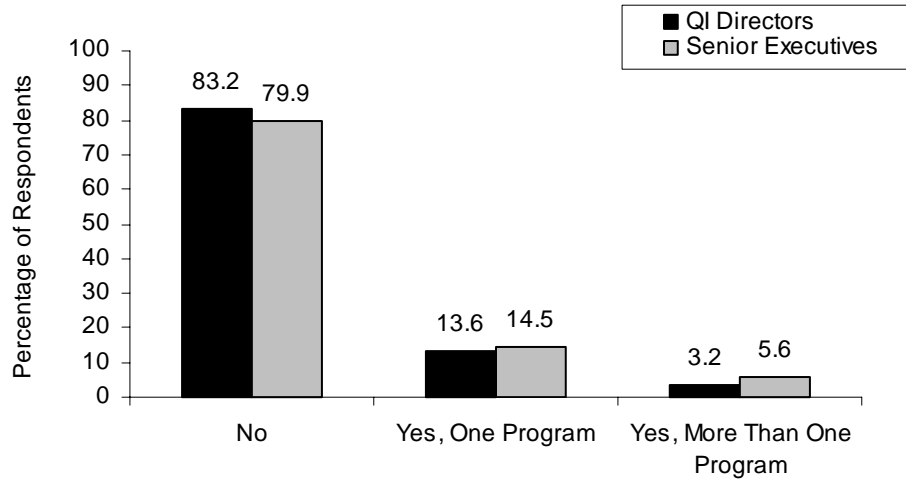
**PAY-FOR-PERFORMANCE PROGRAMS,
POTENTIAL ADDITIONAL QUALITY
MEASURES, AND CMS'S ROLE IN FUTURE
QUALITY IMPROVEMENT EFFORTS**

A. HOSPITAL LEADERSHIP VIEWS ON PAY FOR PERFORMANCE

Relatively few hospitals currently participate in a pay-for-performance (P4P) program or demonstration where the hospital's payment is based on quality of care indicators (besides the section 501(b) program under the MMA). Only one-fifth of senior executives and QI directors reported that their hospital is involved in some type of private, Medicaid, or Medicare-sponsored P4P program (Figure V.1). These include CMS's Premier Demonstration Incentive Program (20 percent of those who said they participate in a P4P program) and various Blue Cross Blue Shield P4P initiatives (50 percent).⁵ Only a very small percentage of respondent hospitals are involved in more than one program. This means that eight of ten respondents do not currently participate in any P4P plan beyond Medicare's section 501 (b) quality reporting incentive requirements.

⁵ For information on Blue Cross Blue Shield pay-for-performance initiatives, see "Blues Refine Pay-for-Performance Programs to Add Patient Safety, Specialist Measures," June 2004, The AIS Report on Blue Cross and Blue Shield Plans (www.aishealth.com/ManagedCare/BluesNews/BLURefineP4PSafety.html); Berthiaume, John T., et al., 2004, "Aligning Financial Incentives with 'Get With the Guidelines' to Improve Cardiovascular Care," *American Journal of Managed Care* 10 (7) p. 501-504. (http://www.ajmc.com/files/articlefiles/A107jul04_Berthiaume501_4.pdf); and Case Studies in Health Plan Pay-for-Performance Programs (available for purchase at <http://www.aishealth.com/Products/p4p.html>).

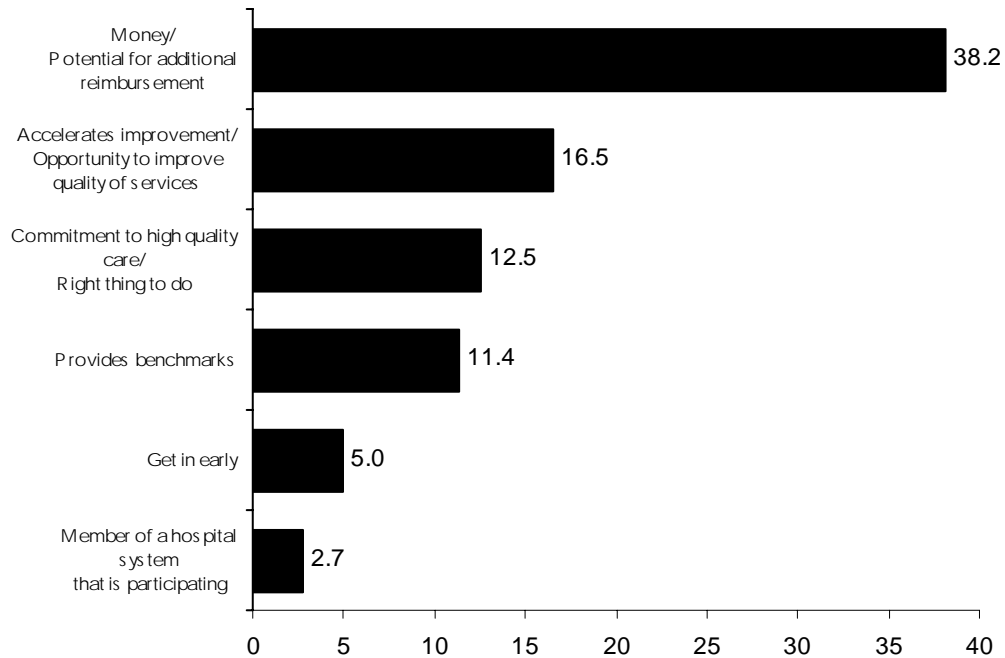
Figure V.1. Participation in Pay-for-Performance (P4P) Programs or Demonstrations (as a percent of all QI directors and senior executives)



Of the very few hospitals that participate in more than one P4P program, three-fourths of senior executives (74 percent) and somewhat more than half of QI directors (58 percent) said the programs reinforce each other. However, the 10 to 15 percent of respondents who said the multiple programs tend to interfere with each other stated most often this was because of different criteria or guidelines for data collection among the programs (sometimes even for the same quality measure). They also cited conflicting payment incentives for hospitals and physicians, as well as overall reporting burden.

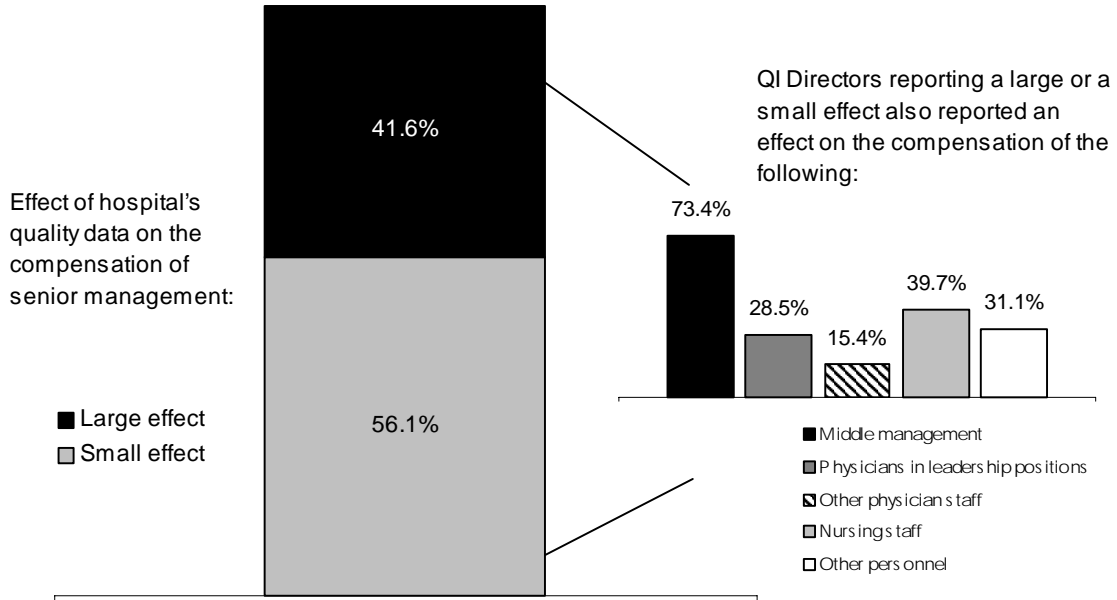
Senior executives in the 20 percent of hospitals currently involved in P4P initiatives reported several reasons for their participation. The two most frequently reported reasons were (1) to take advantage of the potential for additional reimbursement, and (2) to increase focus on the hospital services subject to the incentive payments in order to help stimulate quality improvement for these particular services (Figure V.2).

Figure V.2. Most Important Reason for Participation in P4P Program or Demonstration (as a percent of senior executives (20%) whose hospital participates in pay-for-performance programs, besides the section 501(b) program)



Similar to the percentage of hospitals that participate in external P4P programs, only about one-fourth of QI directors said their hospital's performance on internally or externally reported quality indicators influences the compensation of their hospital's management or staff. However, of these respondents, nearly all (98 percent) said hospital quality data affect the compensation of their senior management (Figure V.3). Additionally, the pay of almost three-fourths of middle management staff in these hospitals is linked to quality data, as is pay for nursing staff in 40 percent of these hospitals. In contrast, quality data affects the compensation of fewer physicians in hospital leadership positions or other physician staff.

Figure V.3. Effect of Hospital Quality Data on Compensation (as a percent of QI directors (23%) whose hospital's quality performance indicators affect management and staff compensation)



Of the one-fourth of QI directors who said that quality data influences the compensation of their senior management staff, nearly all said the reward is based on patient satisfaction surveys, and about eight in ten said such compensation is tied to the HQA Starter Set of measures as well as to a broader set of clinical measures (Figure V.4).

Nearly all senior executives (93 percent) said their hospital's leadership would support future CMS efforts to reward hospitals financially for improved clinical quality. In fact, one-half stated they would strongly support such an initiative. Only 7 percent do not favor any efforts by CMS to link a portion of Medicare payments to hospital quality indicators. Hospitals that currently participate in one or more P4P programs were somewhat more likely than those who do not to support a CMS pay-for-quality initiative within the next few years (Figure V.5). Similarly, hospitals participating in the CMS-sponsored Premier Hospital Quality Incentive Demonstration indicated somewhat stronger support than non-participants for a hospital-wide Medicare pay-for-quality program (Figure V.6).

Figure V.4. Quality Measures on Which Compensation is Based (as a percent of QI directors (22%) whose hospital's quality performance indicators affect senior management compensation)

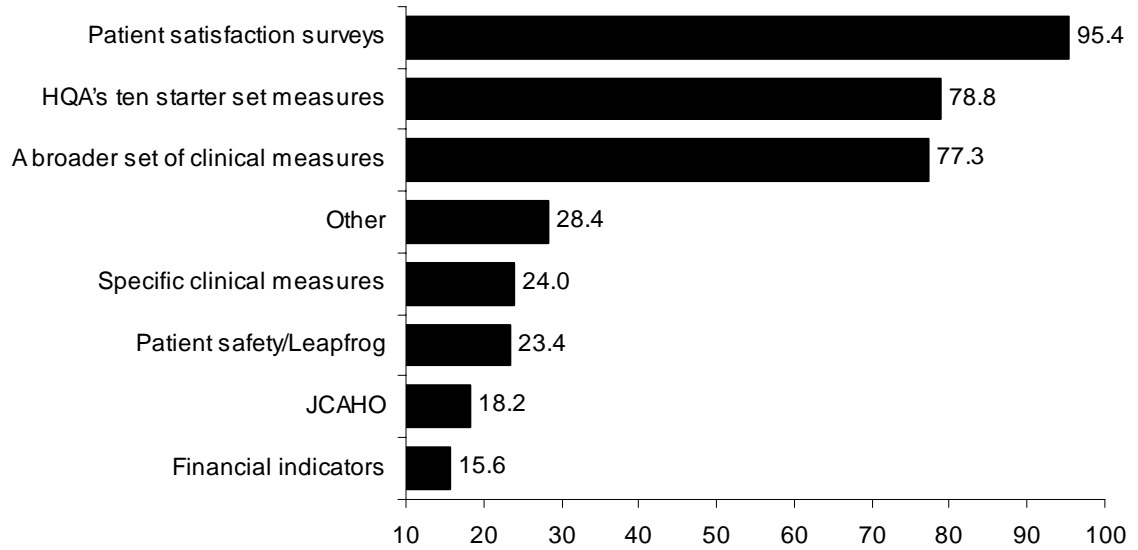


Figure V.5. Support for a CMS Pay-for-Quality Initiative, by Participation in P4P Programs or Demonstrations

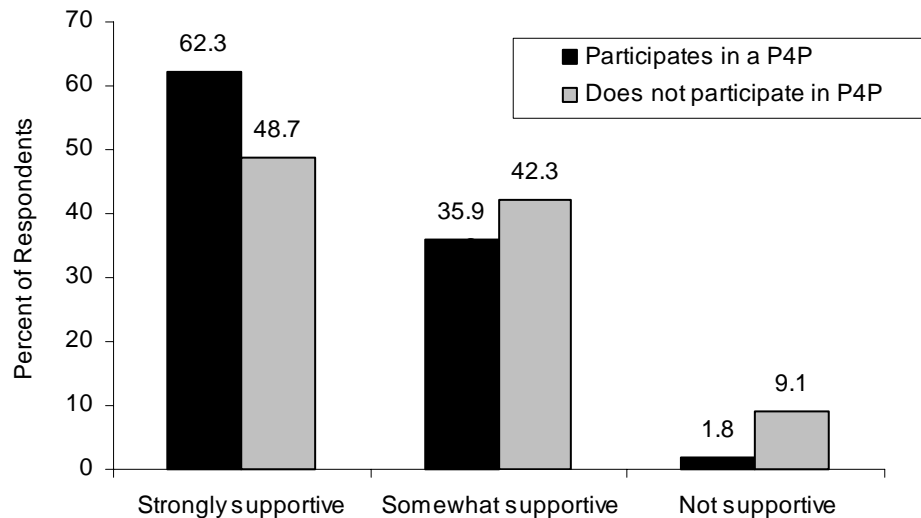
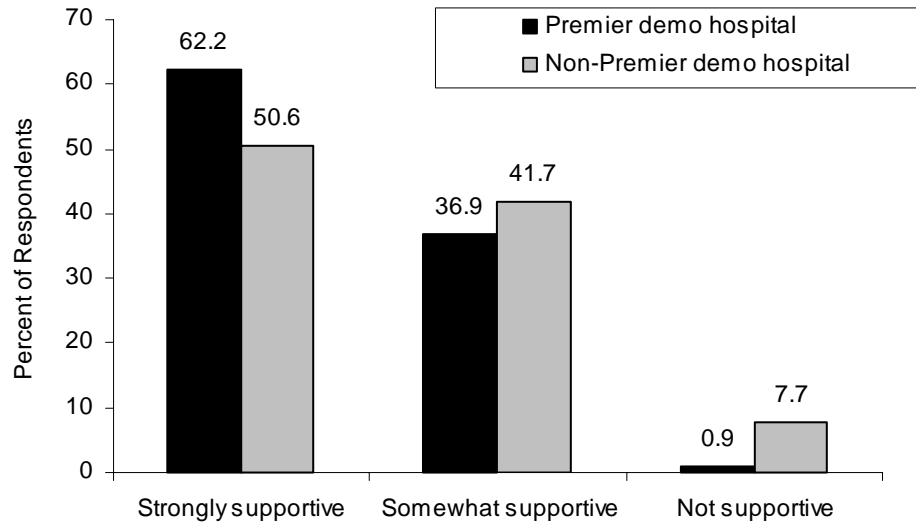


Figure V.6. Support for a CMS Pay-for-Quality Initiative, by Premier Participation

As noted previously in this report, nearly all non-critical access hospitals surveyed submit hospital performance data to CMS under section 501(b) of the MMA based on the HQA 10 measure “Starter Set.” About four in ten of the senior executives believe this measure set is the appropriate one for CMS to use to reward hospital quality (where the reward would apply to enhanced payments for DRGs that fall within the covered clinical conditions) (Figure V.7). The same number instead favor expanding the measure set a little or a lot, while about two in ten said an appropriate measure set for hospital pay-for-quality purposes should include fewer or different measures than the HQA Starter Set. The most popular candidates for elimination were the pneumonia measures (particularly the pneumococcal vaccination at 12 percent of those who want fewer measures); the next most popular candidates were the heart attack measures (Figure V.8 on the following page). Alternatively, of the few respondents who would like different measures than those in the Starter Set for a CMS hospital pay-for-quality initiative, the most frequent suggestion was to add measures that have sufficient volume per year so that real differences between hospitals can be detected (Figure V.9 on the following page).

Figure V.7. For a CMS P4P Initiative, the Current 10-Measure “Starter Set” [as a percent of MMA section 501(b) participating hospitals (99.5% of non-critical access hospitals)]

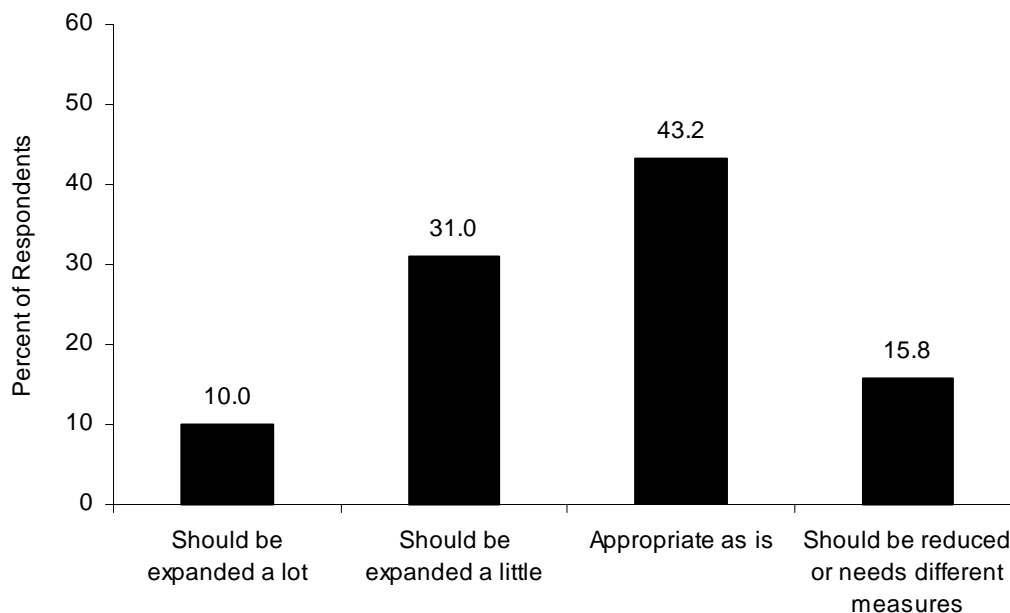


Figure V.8. Measures Senior Executives Would Eliminate from HQA Starter Set for a CMS P4P Initiative (as a percent of non-CAH senior executives (16%) who believe a CMS P4P initiative should not use all 10 Starter Set measures)

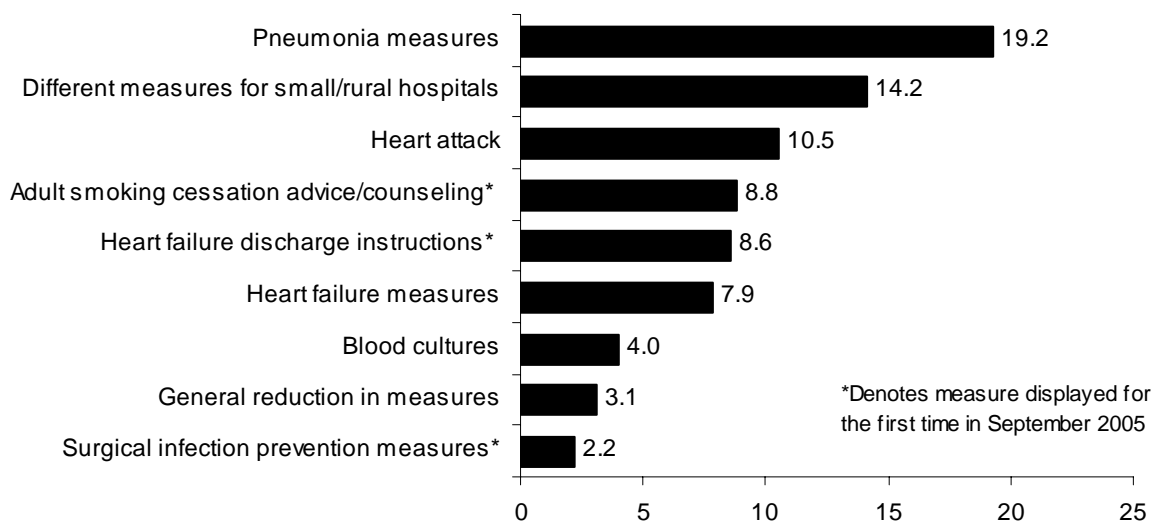
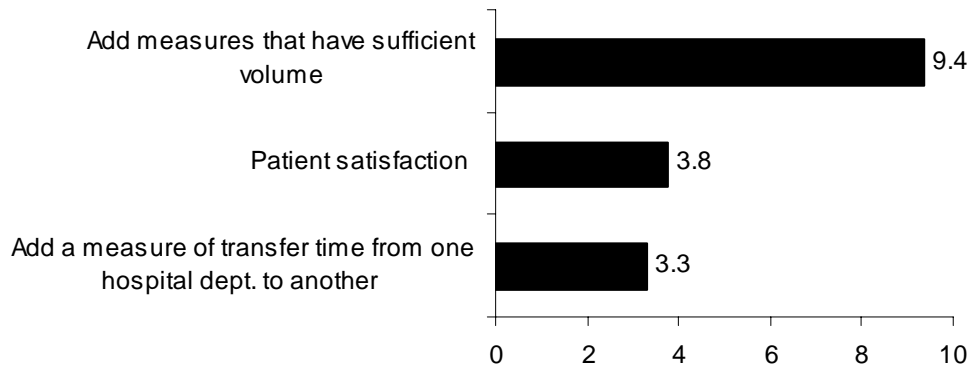


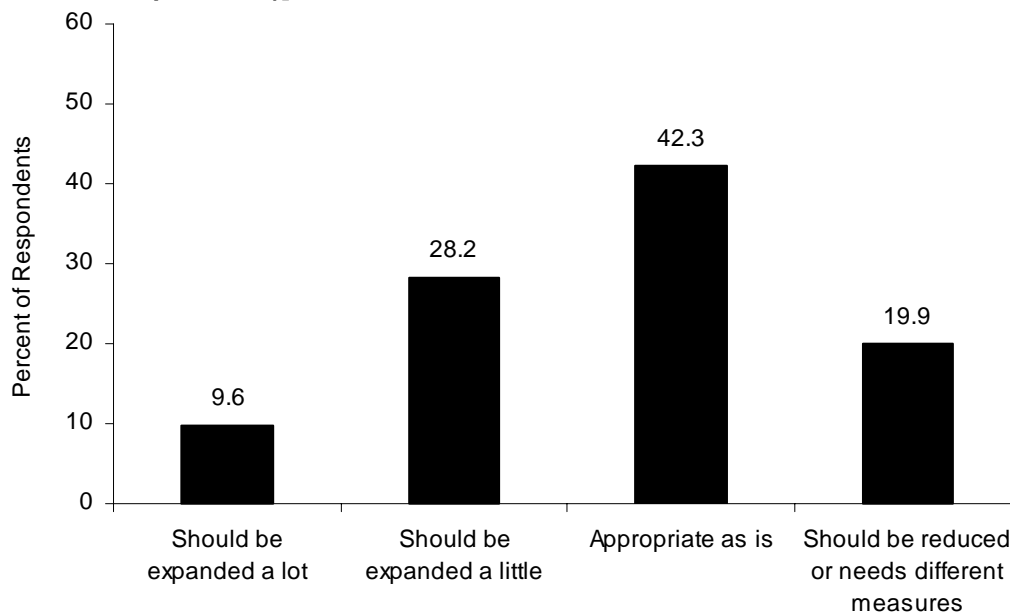
Figure V.9. Measures Senior Executives Would Add to HQA Starter Set for a CMS P4P Initiative (as a percent of non-CAH senior executives (16%) who believe a CMS P4P initiative should use different measures from the 10 Starter Set)



About one-fifth of the hospitals surveyed currently participate in Premier’s pay-for-quality demonstration program.⁶ Similar to hospitals that participate in Medicare’s section 501(b) program, these QI directors were asked whether the current Premier Demonstration Program measures set is an appropriate one for rewarding hospitals based on quality. Four in ten respondents believe it is the appropriate one to use to reward quality (where the reward would apply to enhanced payments for DRGs that fall in the covered clinical conditions), while an equal number said it should be expanded a little or a lot to include additional measures (Figure V.10). Of the 20 percent of QI directors who want some measures eliminated or different measures used, the most frequent suggestions for reduction included a general cutback in measures for influenza and pneumococcal vaccines; administration, timing, and selection of antibiotics for all measured conditions; and AMI measures. Few QI directors provided a specific suggestion for measures or conditions to add to the measure set.

⁶ The Premier Hospital Quality Incentive Demonstration will recognize and provide financial rewards to hospitals that demonstrate high quality performance on evidence-based quality measures for Medicare inpatients with: heart attack, heart failure, pneumonia, coronary artery bypass graft, and hip and knee replacements. The demonstration involves a CMS partnership with Premier, Inc., a nationwide organization of not-for-profit hospitals.

Figure V.10. Comments in the Appropriateness of the Current Premier Demonstration Program Measure Set for a CMS P4P Initiative [as a percent of Premier Hospital Quality Incentive Demonstration participants (20% of survey respondents)]



B. HOSPITAL LEADERSHIP VIEWS ON POTENTIAL FUTURE MEASURES FOR PUBLIC REPORTING

Senior executives were asked their views on adding patient-survey based measures of hospital quality to public reports. A high number—nearly eight in ten—expressed support for patient experience measures, with nearly three in ten saying they are strongly in favor of including this type of measure in hospital public reports and the other five in ten saying they were somewhat in favor. The most frequently cited reasons for including patient perceptions were to bring greater transparency and public accountability to the quality of services the hospital provides (Table V.1).

Table V.1. Reasons for Senior Executive Support of Public Reporting of Patient Perceptions of Hospital Quality (as a percent of senior executives (28%) who strongly favor inclusion of patient experiences in hospital public reports)

Top 5 Reasons Strongly Favor	Percent Strongly Favor
Would bring more transparency internally and externally to the quality of services provided	39.8%
Public accountability	39.1%
Scores will be favorable to our hospital, increasing our reputation	22.8%
To find out areas in which our hospital needs to improve	21.2%
To help stimulate improvement	20.6%

In addition to patient ratings of hospital care, senior executives were asked their views about potentially including a number of additional clinical or structural hospital quality indicators in public reports. These measures, listed in Table V.2 on the following page, have all been endorsed or proposed by CMS, the Joint Commission, the NQF, or The Leapfrog Group. Risk-adjusted outcome measures—mortality rates, hospital-acquired infection rates, and post-operative adverse events for specific procedures or conditions—have the highest support with over eight in ten respondents strongly or somewhat favorable toward public reporting of such quality indicators. NQF-endorsed safe practices had high support, with 87 percent favoring their inclusion in future public reporting initiatives, although a few received much less support (computerized physician order entry (CPOE), evidence-based hospital referral, and ICU physician staffing). Nearly one-third of senior executives were not in favor of adding the latter three measures to hospital quality of care public reports. Inpatient hospital falls with injury and pain screening and assessment measures received a fair amount of support, but not as strong as the four top-ranked measure categories.

Table V.2. Senior Executive Views on Public Reporting of Measures Endorsed or Proposed by CMS, the Joint Commission, NQF, or The Leapfrog Group (as a percent of all senior executives)

Potential Measure	% Strongly Favorable	% Somewhat Favorable	% Not Favorable
Risk-adjusted mortality rates for CABG, PCI, and/or AMI	46.5	35.3	18.2
Risk-adjusted hospital-acquired infection rates for specific procedures	44.4	40.8	14.7
NQF-endorsed safe practices	40.8	45.7	13.5
Risk-adjusted adverse events following major surgical procedures	38.5	43.1	18.4
Screening and comprehensive assessment of pain in patients with particular conditions (arthritis, cancer, low back surgery)	31.3	50.7	18.0
Falls with injury per 1,000 patient days	31.8	48.1	20.2
Computerized physician order entry (CPOE)	28.3	36.9	34.9
ICU physician staffing	24.9	40.0	35.1
Evidence-based hospital referral	23.8	47.4	28.9
Nursing care hours per 1,000 patient days (RN, LPN, and UAP)	19.5	50.1	30.5

About one-fifth of senior executive respondents offered additional measures they would support being added to hospital public reports. Table V.3 displays the five most frequent suggestions. About one-quarter advocate public reporting of the IHI change measures associated with its 100,000 Lives Campaign.⁷ Other measures, suggested less frequently, include nursing staff measures (e.g., nurse staff hours per patient day, staff turnover, nursing certification and nursing magnet status of hospital, and nurse-sensitive care indicators such as pressure sores); risk-adjusted average length of inpatient hospital stays; medication error rates; and pre-operative preventive care indicators (e.g., receipt of pre-operative beta blockers, deep vein thrombosis prophylaxis treatment, and surgical infection prevention care). Additional specific categories mentioned by less than 7 percent of respondents include: obstetrics procedures, use of disease management tools, pediatric-specific measures, small/rural hospital-specific measures, and post-operative complications.

C. HOSPITAL LEADERSHIP VIEWS OF CMS'S ROLE IN FUTURE QUALITY IMPROVEMENT ACTIVITIES

The large majority of QI directors—about 9 of 10—believes that CMS and the quality improvement organization (QIO) should take a major role in all of the activities we questioned them about related to quality improvement (Table V.4). The strongest support was for CMS and QIOs to provide print and web-based information on how to improve hospital performance in specific clinical areas, and the least support—although still strong—was for QIOs to provide this information through in-person or phone consultation.

Table V.3. Top 5 Additional Measures Suggested for Future Hospital Public Reporting (as a percent of all senior executives)

Top 5 Additional Measures Suggested for Future Hospital Public Reporting	% of Senior Executives Who Suggested Measure
IHI change measures	26.7%
Nursing staff	12.0
Risk-adjusted length of stay	10.8
Medication errors	8.4
Pre-operative preventive care	7.4

⁷ Measurement would encompass statistics that capture a hospital's use of Rapid Response Teams, techniques to prevent adverse drug events (e.g., implementation of medication reconciliation procedures), delivery of evidence-based AMI care, and implementation of evidence-based components of care for the prevention of surgical site infections, central line infections, and ventilator-associated pneumonia.

Table V.4. Activities Related to Quality Improvement in Which CMS/QIOs Should Play a Major Role (as a percent of all QI directors)

CMS/QIO Roles in Activities Related to Quality Improvement	% of QI Directors Favoring CMS Involvement
Provide print and web-based information on how to improve performance in specific clinical areas	96.1
Actively work to align public reporting information requests among various organizations	95.9
Validate data on publicly reported measures	94.5
Provide in-person or phone assistance through the QIOs on the technical aspects of data abstraction and reporting	92.4
Identify priority areas for public reporting and improvement	92.0
Provide feedback via the cms.hhs.gov website on individual hospitals' performance and national benchmarks	90.9
Provide in-person or phone consultation through the QIOs on how to improve performance	88.6

CHAPTER VI

CONCLUSION

Most of findings from this study are encouraging with regard to CMS's role in public reporting of hospital quality data and in hospital quality improvement initiatives more generally. Specifically, the study explored the following questions:

A. WHAT WERE HOSPITALS' EXPERIENCES WITH THE HQA AND SECTION 501(B) PUBLIC REPORTING PROGRAMS?

Nearly all hospitals (98 percent) submitted quality data to CMS under the HQA, and virtually all non-critical access hospitals (99 percent) submitted quality measures to CMS under section 501(b) of the Medicare Modernization Act. Most hospitals had a fairly positive experience with the CMS/HQA reporting process. Approximately seven in ten said there was clear communication from CMS about what the hospital needed to do to participate in HQA and section 501(b). However, approximately one-quarter of respondents had a more negative experience. More than nine of ten respondents said that Hospital Compare data fairly accurately represent the hospital's quality performance for the measured conditions. Nearly all (95 percent) QI directors and senior executives said they or colleagues regularly review the data posted on CMS's Hospital Compare website and compare their hospital's quality performance to that of other hospitals.

B. HOW HAVE ORGANIZATIONS, SUCH AS THE MEDIA, PAYERS, AND PURCHASERS, REACTED TO THE HOSPITALS' PUBLICLY REPORTED DATA?

Approximately one-quarter of senior executives and QI directors reported that the hospital received any publicity or attention as a result of the quality data published by CMS. Less than one-half (44 percent) felt the publicity was positive, 30 percent felt the publicity was neutral, and 26 percent felt it was negative. Among hospitals receiving publicity, by far the most common source of publicity was local print or broadcast media, with three-fourths reporting this type of publicity. Nearly one-half of senior executives reported that such feedback other than publicity from outside the hospital reinforced and encouraged their on-going quality improvement efforts.

C. HOW HAVE HOSPITALS' QUALITY IMPROVEMENT EFFORTS CHANGED AS A RESULT OF PUBLIC REPORTING?

Nearly all QI directors (95 percent) reported that their hospital implemented either new or enhanced quality improvement initiatives over the past two years. Most often, these initiatives focused on pneumonia and heart failure care, but many hospitals also implemented projects to prevent surgical infections and to improve care for heart attack patients. Over the same time period, almost one in five hospitals said they reduced or dropped some quality improvement activities during the period, perhaps postponing such activities. This most frequently occurred in the clinical areas of ICU care, surgical infection prevention, and obstetrics.

Seventy-five percent of QI directors and 81 percent of senior executives reported that their hospital's performance on one or more of the HQA or section 501(b) measures had improved over the previous reporting period. Approximately nine of ten QI directors and senior executives whose Hospital Compare measures had increased over the previous reporting period attributed these increases to new or enhanced quality improvement efforts. These efforts most often involved feedback and dissemination of results to physicians and staff, staff and physician education of the hospital's new quality improvement initiatives, and a specific focus on the new quality initiatives among all hospital staff.

A very high percentage of senior executives (87 percent) and an even higher percentage of QI directors (93 percent) declared that their hospital had experienced an increase in CEO and other top administration leadership attention to hospital quality or knowledge of quality performance over the past two years. Among those reporting an increased attention to quality, more than six in ten (62 percent) said that participation in the HQA or section 501(b) programs played a major role in generating that increased leadership attention to quality issues. Eight-five percent of senior executives asserted that their hospital's board of directors paid more attention to quality matters compared with two years ago. Three-fourths of the respondents gave at least partial credit to the HQA and section 501(b) initiatives for increasing their hospital board's attention to quality issues.

Approximately six in ten senior executives reported their hospital purchased new computer hardware or software within the past two years that have enhanced the hospital's quality measurement and reporting efforts. Many hospitals have selected electronic health records capabilities: 88 percent have electronic viewing of lab results that is nearly always accompanied by decision support tools, such as highlighting results that are out of normal range (95 percent); 59 percent have an electronic clinical notes system; and 50 percent have electronically stored images available throughout the hospital. However, only 21 percent of these hospitals had computerized physician order entry (CPOE) systems.

Almost eight in ten QI directors reported receiving advice from outside the hospital on how to improve the hospital's performance on pneumonia, heart failure, heart attack, or surgical infection prevention. Among those reporting outside assistance, the two most common sources of that assistance have been the hospital's QIO and the Institute for Healthcare Improvement (IHI).

Of hospitals for which at least one Hospital Compare measure has been below the 50th percentile benchmark, the most commonly reported barrier to improving the measure is inaccurate documentation (90 percent), which causes the hospital's published score not to reflect care actually provided by the hospital. The second, third, and fourth most commonly reported barriers among both senior executives and QI directors were lack of physician involvement (76-83 percent), insufficient financial resources (70-76 percent), and lack of sufficient QI staff (64 percent each).

D. WHAT IS HOSPITAL LEADERSHIP'S VIEW OF PAY-FOR-PERFORMANCE PROGRAMS, POTENTIAL NEW QUALITY MEASURES, AND CMS'S ROLE IN FUTURE QUALITY IMPROVEMENT PROGRAMS?

One-fifth of senior executives and QI directors reported that their hospital is involved in some type of pay-for-performance program (besides the section 501(b) program under the MMA). Senior executives most frequently reported reasons for participation in such programs were to take advantage of the potential for additional reimbursement and to increase focus on the hospital services subject to the incentive payments in order to stimulate quality improvement for these particular services. Nearly all senior executives (93 percent) said their hospital's leadership would support future CMS efforts to reward hospitals financially for improved clinical quality.

Nearly eight in ten senior hospital executives expressed support for adding patient-survey-based measures of hospital quality to public reports. Approximately eight in ten respondents also favored including risk-adjusted outcome measures such as mortality rates, hospital-acquired infection rates, and post-operative adverse events for specific procedures or conditions.

Approximately nine in ten QI directors believe that CMS and their hospital's state QIO should take a major role in potential future quality improvement programs. The strongest support was for CMS and QIOs to provide print and web-based information on how to improve hospital performance in specific clinical areas.

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APPENDIX A

SAMPLE DESIGN AND RESPONSE RATE TABLES

We selected an initial sample of 800 hospitals with equal probability within each stratum. In some strata we selected all hospitals and in other strata we selected as few as 10 percent of the hospitals. The initial sample size was based on a target of 560 completed interviews from both QI directors and senior executives. We strove for an 80 percent response rate, but understood from prior similar surveys that a 70 percent response rate could occur. During the data collection period, however, we experienced response rates of 90 to 95 percent for both the QI director and senior executive surveys. We determined that the project resources were insufficient to conduct interviews with more than 700 QI directors and senior executives so we decided to subsample both types of respondents.

At a specific point in time, we determined that 620 QI directors either had completed interviews, were ineligible, or had made a firm appointment for the interview. We then selected a stratified random sample of 60 from the remaining 180 QI directors. Similarly, we identified 616 senior executives who either had completed interviews, were ineligible, or had made a firm appointment, and we selected 63 of the remaining 184 senior executives. This resulted in final sample sizes of 680 for the QI director survey and 679 for the senior executive survey. The subsampling resulted in increasing the size of the sampling weights for hospitals in some strata by a factor of between two and four (depending on whether we subsampled at a rate of 50 or 25 percent). Table A.1 below shows the final sample sizes by sampling strata for the QI director survey and the senior executive survey.

A. RESPONSE RATES

Response rates are generally taken as a measure of survey quality. Weighted response rates can be used to estimate the proportion of the survey population for which useable information is available, whereas unweighted response rates generally measure the proportion of the sample that resulted in useable information for analysis. In essence, the weighted response rate is a measure of the potential for nonresponse bias and the unweighted response rate is a measure of the success of the data collection effort. In

Table A.1 we provide both weighted and unweighted response rates for the QI director survey and the senior executive survey. The QI director survey had a weighted response rate of 96 percent and the senior executive survey had an 89 percent weighted response rate. The unweighted response rates were higher than the weighted response rates for both surveys—98 percent for the QI director survey and 96 percent for the senior executive survey. For the individual sampling strata, the weighted response rates were between 85 and 100 percent, except for one stratum of senior executives (69 percent for senior executives in hospitals with unknown size, were not in the Premier Demonstration, and were not accredited by the Joint Commission).

In Table A.2, we show the frame size, the sample sizes, and the response rates by the three major stratification factors. The weighted response rates are between 90 and 97 percent for the QI director survey and between 83 and 94 percent for the senior executive survey. Again, the unweighted response rates are higher than the weighted response rates and are greater than 95 percent for all but one stratum of senior executives.

B. SAMPLING WEIGHTS AND NON-RESPONSE ADJUSTMENT PROCEDURES

The sampling weights were computed from the inverse of the selection probabilities. We computed the weights in two phases. The first phase weights were based on original sampling rates (for the full sample of 800 hospitals). We then adjusted for nonresponse at this phase (only one QI director and three senior executives who had a firm appointment refused to respond). We then computed a second phase weight from the product of the first phase response adjusted weight and the subsampling rate. After we computed these second phase weights, we adjusted these weights to compensate for nonresponse. We used the sampling strata as the weighting classes for the nonresponse adjustment for each phase. After the nonresponse adjustments, we post-stratified the nonresponse-adjusted weights to the sampling frame counts.

C. ESTIMATION AND SAMPLING VARIANCES

The sampling variance is a measure of the variation of an estimator attributable to having sampled a portion of the full population of interest, using a specific probability-based sampling design. The sampling variance is a measure of the variation of the estimate of a population parameter (for example, a population mean or proportion) over repeated samples, while the classical “population” variance is a measure of the variation among the observations in the population. The population variance differs from the sampling variance in that it is a constant, independent of any sampling issues, while the sampling variance becomes smaller as the sample size increases. The sampling variance is zero when the full population is observed in a population or a stratum of a population, as in a census.

The sampling variances for survey estimates from QI director and senior executive surveys are computed accounting for both the stratification and the proportion of the sampling frame that responded to the survey. In the QI director and senior executive surveys, we selected all or most hospitals in some sampling strata and therefore, some strata contribute little, if any, to the sampling variance.

Table A.1. Sample Design, Response, and Unweighted and Weighted Response Rates for QI Directors and Senior Executives by Individual Sampling Strata

Sampling Strata	QI Directors Sample						Senior Executives Sample					
	Accreditation (JCAHO)	Premier Participation	Frame	Initial Sample	Final Sample	Response	Response Rate Unweighted	Response Rate Weighted	Final Sample	Response	Response Rate Unweighted	Response Rate Weighted
Total			3,856	800	680	664	97.6	94.6	679	650	95.7	88.6
Beds: 1-99	Yes	Yes	31	26	22	21	95.5	91.0	26	26	100.0	100.0
Beds: 1-99	Yes	No	867	95	82	82	100.0	100.0	73	69	94.5	84.2
Beds: 1-99	No	Yes	5	5	5	5	100.0	100.0	5	5	100.0	100.0
Beds: 1-99	No	No	629	168	138	134	97.1	90.5	135	130	96.3	88.1
Beds: 100-299	Yes	Yes	105	69	55	53	96.4	89.0	57	54	94.7	85.2
Beds: 100-299	Yes	No	1,330	174	151	147	97.4	92.7	150	145	96.7	90.2
Beds: 100-299	No	Yes	2	2	2	2	100.0	100.0	2	2	100.0	100.0
Beds: 100-299	No	No	114	26	21	20	95.2	92.9	22	20	90.9	84.6
Beds: 300+	Yes	Yes	103	49	44	42	95.5	91.8	46	46	100.0	100.0
Beds: 300+	Yes	No	586	155	131	130	99.2	97.4	132	126	95.5	91.2
Beds: 300+	No	Yes	1	1	1	1	100.0	100.0	1	1	100.0	100.0
Beds: 300+	No	No	5	5	5	5	100.0	100.0	5	5	100.0	100.0
Unknown	Yes	No	42	13	11	10	90.9	89.2	13	9	69.2	69.2
Unknown	No	No	36	12	12	12	100.0	100.0	12	12	100.0	100.0

Table A.2. Sample Design, Response, and Unweighted and Weighted Response Rates for QI Directors and Senior Executives by Major Sampling Strata

Sampling Strata	QI Directors Sample						Senior Executives Sample							
	Frame	Initial Sample	Final Sample	Response	Response Rate Unweighted	Response Rate Weighted	Final Sample	Response	Response Rate Unweighted	Response Rate Weighted	Final Sample	Response	Response Rate Unweighted	Response Rate Weighted
Total	3,856	800	680	664	97.6	94.6	679	650	95.7	88.6	679	650	95.7	88.6
Hospital Size														
Beds: 1-99	1,532	294	247	242	98.0	95.9	239	230	96.2	86.2	239	230	96.2	86.2
Beds: 100-299	1,551	271	229	222	96.9	92.5	231	221	95.7	89.5	231	221	95.7	89.5
Beds: 300+	695	210	181	178	98.3	96.6	184	178	96.7	92.6	184	178	96.7	92.6
Unknown	78	25	23	22	95.7	94.2	25	21	84.0	83.4	25	21	84.0	83.4
Accreditation (JCAHO)														
Yes	3,064	581	496	485	97.8	95.5	497	475	95.6	88.7	497	475	95.6	88.7
No	792	219	184	179	97.3	91.4	182	175	96.2	88.3	182	175	96.2	88.3
Premier Participation														
Yes	247	152	129	124	96.1	90.8	137	134	97.8	93.7	137	134	97.8	93.7
No	3,609	648	551	540	98.0	94.9	542	516	95.2	88.3	542	516	95.2	88.3