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Evaluation of the New Jersey Hospital Quality Initiative: Final Report

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Executive Summary

In response to growing concerns about quality of hospital care, the New Jersey Department of Health and Senior Services (DHSS) has pursued policies to encourage improvement. As part of those efforts, beginning in 2004 DHSS began an annual series of reports on hospital-specific process of care quality measures. Since that time, there has been considerable progress for most hospitals reflected in the performance reports, but it is also evident that some hospitals have had difficulty reliably achieving accepted standards of care.

In 2005, then DHSS Commissioner Fred Jacobs, MD, JD, sought to augment public reporting to assist the state's hospitals that appeared to have the most difficulty improving performance. Under his leadership, the New Jersey Hospital Quality Initiative (NJHQI) was developed to provide help to facilities with lagging performance on quality indicators. DHSS partnered with the Rutgers Center for State Health Policy (CSHP) to help develop NJHQI, and in September 2005 the Healthcare Foundation of New Jersey awarded a grant to the CSHP to work with DHSS to launch and evaluate the initiative. During the planning phase of this grant, the New Jersey Health Education and Research Trust (HRET), an affiliate of the New Jersey Hospital Association, joined the project leadership team to develop the hospital staff training and technical assistance strategy for the NJHQI.

This report provides an overview of the development and implementation of the NJHQI and describes program evaluation methods and results. Overall, the evaluation paints a picture of improved quality of care in many of the NJHQI participating hospitals. However, the program was implemented at a time when there was a concerted national effort to improve hospital quality, so it is difficult to attribute the successes of participating hospitals to the NJHQI. Several of the NJHQI hospitals demonstrated rapid improvement following participation in the program, even relative to national trends among peer hospitals; but other participating hospitals did not improve, including two that ultimately closed. We conclude that hospital quality improvement strategies targeting hospitals with historically low performance hold promise for improving care, but that resource limitations and underlying financial challenges in the hospital sector pose serious barriers to improvement.

Overview of NJHQI

The NJHQI focused on improving process of care for congestive heart failure (CHF), a common condition with clear standards of care. To launch the initiative, the DHSS Commissioner wrote to the leadership of eleven hospitals with historically low performance on CHF process of care measures to invite their participation. Of these, seven agreed to participate. In addition to the invited facilities, seven other hospitals requested to join the initiative. The volunteer hospitals had generally better quality performance scores than the invited group, and many were members of the same hospital systems invited facilities. The NJQHI pursued four specific objectives:

1. Improve the quality of care for patients with congestive heart failure within hospitals with historically weak performance.
2. Promote an overall culture of quality improvement and encourage adoption of quality improvement strategies.
3. Strengthen the coalition of New Jersey agencies and organizations dedicated to improving quality of care.
4. Develop evidence about the efficacy of quality improvement initiatives, particularly in low-performing institutions.

Beginning in 2006, the participating NJHQI hospitals worked with staff from the HRET to develop their quality improvement strategies. Teams from the hospitals participated in a series of six workshops and benefited from ongoing consultation with HRET through technical assistance calls, a listserv, and project web site.

NJHQI Evaluation

Methods

The evaluation focused on the cohort of hospitals initially invited to participate in NJHQI but also included analysis of the additional volunteer hospitals. The central hypothesis of the evaluation is that CHF process indicator scores for the invited NJHQI participants would improve faster or to a higher level following engagement in the intervention than they would have without the initiative. The CSHP evaluation team conducted interviews and analyzed publically available process of care data to draw inferences of the impact of NJHQI on heart failure care among patients in participating hospitals. Specifically, the evaluation drew two main sources of information:

- Between 2006 and 2009, CSHP conducted three rounds of interviews with leaders and project team members at the participating hospitals. Open-ended questions were asked to elicit an understanding of how the NJHQI participants viewed their experiences and the impact of the initiative. They were asked to describe their heart failure quality

improvement efforts, barriers encountered, lessons learned, and to reflect on the outcomes and sustainability of the project.

- Process of care indicators for CHF patients were drawn from publically available data from the Centers for Medicare and Medicaid Services (CMS) for 2004 to 2007 for all patients hospitalized at any acute care hospital in the U.S. These data were merged with information on hospital characteristics obtained from the American Hospital Association Annual Survey. Two groups of non-New Jersey hospitals that were similar to the NJHQI invited and volunteer hospitals, respectively, were selected based on pre-intervention CHF scores and selected hospital characteristics. CHF quality indicators for the NJHQI invited and volunteer hospitals before and after the program were compared to trends in their respective comparison cohorts.

Findings

Interviews with NJHQI hospital personnel documented that quality improvement efforts met initially with significant resistance from medical and other hospital staff and encountered resource constraints. Interviews revealed, however, that by the end of the initiative many barriers had been overcome and improvement efforts were becoming institutionalized. Systemic improvements were cited by the participants including the development of physician champions for quality improvement, reporting of quality results to hospital boards, and regular peer comparisons of measures. Participants also reported learning from one another and adopting cost-effective care improvement strategies. The interviewees reported that NJHQI largely achieved its goals and that care for CHF patients improved.

Hospital-specific trends in the publicly reported quality indicators for most of the hospitals largely bear out these perceptions. Most improved discharge instruction compliance scores, the primary focus of their improvement efforts, and scores for other CHF process of care indicators also improved. While improvement was the norm among NJHQI hospitals, they did not, on average, improve care faster than the national trend. Underneath this average, however, rapid improvement is evident in three of the NJHQI invited participants following engagement in the program. In contrast to comparison group trends, the remaining four invited participants made more equivocal progress or did not improve following participation (in fact, one of these closed). A look back at differences in interview responses between the rapidly improving NJHQI participants and the others suggests that the former took greater advantage of program resources and engaged more actively in quality improvement activities.

Conclusions

Interviews with project staff and leadership at the NJHQI hospitals reveal a deep appreciation for the resources provided by the program and, in most cases, an engagement in significant

new quality improvement efforts. Significant resistance and barriers to the hospitals' efforts were largely overcome by the end of the program. Interview participants expressed a sense that NJHQI had achieved its goals and that sustainable improvements in care of heart failure patients were made. We observed considerable heterogeneity in trends in process-of-care scores among NJHQI hospitals, with three of the seven invited hospitals improving rapidly following engagement in the program. Interviews confirm that these hospitals took the greatest advantage of the NJQHI opportunity.

The NJHQI was implemented at a time of concerted national attention on quality improvement, and this is reflected in national trends in CHF quality metrics. The NJHQI hospitals were selected because they faced great challenges to improving care, so improvements demonstrated among participants can be seen as significant accomplishments. The achievements of selected NJHQI hospitals reveal the importance of training and networking among those responsible for quality improvement, engaging effective physician champions, and the taking a systematic approach to improving care. We conclude that the New Jersey Hospital Quality Initiative enhanced opportunities for hospital leaders to lead and to institutionalize cost-effective and systematic improvement strategies. However, financial distress among New Jersey hospitals remains a serious concern and presents ongoing challenges.

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Introduction

Studies of the quality of care for Medicare patients published in the early 2000s ranked New Jersey low in nationwide comparisons (Jencks et al., 2000, 2003), stimulating considerable reflection among New Jersey policymakers and hospital quality stakeholders. Since the release of those comparisons, the New Jersey Department of Health and Senior Services (DHSS) in cooperation with other leaders in the field have made considerable efforts to improve the state's standing in hospital quality metrics. Public reporting of hospital performance scores has been a centerpiece of New Jersey's efforts to raise the bar for hospital quality. In 2004, the DHSS began a series of reports publishing hospital-specific quality measures (DHSS, 2004). These data, which reflected care in 2002, showed that the median hospital failed to deliver recommended care about 10% of the time for heart attack patients and about 25% of the time for patients with community-acquired pneumonia.

DHSS has expanded the scope of performance reporting in subsequent years, adding additional process of care measures. The indicators reported in New Jersey are based on nationally accepted measures of the delivery of clinical important care for common conditions. By the 2006 DHSS hospital performance report (reflecting care in 2004), the state's hospitals had made considerable progress in heart attack and pneumonia care, reaching 94% and 87% of recommended care for the median hospital, respectively. In addition, performance measures were added for congestive heart failure, with the median hospital recommended-care score of 86% (DHSS, 2006).

In spite of the considerable progress in the average scores reflected in the performance reports, it was evident that some hospitals were having difficulty reliably achieving the accepted standard of care. For instance, by the third public performance report, six hospitals still had failed to reach appropriate care targets for community-acquired pneumonia at least 20% of the time. Congestive heart failure scores showed considerable variability in that year, with a dozen hospitals delivering appropriate care at least 95% of the time, but thirteen others delivering the standard of care less than 75% of the time. In the case of heart failure care, the lowest scoring hospital delivered recommended care less than 60% of the time.

In 2005, then DHSS Commissioner Fred Jacobs, MD, JD, sought to move beyond public reporting to assist the state's hospitals that appeared to have the most difficulty improving performance. Under the leadership of Commissioner Jacobs and Deputy Commissioner Marilyn Dahl, the New Jersey Hospital Quality Initiative (NJHQI) was developed to provide help to facilities with lagging performance on quality indicators. DHSS engaged the Rutgers Center for State Health Policy (CSHP) to help develop the NJHQI strategy and evaluation plan. In September 2005, the Healthcare Foundation of New Jersey funded the CSHP to work with DHSS to launch the NJHQI. During the planning phase of this initial grant year, the New Jersey Health Education and Research Trust (HRET), an affiliate of the New Jersey Hospital Association, joined the project leadership team to develop a hospital staff training and technical assistance strategy for the NJHQI.

This report provides an overview of the development and implementation of the NJHQI, a detailed description of program evaluation methods, and the evaluation results. Overall, the evaluation paints a picture of improved quality of care in many of the NJHQI participating hospitals. However, the program was implemented at a time when there was a concerted national effort to improve hospital quality, so it is difficult to attribute the successes of participating hospitals to the NJHQI. Several of the NJHQI hospitals demonstrated rapid improvement following participation in the program, even relative to national trends among peer hospitals; but other NJHQI hospitals did not improve, including two that ultimately closed during the evaluation. We conclude that hospital quality improvement strategies targeting hospitals with historically low performance hold promise for improving care for patients dependent on distressed facilities, but that resource limitations and underlying financial distress in the hospital sector pose serious barriers to improvement.

Overview of NJHQI

Program Focus and Objectives

In a collaborative effort, leadership from New Jersey Department of Health and Senior Services (DHSS), Rutgers Center for State Health Policy (CSHP), and the Health Research and Education Trust (HRET) focused the NJHQI on a single clinical condition, congestive heart failure (CHF). Organizing the program around a single disease entity would give participating hospitals clear direction for their quality improvement efforts and CHF represents a very common and serious condition health condition. In 2005, CHF was the third most common principal diagnosis among hospitalized patients in New Jersey, representing over 36,000 discharges in that year (HCUPnet, 2009). Moreover, plans were already in place to add CHF quality indicators to the DHSS Hospital Performance Report in the coming year, making it likely hospitals would be highly motivated to work to improve these measures. In baseline data, wide variability in the

CHF quality indicators was evident, and project leadership felt that helping hospitals improve CHF indicators would generate lessons for quality improvement in other areas.

Successful hospital-based care of CHF patients would be measured by a set of four process-of-care measures developed by the Joint Commission on Accreditation of Healthcare Organizations. As a condition of full payment, hospitals are required by the federal Centers for Medicare and Medicaid Services to collect these measures from medical records, thus there would be no added data collection burden of NJHQI participation.¹ The NJHQI would focus on improving CHF process-of-care as measured by those reported to CMS:

1. Percent of heart failure patients discharged home with complete written discharge instructions addressing *all* of the following: activity level, diet, discharge medications, follow-up appointment, weight monitoring, and what to do if symptoms worsen.
2. Percent of heart failure patients for whom left ventricular function was assessed before arrival, during hospitalization, or is planned for after discharge.
3. Percent of heart failure patients with left ventricular systolic dysfunction who are prescribed an angiotensin converting enzyme inhibitor (ACEI) or angiotensin receptor blocker (ARB) at hospital discharge, unless contraindicated.
4. Percent of heart failure patients with a history of smoking cigarettes that are given smoking cessation advice or counseling during hospital stay.

The planning phase of the NJHQI ended in early 2006 and the program was formally launched at the first program workshop in March 2006 (discussed further below), with four specific objectives:

1. Improve the quality care for patients with congestive heart failure within hospitals with historically weak performance.
2. Promote an overall culture of quality improvement and encourage adoption of quality improvement strategies.
3. Strengthen the coalition of New Jersey agencies and organizations dedicated to improving quality of care.
4. Develop evidence about the efficacy of quality improvement initiatives, particularly in low-performing institutions.

These objectives were pursued through the careful selection of hospitals to participate in the NJHQI, a formal program of training and technical assistance, as well as the implementation of a formal program evaluation. These activities are described in the remainder of this report.

¹ For a complete description of CMS process-of-care quality measures see:
http://www.cms.hhs.gov/HospitalQualityInits/18_HospitalProcessOfCareMeasures.asp

Hospital Selection & Recruitment

NJHQI leadership from DHSS, CSHP and HRET developed a list of candidate hospitals with low CHF quality indicator scores during the first half of 2005. In addition, the leadership team examined data on payer mix from state hospital cost reports and drew upon their “on the ground” knowledge of the current circumstances of candidate hospitals. Eleven hospitals were selected for invitation to NJHQI. Letters were sent the chief executives of each of the candidate hospitals from DHSS Commissioner Fred Jacobs, MD, JD, describing the NJHQI and outlining criteria for participation (see Appendix A). Dr. Jacobs’ letter asked for a written pledge by the hospital chief executive *and* president of the hospital’s medical staff to devote the resources necessary to implement the quality improvement initiative. The buy-in of the president of the medical staff was seen as essential because of the importance of medical staff cooperation and support. The hospitals were also asked to make an in-kind commitment of one full-time equivalent staff member to the initiative.

Of the eleven hospitals invited to participate, seven signed on and four declined. In addition, other hospitals that were not among those initially invited sought to join the program. NJHQI leadership felt that the experience of the “invited” NJHQI participants would be enhanced with the addition of other hospitals with diverse circumstances and experiences in quality improvement. Ultimately, seven additional “volunteer” hospitals were permitted to join the initiative. Among these were three hospitals that are part of the same hospital systems as an invited hospital, and four that had been part of a separate DHSS quality improvement initiative.

As shown in Table 1, the eleven hospitals asked to participate in NJHQI provided recommended care an average of 68% of the time for heart failure care in 2004 (the summary score is the patient-weighted average of the four CHF quality indicators), with those signing on to participate averaging just above that level. Among the hospitals sent letters of invitation, those that agreed to participate also had below-average summary process-of-care scores for heart attack and community-acquired pneumonia patients. Invited hospitals that agreed to participate were also distinguished by the high proportion of admissions with Medicaid or no health insurance, indicating that these hospitals serve low-income communities and are likely to face significant financial constraints. The four hospitals that declined participation had heart failure scores just below the average of those that agreed to participate. These hospitals were also comparatively small (as measured by number of beds) but a smaller proportion of their patients was uninsured or covered by Medicaid. An informal review of the status of these hospitals suggested that at least some would have had great difficulty participating at that time. One hospital had applied for state approval to close, and others had had recent turnover in senior leadership.

Table 1: Characteristics of Invited and Participating NJHQI Hospitals

| | All New Jersey Hospitals | Invited Hospitals | | | Volunteer Hospitals |
|---|--------------------------------|---------------------------|--------------------------|----------------------------|------------------------|
| | | Invitation Letter Sent | Agreed to Participate | Declined to Participate | |
| Number of Hospitals | 82 | 11 | 7 | 4 | 7 |
| Quality Indicator Summary Scores (%)¹ | | | | | |
| Congestive Heart Failure ² | 82 | 68 | 70 | 65 | 87 |
| Heart Attack ³ | 91 | 85 | 86 | 85 | 85 |
| Community-Acquired Pneumonia ³ | 77 | 72 | 70 | 77 | 91 |
| Hospital Characteristics⁴ | | | | | |
| Staffed Beds (mean number) | 330 | 348 | 421 | 219 | 330 |
| Teaching Hospital (%) | 15 | 9 | 14 | 0 | 0 |
| Medicaid/Self-Pay Discharges (%) | 21 | 38 | 45 | 26 | 24 |

¹Percent of recommended care delivered when indicated.

²Data for calendar year 2004 discharges from the Centers for Medicare and Medicaid Services

(<http://www.hospitalcompare.hhs.gov>).

³Data for 2004 from the New Jersey Hospital Performance Report from <http://web.doh.state.nj.us/hpr/hpr2005.pdf>.

⁴Data for 2003 from the annual state Hospital Cost Reports, New Jersey Department of Health and Senior Services.

Table 2 lists the fourteen hospitals that were ultimately part of the NJHQI. Participating hospitals were concentrated in the northern part of the state, but also included hospitals in southern Salem County and the central New Jersey counties of Mercer and Middlesex. All are not-for-profit, except Memorial Hospital of Salem County which is for-profit.

Table 2: NJHQI Participating Hospitals

| Invited Hospitals | | Volunteer Hospitals | |
|--------------------------------------|----------------------------|----------------------------------|----------------------------|
| Barnert Hospital ¹ | Paterson, Passaic County | Capital Health System, Mercer | Trenton, Mercer County |
| Christ Hospital | Jersey City, Hudson County | Capital Health System, Fuld | Trenton, Mercer County |
| Jersey City Medical Center | Jersey City, Hudson County | Greenville Hospital ³ | Jersey City, Hudson County |
| Memorial Hospital of Salem County | Salem, Salem County | JFK Medical Center | Edison, Middlesex County |
| St. Joseph's Regional Medical Center | Paterson, Passaic County | Meadowlands Hospital | Secaucus, Hudson County |
| St. Mary's Hospital ² | Passaic, Passaic County | St. Joseph's Wayne Hospital | Wayne, Passaic County |
| Trinitas Hospital | Elizabeth, Union County | St. Michael's Medical Center | Newark, Essex County |

¹Filed for bankruptcy in 2007 and closed in 2008; ²Filed for bankruptcy in 2009; ³Closed in 2008

The NJHQI Intervention

The NJHQI created a collaborative of participating hospitals and provided expert technical assistance. No grant funds were offered to the participating hospitals, and, as noted above, there was an expectation that the participants would contribute in-kind resources. HRET led the development of the NJHQI quality improvement intervention. The intervention was based on a widely used strategy promoted by the Institute for Healthcare Improvement that seeks to promote the reliability (consistent delivery) of care in hospitals for specific conditions, in this case CHF (Nolan et al., 2004). In the first project year, HRET conducted assessment site visits to evaluate the quality improvement needs of each hospital and help in designing the technical assistance plan for the program. Following each visit, HRET staff worked with each hospital to identify improvement goals and strategies. HRET developed six one-day workshop sessions for participating hospitals over the course of the program, and hosted technical assistance conference calls and a project listserv. The training workshops offered teams from participating hospitals the opportunity to share strategies and lessons learned and to engage with leading experts in the field to help them develop and refine their strategies:

- Workshop 1 (March 24, 2006) featured a welcome address by Commissioner Jacobs, MD, JD, and workshop sessions led by Roger Resar, MD, Senior Fellow at the Institute for Healthcare Improvement. Dr. Resar worked with teams from each hospital to help them refine their quality improvement targets and strategies and train them in rapid cycle improvement methods.
- Workshop 1 (June 21, 2006) included presentations by Linda Flynn, RN, PhD and Joel Cantor, ScD focusing on the history and goals of the NJHQI, the evaluation design, and

the research principles and measurement strategies underlying the evaluation. Each participating hospital presented progress reports and engaged with HRET staff to identify and address barriers encountered during project implementation.

- Workshop 3 (November 17, 2006) began with a presentation by Jasmine Rizzo, MD, MPH, outlining the program evaluation strategy and comparing heart failure performance at participating hospitals compared to others in New Jersey and nationwide. In addition, staff from participating hospitals presented their early findings and engaged in discussions of ways to advance the project goals in their institutions.
- Workshop 4 (June 14, 2007) began with an address by Dr. Jacobs providing an update on DHSS initiatives and underscoring the importance of NJHQI. Frank Smart, MD, JD, Chairman of the Department of Cardiovascular Medicine at the Atlantic Health System addressed strategies for managing heart failure patients in the hospital and post-discharge to prevent readmissions. Fran Griffin, RRT, a director at the Institute for Healthcare Improvement outlined care gaps for CHF patients and the impact of human factors (training and experience, fatigue, overload, etc.) that can affect quality of care for CHF patients. The session also included time for project team interaction and technical assistance.
- Workshop 5 (November 30, 2007) featured Lois Dornan, MSN, RN, from the Robert Wood Johnson Health Network. Ms. Dornan presented an update on hospital quality data resources and requirements, and counseled the project staff on best practices for using data to engage hospital quality stakeholders.
- Workshop 6 (May 7, 2008) featured an introduction by Dr. Jacobs and a presentation by Mary Naylor, PhD, RN, FAAN, of the University of Pennsylvania on the effective management of transitions in care for vulnerable populations. Joel Cantor, ScD and Mary Ellen Cook, MPP presented early evaluation findings, and Aline Holmes, RN, APNC, MSN, led a discussion of strategies for sustainability of the hospitals achievements.

In addition to the training workshops, periodic one-hour technical-assistance conference calls were held over the course of the project among hospital participants. During these calls, participants were able to share their experiences with barriers, successes, and best practices for implementing quality improvement. The HRET also created an electronic discussion forum, listserv, and website for sharing program materials among participants.

In the last year of the program, with support of the DHSS, the hospitals were provided with access to an on-line quality indicator tracking and quality improvement system called Get with the Guidelines (GWTG), sponsored by the American Heart Association (AHA, 2009). GWTG provides web-based patient management tools and resources for engaging in quality improvement. HRET provided training for participating hospitals in the implementation of GWTG.

In summary, NJHQI provided resources and support to hospitals to engage in quality improvement for congestive heart failure patients. The hospitals were free to select improvement targets and strategies. The following section describes the project evaluation, including descriptive information about the activities of each NJHQI project as well as outcome information.

Evaluation Methods

Data Sources

Data for this study were obtained from two main sources. First, semi-structured telephone interviews of hospital leaders and project staff involved in NJHQI were conducted to obtain information about intervention activities and perceived challenges and accomplishments. Interview protocols and procedures were reviewed and approved by the Rutgers University Institutional Review Board. Interviews were completed for all hospitals in 2006, and all but two facilities in 2008 and 2009. Two hospitals closed (one in the invited and one in the volunteer group, see Table 2) before the end of the program. Interview questions identified which heart failure quality indicators each hospital was seeking to improve, barriers encountered, strategies used, and lessons learned. In the 2009 interviews, additional questions were asked about sustainability of quality work begun under NJHQI and the extent to which program participation helped the hospitals engage in additional quality improvement activities for other diseases and conditions. In all, 22 open ended and 16 closed ended questions were included in the final round of interviews (Appendix B).

Hospital officials interviewed had titles reflecting a wide range of responsibilities including: Director of Quality, Vice President of Patient Safety and Performance Improvement, Vice President Risk Management and Patient Safety, Quality Nurse Specialist, Performance Improvement Manager, Chief Quality Officer, Clinical Quality Improvement Coordinator, Nurse Manager, and Nurse Practitioner. The final round of interviews (ranging from 20 to 40 minutes) was conducted in March and April 2009. Eleven interviews were conducted among the twelve participating hospitals; two hospitals in the same health system participated jointly. Most of the hospitals used a team approach, with all the key members of the quality or clinical staff involved in the initiative participating in a group interview. This provided an extensive overview of the strategies used by hospitals in their sustainability efforts. Interviews were audio recorded and the notes were transcribed.

Second, process indicators of the quality of care for congestive heart failure patients collected by the Centers for Medicare and Medicaid Services (CMS) from 2004 to 2007 for all patients hospitalized at any acute care hospital in the U.S. were downloaded from the CMS Hospital Compare website (www.hospitalcompare.hhs.gov). Data on hospital characteristics

were obtained from the American Hospital Association (AHA) Annual Survey for these years and linked to the process quality indicator data.

Analysis

Open-ended questions were developed to elicit an in-depth understanding of how the NJHQI participants viewed their professional experiences and to describe their perception of outcomes achieved. Questions were asked about CHF quality improvement activities, barriers to success, lessons learned, outcomes achieved, and sustainability of the improvements made under NJHQI. Responses were coded into discrete categories using open coding and the coded responses were analyzed for patterns. To shed light on the special challenges faced by the invited hospitals, the frequency of responses to interview questions by invited hospital staff were compared to those from volunteer facilities, which began the program in less financial distress and with higher quality scores. Responses from 2009 interviews were also compared to responses from 2006 and 2008, to detect if costs or staff resistance had changed and whether these factors are still barriers to continuing implementation. Qualitative interview data were analyzed using ATLAS Ti (Version 6.0).

Merged CMS quality indicator and AHA hospital characteristic data were used to select separate groups of non-New Jersey comparison hospitals for each of the two NJHQI intervention groups (i.e., invited and volunteer hospitals).² The hospitals selected nationally had baseline (2005) characteristics similar to the respective group of NJHQI hospitals. Like the intervention hospitals, the comparison groups included only non-governmental hospitals located in Metropolitan Statistical Areas. Comparison groups were also limited to facilities outside of New Jersey that are similar to the NJHQI hospitals with respect to characteristics likely to be associated with hospitals' capacity to improve process quality. Separate comparison groups were selected for the invited and volunteer hospitals with values in the same range of baseline year (2005) CHF quality indicator scores, number of staffed beds, teaching status (residents per bed), and the percent of discharges with an expected primary payer of Medicaid.³ Mean, minimum, and maximum values of baseline characteristics of NJHQI and comparison hospitals are shown in Table 3.

The central hypothesis of the evaluation is that CHF process indicator scores for the invited NJHQI participants would improve faster or to a higher level following engagement in the intervention than they would have without the initiative. We also consider patterns of improvement among the volunteer participants. Trends in the four CHF quality indicators

² Hospitals outside New Jersey were used for the comparisons groups to avoid selection effects and because there would be an insufficient number of in-state comparable facilities.

³ More detailed data that measure payer mix (including uninsured and other less remunerative patients) would be preferred but are not available. Medicaid payer share is a widely used marker in national studies for poor payer mix.

collected by CMS were examined separately and we calculated and examined a composite summary measure (described below).

Within each hospital, patient samples vary for each quality indicator, so we calculated sample size weighted means for each performance measure for each hospital. Summary scores were calculated for each hospital as the ratio of the sum of the numerators across the four indicators (i.e., received recommended care) divided by the sum of the denominators (i.e., eligible to receive recommended care).

Data were analyzed using Microsoft Excel 2007 and Stata 10.0. Weighted means and 95% confidence intervals are calculated for each CHF indicator and the CHF care summary score. Separate means and confidence intervals were calculated for each NJHQI participant, for the average of the NJHIQ invited and volunteer groups, and for their respective comparison groups. We use these statistics to test the hypothesis that NJHQI hospitals improved their scores to a higher level or faster than their associated comparison group following the program (i.e., in 2006 and 2007) compared to the pre-implementation period (i.e., 2004 and 2005). We also conducted t-tests to determine whether differences between intervention and comparison groups were statistically significant within each year of the study.

Table 3: Baseline Characteristics (2005) of NJHQI Participating Hospital and Comparison Groups

| | Invited Hospitals | | | | Volunteer Hospitals | | | |
|---|-------------------|-----------------|---------|---------|---------------------|-----------------|---------|---------|
| | NJHQI Mean | Comparison Mean | Minimum | Maximum | NJHQI Mean | Comparison Mean | Minimum | Maximum |
| Number of Staffed Beds | 320 | 283 | 110 | 651 | 187 | 203 | 88 | 325 |
| Residents per 100 Beds | 8 | 3 | 0 | 25 | 9 | 3 | 0 | 39 |
| Medicaid Patients (%) | 31 | 25 | 20 | 40 | 15 | 15 | 5 | 30 |
| Process of Care Measures (%) ¹ | | | | | | | | |
| LVF Assessment | 85 | 88 | 74 | 99 | 95 | 94 | 84 | 99 |
| ACEI/ARB | 82 | 80 | 62 | 90 | 84 | 88 | 68 | 100 |
| Discharge Instructions | 46 | 44 | 10 | 70 | 79 | 63 | 0 | 100 |
| Smoking Advice | 83 | 81 | 64 | 97 | 97 | 87 | 0 | 100 |
| Number of Hospitals | 7 | 43 | | | 7 | 472 | | |

¹See text for description of measures.

Findings

The interviews provide a picture of the effects of the initiative. The most valuable benefit reported by the hospitals was the opportunity to work with other hospitals and share best practices. This sentiment was widely shared, and well articulated by one respondent from an invited hospital:

As individual hospitals we spent so much time [before NJHQI] trying to reinvent the wheel. Being part of a collaborative you get to share ideas and it is also encouraging to see your ideas can be shared as well, and sometimes other people are doing the same thing. It gives you confidence that you are on the right track.

Hospital Activities

All of the hospitals in the invited group focused on improving compliance with discharge instruction guidelines. Improving discharge instruction compliance was seen as challenging but important. One hospital also focused on ACEI or ARB use for patients with left ventricular systolic dysfunction and one on timely documentation of ejection fraction. Among the volunteer group, five hospitals focused on discharge instructions, two focused on assessment of left ventricular function, two focused on ACEI/ARB use, one focused on smoking cessation counseling, and one focused on physician documentation of contraindications for drugs and procedures reflected in the quality indicators. All the hospitals in both groups reported that their major focus did not change in the final year of the intervention.

All of the hospitals in the Invited group focused on improving compliance with discharge instruction guidelines.

Hospitals employed a variety of strategies to improve the rate of discharge instructions completeness including designing protocols, flagging charts, extensive staff education, audit tools, and holding staff accountable for providing instructions. Two hospitals in the invited group also made changes to the patient's follow-up procedure after discharge. There were no changes in follow-up procedures made by volunteer hospitals. Half of the hospitals in the invited group developed or adopted new standing or standard orders for heart failure patients, and four hospitals changed the way they conduct medication reconciliation, a challenging requirement of the discharge instruction process measure. All the invited hospitals provided new heart failure-related training to hospital staff, including physicians, residents, nurses, case managers, and medical records staff whereas only half of the volunteer hospitals provided similar training.

In the final year of NJHQI, DHSS provided support for participating hospitals to adopt the American Heart Association's Get with the Guidelines (GWTG) program, described above. Four invited and two volunteer hospitals took advantage of this opportunity. Other hospitals reported that despite having free access to GWTG, using it would require more resources than

they could devote. Among the three invited hospitals that adopted GWTG, two are planning to continue its use, but reporting that using GWTG is too cumbersome, the third is planning to discontinue its use. Two of the hospitals using GWTG obtained grant resources to launch its use.

Almost all of the invited NJHQI hospitals developed patient education (and often staff education) materials, including booklets, brochures, and presentation slides, generally in both English and Spanish. One hospital also provided weekly education to patients as well as their family members. In the volunteer group, four out of six hospitals operating in the final program year developed patient education materials.

Finally, hospital respondents universally reported that the workshops sponsored by NJHQI between 2006 and 2008 were valuable and informative. Most of the hospitals stated that interaction with peers from other program hospitals played a vital role in the success of this initiative. When asked about the listserv as well as program conference calls, the hospitals in both the invited and volunteer group found the listserv to be more useful.

Barriers and Accomplishments

Staff responsible for NJHQI reported that they achieved quality improvements as a result of participation in the initiative. Most cited procedural improvements (e.g., implementation of tracking systems), but three hospitals cited specific improvements in national hospital quality of care metrics (e.g., discharge instruction scores). Systemic organizational improvements that were cited by two or more hospitals include the development of physician champions, direct reporting of quality results to the hospital's board, and regular peer comparisons of measures and data reporting.

Staff responsible for NJHQI reported that they achieved quality improvements as a result of participation in the initiative.

Hospitals also instituted goals based on clinical and evidence-based outcomes, standardization of discharge and other patient education materials, and creation of concurrent monitoring tools. Many of the barriers cited in first two rounds of interviews were described as being successfully addressed as a result of the NJHQI. In the final round of interviews, only one invited and one volunteer hospital reported resistance from medical staff in continuing activities begun under NJHQI. In contrast, in the first two rounds of interviews, four hospitals in the invited group and four in the volunteer group reported encountering resistance from hospital staff. Changes that staff and physicians had previously found problematic, such as use of new discharge documentation, were described as "part of the culture" in most program hospitals by the end of the initiative. Invited hospital participants said that costs were not a barrier to maintaining the gains of the NJHQI, but half of the volunteer hospitals reported it as a barrier in expanding the efforts.

Most frequently cited both as a lesson and a benefit of NJHQI was sharing with peers at other hospitals, networking, and identifying and maximizing use of existing resources. This was

One respondent said the most important lesson was “learning innovative ideas with the least amount of resources needed”.

not described as a matter of individual support among the hospital representatives, but rather a sharing of targets and strategies for quality improvement, and an opportunity to efficiently gain knowledge (not “reinventing the wheel” by trying strategies that other hospitals had already perfected). One respondent said the most important lesson was “learning innovative ideas with the least amount of resources needed.”

Another benefit of the NJHQI was the utility of the heart failure measures as a model for other quality initiatives in other disease entities, including stroke, heart attack, and pneumonia. Some hospitals implemented the discharge instructions tool on a hospital-wide basis. One NJHQI leader succinctly cited three lessons learned: The importance of using performance improvement or quality methodology, “working well with our [hospital’s] team”, and networking with other hospitals.

All of the respondents in the final round of interviews reported that their hospital was able to sustain the improvements made under NJHQI. Six of the respondents cited process measures as indicating their ability to sustain the changes, such as concurrent chart documentation, discharge instructions, regular reporting and reconciliation of data, new interdisciplinary meetings, and coordination of nursing and case management. Six of the respondents cited compliance measures (between 95 and 100 percent) as indicating their ability to sustain the changes.

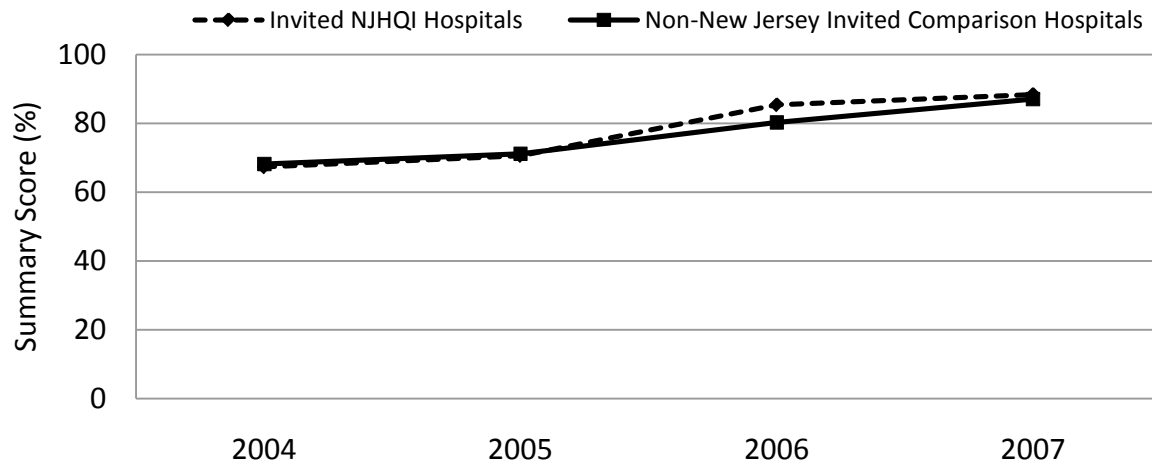
All of the respondents in the final round of interviews reported that their hospital was able to sustain the improvements made under NJHQI.

Quality Measure Performance

The principal objective of the NJHQI was to facilitate improvement in CMS process of care performance scores among the invited hospitals. In fact, the NJHQI invited hospitals showed a rapid increase in CHF process of care summary scores (Figure 1a), from 71 percent to 85 percent between the years before (2005) and following program initiation (2006). CHF quality continued to improve among participating hospitals, albeit at a slower pace, in 2007, reaching 88 percent on average. While the gains in the non-New Jersey invited-hospital comparison group were somewhat less rapid between the years before (2005) and after the initiation of NJHQI (2006), CHF summary scores improved steadily for this group throughout the study period as well. Although, on average, the NJHQI participants increased CHF summary scores to a slightly higher level than the comparison group by 2006-07, there were no statistically significant differences between the groups in any of the study years. NJHQI volunteer hospitals

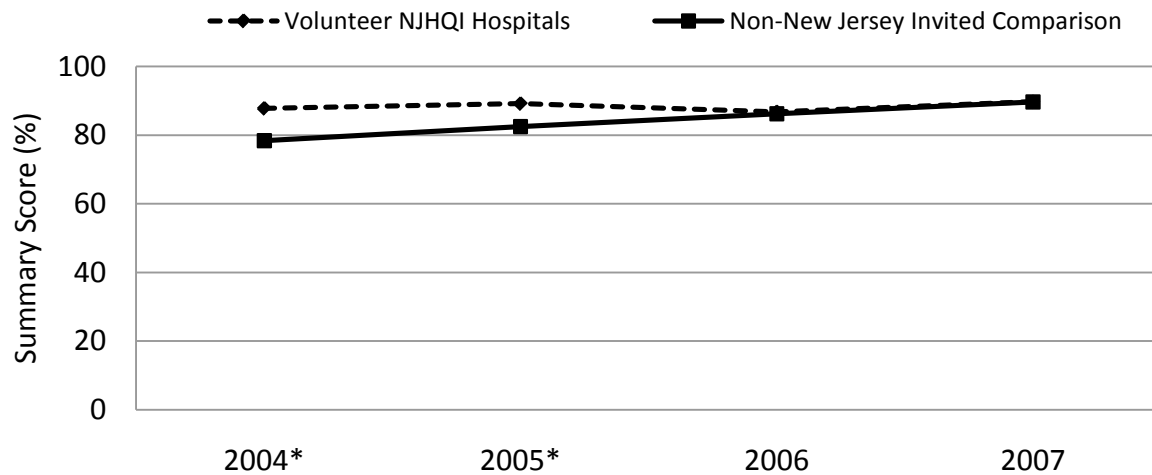
summary scores were high, near 90 percent, throughout the study period, and ended the study period with scores equivalent to their non-New Jersey comparison group (Figure 1b).

Figure 1a: Congestive Heart Failure Summary Scores, Weighted Mean Scores for NJHQI Invited and Comparison Hospitals



Source: Rutgers Center for State Health Policy, see text for data source and methods.

Figure 1b: Congestive Heart Failure Summary Scores, Weighted Mean Scores for NJHQI Volunteer and Comparison Hospitals

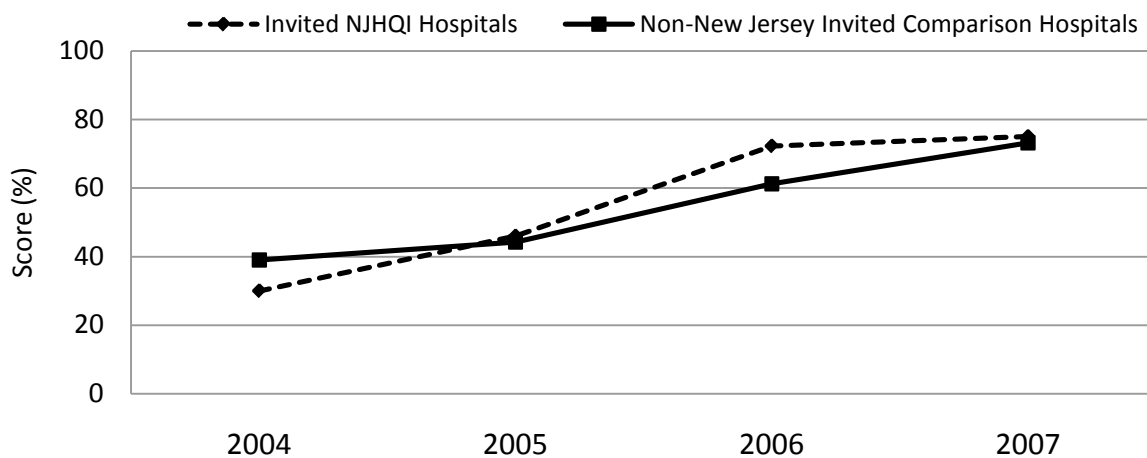


Source: Rutgers Center for State Health Policy, see text for data source and methods.

*Significant difference between groups ($p < 0.05$).

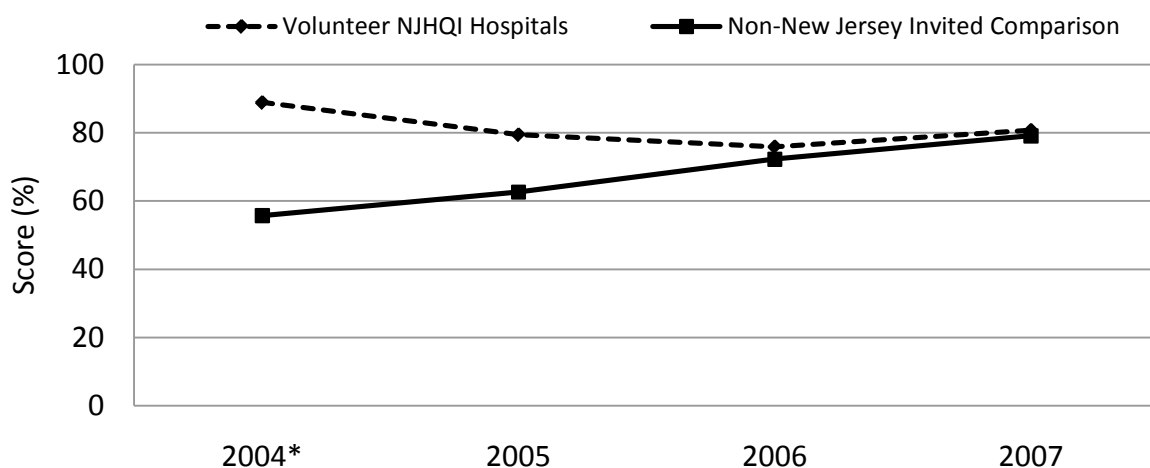
Providing complete discharge instructions was the focus of the most concerted quality improvement efforts of NJHQI participants (discussed above), and this measure improved among NJHQI invited participants more than 1.6 fold between 2005 and 2007 (Figure 2a). Like the summary score, the invited-hospital comparison group also showed increases during this period, and there were no statistically significant differences between the two groups. Also like patterns observed in summary scores, discharge instruction scores for the NJHQI volunteer hospitals started the study period at high levels and ended the period with scores statistically equivalent to their comparison group (Figure 2b). Notably, in spite of their focus on improving discharge instruction scores, there was a declining trend between 2004 and 2006 in performance scores among the volunteer hospitals.

Figure 2a: Patients Given Discharge Instructions, Weighted Mean Scores for NJHQI Invited and Comparison Hospitals



Source: Rutgers Center for State Health Policy, see text for data source and methods.

Figure 2b: Patients Given Discharge Instructions, Weighted Mean Scores for NJHQI Volunteer and Comparison Hospitals

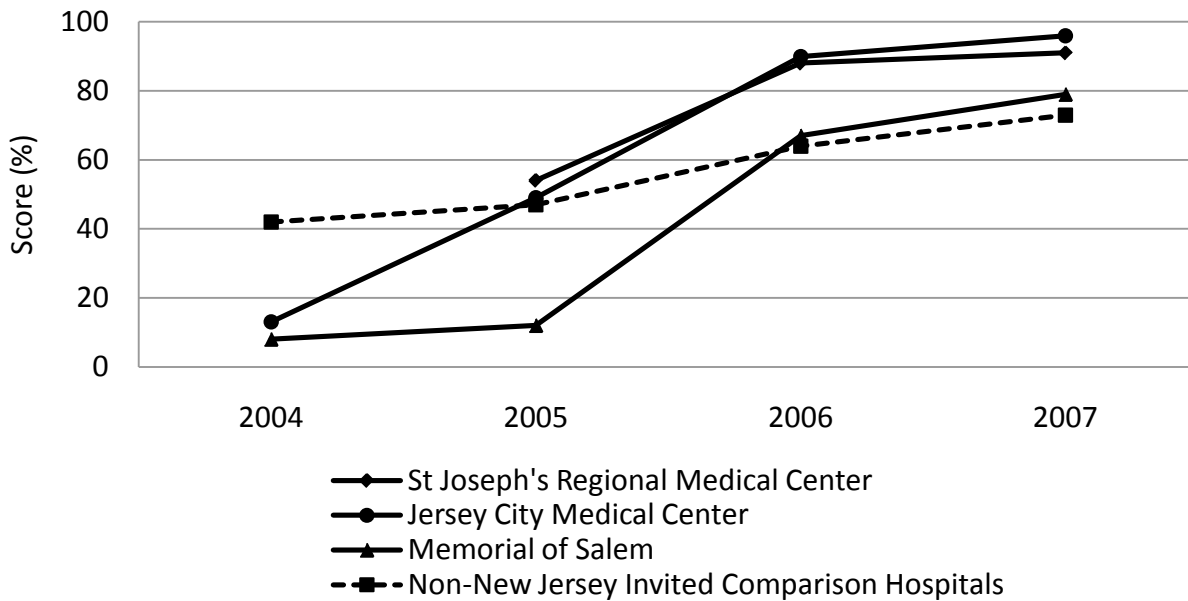


Source: Rutgers Center for State Health Policy, see text for data source and methods.

*Significant difference between groups ($p < 0.05$).

Beneath the *average* gains in the NJHQI participants, there is considerable variation in score trends. Trends in scores for discharge instructions, the measure on which the NJHQI hospitals devoted the most effort, illustrate this variability. Three invited hospitals showed dramatic gains in this measure during the study period, especially after engagement in the intervention (Figure 3a). Two of these hospitals, St. Joseph's Regional Medical Center and Jersey City Medical Center, delivered complete discharge instructions only about half the time in 2005, and by 2007 had achieved scores of 91 and 96 percent, respectively. The third that achieved major success following the intervention, Memorial Hospital of Salem County, started at an even lower level and increased its discharge instruction score more than six fold to nearly 80 percent by 2007. The pattern of discharge instruction scores in these three facilities appears to reflect the success reported by staff at NJHQI hospitals (discussed above).

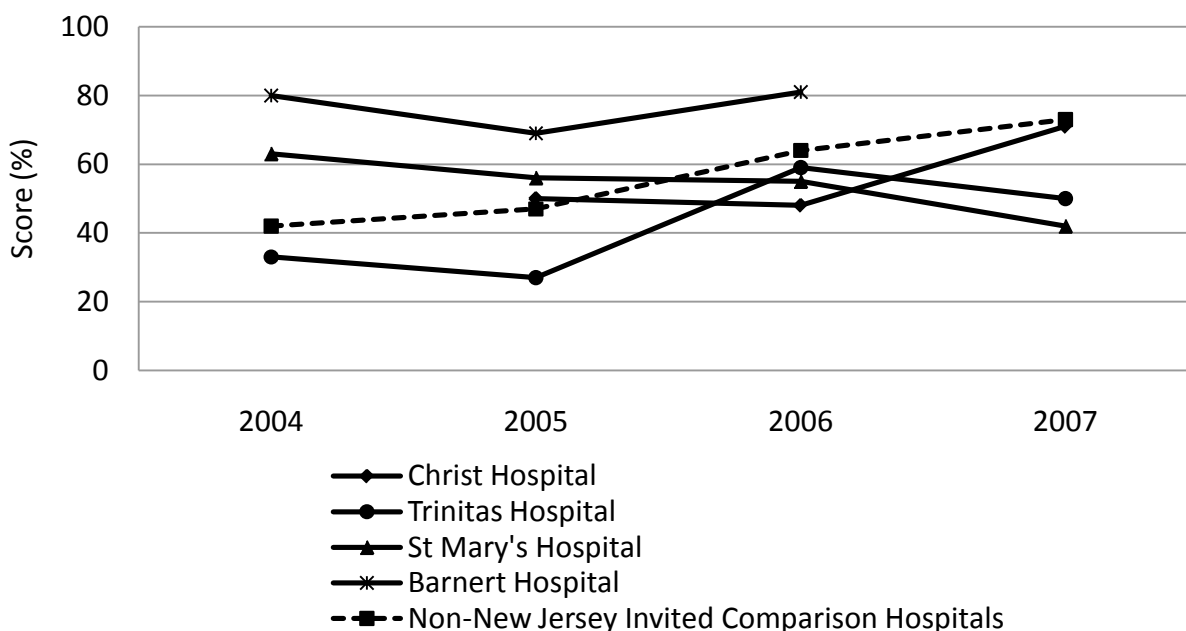
Figure 3a: Discharge Instruction Scores, “Successful” NJHQI Invited Hospitals and Weighted Mean Scores for Comparison Hospitals



Source: Rutgers Center for State Health Policy, see text for data source and methods.
 Note: 2004 data not available for St. Joseph's Regional Medical Center

The remaining NJHQI invited hospitals did not succeed in improving discharge instruction scores or had more equivocal progress following program participation (Figure 3b). One of these, Barnert Hospital, was clearly not in a position to invest resources in quality initiatives as it filed for bankruptcy in 2007 and ultimately closed the following year. Two other hospitals had mixed results, including Trinitas Hospital that made rapid progress the year NJHQI began, but did not sustain its achievements in 2007, and Christ Hospital that appears to have begun improvement late in the intervention. The performance of the remaining facility, St. Mary's of Passaic, declined over the period of NJHQI participation.

Figure 3b: Discharge Instruction Scores, “Unsuccessful/Equivocal” NJHQI Invited Hospitals and Weighted Mean Scores for Comparison Hospitals



Source: Rutgers Center for State Health Policy, see text for data source and methods.

Note: 2004 data not available for Christ Hospital; Barnert Hospital filed for bankruptcy in 2007 and closed in 2008

Qualitative interview responses shed some light on why scores for some of the invited hospitals seemed to show large gains during NJHQI participation and others did not. Interview responses from the more “successful” hospitals reflect more extensive and more active strategies and somewhat less staff resistance and resource problems in the final year of the program. They were also somewhat more likely to report that they were able to maintain their strategies after the completion of NJHQI. The three most successful hospitals used more intensive staff education, created steps to follow the patient sooner in the admission process, and increased staff accountability for improved quality performance. Conversely, the staffs in hospitals without a successful pattern of quality indicator improvement after NJHQI were more

likely to report continued resistance from the medical staff, funding constraints, and limited staff resources to sustain the activities started under the initiative.

Improvements in scores for other CHF quality indicators among both groups of NJHQI hospitals were evident but less dramatic and tightly paralleled trends in their respective non-New Jersey comparison groups (Appendix C). Average scores for these quality measures were high for both NJHQI groups throughout the study period, ranging from around 80 percent for most measures before the intervention (2005) and from 90 to 100 percent by 2007 in most cases.

Conclusions

The New Jersey Hospital Quality Initiative was developed in 2005 by the New Jersey Department of Health and Senior Services (DHSS) and Rutgers University Center for State Health Policy to help hospitals facing the greatest challenges improve quality of care. National and state-specific data documented that many hospitals were falling short of reliably providing recommended care. Public release of nationally accepted process of care measures seemed to be encouraging hospitals to improve care, but concerns lingered that hospitals with the least resources would not be able to achieve the sorts of gains that other hospitals were achieving. Thus, under the leadership of then DHSS Commissioner Fred Jacobs and with financial support from the Healthcare Foundation of New Jersey, NJHQI was launched.

Financial distress among New Jersey hospitals was, and remains, a serious concern. The New Jersey Commission on Rationalizing Health Care Resources established in 2006 and chaired by Princeton Professor Uwe Reinhardt noted that “Many New Jersey hospitals are in poor financial condition relative to hospitals nationwide...” and that “a large number...appear to be heading toward distress in the near future.” (p. 65) (New Jersey Commission, 2008). In fact, between 2005 and mid-2009, a dozen New Jersey hospitals closed and several others filed for bankruptcy protection (NJHA, undated), including three NJHQI hospitals.

The NJHQI centered on a series of six in-depth quality improvement workshops organized and convened between March 2006 to May 2009 by the Health Research and Education Trust (HRET), a branch of the New Jersey Hospital Association. The workshops provided opportunities for teams from the participating hospitals to engage with nationally regarded quality improvement experts and to work with one another as they developed their improvement strategies. HRET facilitated communication among NJHQI hospitals and provided additional resources between workshops by hosting conference calls, a resource-rich web site, and distributing materials through a program listserv.

The participating hospitals did not receive grant support for their efforts. On the contrary, hospital executive and clinical leadership were asked to pledge significant in-kind

contributions to be admitted to the program. Still, interviews with project staff and leadership at the NJHQI hospitals reveal a deep appreciation for the resources provided by the program and significant engagement in new quality activities among most. Early in the initiative, most of the hospitals elected to organize their efforts around improving compliance with national discharge instruction guidelines for patients with congestive heart failure. This was widely seen as a challenging target that would involve extensive coordination among hospital staff and with admitting physicians from the community. In fact, data revealed that discharge instruction compliance rates were quite low among the invited participants in NJHQI before the initiative (Table 3 and Figure 1a).

Quality improvement efforts by the program hospitals met initially with significant resistance and resource constraints. Interviews reveal, however, that by the end of the two-year initiative many barriers had been overcome and improvement efforts were becoming institutionalized in many of the program hospitals. Interview participants expressed a clear sense that NJHQI had achieved its goals and that significant progress had been made in making real improvements in care of heart failure patients.

Trends in publicly available quality indicators bear out these perceptions. Most of the NJHQI hospitals improved discharge instruction scores, as well as scores for other quality indicators during the period of the intervention (see Figures 1a to 3a, and Appendix C). To evaluate whether these improvements were faster or greater than might have happened without NJHQI, these trends were contrasted with carefully selected comparison groups of non-New Jersey hospitals. The comparison groups started in similar circumstances as the NJHQI hospitals with respect to baseline quality scores and basic hospital characteristics (size, teaching status, payer mix, etc.). The NJHQI was implemented at a time of concerted national attention on quality improvement, and this is reflected in score trends for the comparison hospitals.

While improvement among NJHQI hospitals was the norm, on average, program hospitals did not improve care *faster* than the national trend. However, underneath this average, strikingly rapid improvement is clearly evident in three of the NJHQI invited participants following their engagement in the program. In contrast to comparison group trends, the remaining four invited participants made either more equivocal progress or did not improve following participation (in fact, one of these closed). A look back at differences in interview responses between the “successful” NJHQI participants and the others suggests that the former took greater advantage of program resources and engaged more actively in quality improvement activities. We cannot definitively attribute the success of these hospitals to NJHQI, but the trajectory of score trends combined with analysis of interview responses suggests that the program did, in fact, contribute to rapid improvement in these hospitals.

In spite of progress in improving process of care, NJHQI and other New Jersey hospitals face some new challenges. CMS has added measures to its public reporting (see www.hospitalcompare.hhs.gov), including readmission rates for heart failure and other

conditions. The work of NJHQI, and its focus on discharge instructions in particular, positions its participants well to develop readmission prevention strategies. Other resources have become available to hospitals in New Jersey since the end of the NJQHI, including the Robert Wood Johnson Foundation's New Jersey Health Initiatives Expecting Success: Excellence in Cardiac Care program.

One final conclusion from NJHQI is clear – achieving quality improvement in financially distressed facilities is difficult but achievable. The achievements of the NJHQI hospitals reveal the importance of training and networking among those responsible for quality improvement, engaging effective physician champions, the taking a “systems approach” to improving care. We conclude that the New Jersey Hospital Quality Initiative contributed to achieving these goals and, as a result, enhanced opportunities for hospital leaders to lead and to institutionalize cost-effective and systematic improvement strategies.

References

American Heart Association (AHA). February 2009 Get With The Guidelines - Heart Failure Fact Sheet. <http://www.americanheart.org/downloadable/heart/1237563076836factsheetHF.pdf>

Department of Health and Senior Services (DHSS). 2004 New Jersey Hospital Performance Report. Trenton: New Jersey Department of Health and Senior Services. <http://web.doh.state.nj.us/hpr/hpr2004.pdf> (Accessed June 22, 2009).

Department of Health and Senior Services (DHSS). 2006 New Jersey Hospital Performance Report. Trenton: New Jersey Department of Health and Senior Services. <http://web.doh.state.nj.us/hpr/docs/2006/report.pdf> (Accessed June 22, 2009).

HCUPnet, Healthcare Cost and Utilization Project [Internet]. Rockville, MD: Agency for Healthcare Research and Quality. State Inpatient Database [cited 2009] Available from: <http://hcupnet.ahrq.gov>

Jencks SF, Huff ED, Cuerdon T, et al. Quality of Medical Care Delivered to Medicare Beneficiaries: A Profile at the State and National Levels. *JAMA* 2000; 284:1670-1676.

Jencks SF, Huff ED, and Cuerdon T. Change in the Quality of Care Delivered to Medicare Beneficiaries, 1998-1999 to 2000-2001. *JAMA* 2003; 289:305-312.

New Jersey Commission on Rationalizing Health Care Resources (New Jersey Commission). *Final Report*. January 24, 2008. Trenton NJ: New Jersey Department of Health and Senior Services. <http://www.nj.gov/health/rhc/finalreport/index.shtml>

New Jersey Hospital Association (NJHA). Undated. "What Will Happen to My Hospital?" Brochure. Princeton NJ: New Jersey Hospital Association. <http://www.njha.com/Press/Pdf/ClosureList0309.pdf> (accessed July 5, 2009).

Nolan T, Resar R, Haraden C and Griffin FA. Improving the Reliability of Health Care, 2004. Institute for Healthcare Improvement Innovation Series white paper. <http://www.ihl.org/IHI/Results/WhitePapers/ImprovingtheReliabilityofHealthCare.htm>

Appendix A: NJHQI Recruitment Materials



State of New Jersey
DEPARTMENT OF HEALTH AND SENIOR SERVICES
PO BOX 360
TRENTON, N.J. 08625-0360

RICHARD J. CODEY
Acting Governor

www.nj.gov/health

FRED M. JACOBS, M.D., J.D.
Commissioner

December 1, 2005

William McDonald, Interim CEO
St. Joseph's Healthcare System
703 Main Street
Paterson, NJ 07503

Dear Mr. McDonald:

As you know, the Department of Health and Senior Services (Department) released its second annual Hospital Performance Report in September 2005 featuring measures of the reliability of New Jersey's general hospitals in providing care for patients with acute myocardial infarction and community-acquired pneumonia. I am very pleased that the 2005 report demonstrated significant improvement over the 2004 report, and I believe that the release of future Performance Reports will continue to focus hospitals' attention on quality improvement. To that end, next year the Department will add measures of the reliability of care for patients with heart failure to the Performance Report.

I am writing to invite St. Joseph's Healthcare System including both the Medical Center and Wayne to participate in a new initiative to help selected facilities in their efforts to improve performance for heart failure patients. This effort, the New Jersey Hospital Quality Initiative (NJHQI), will provide customized assessment and training resources to selected hospitals. Funded by the Healthcare Foundation of New Jersey, the NJHQI is a joint initiative of the Department, the New Jersey Hospital Association (NJHA) Quality Institute, and Rutgers Center for State Health Policy (CSHP).

NJHA Quality Institute staff and expert consultants will work closely with each participating hospital for one year to conduct an intensive assessment of quality improvement needs and will provide in-depth training for hospital personnel in quality improvement strategies (see Attachment for a brief description of the program). While these resources will be provided at no charge, hospitals will be expected to commit significant staff time to the NJHQI. In addition to the active involvement and commitment of senior hospital and medical staff leadership, each participating hospital will agree to release quality improvement and other staff from their routine duties from time to time in order to engage in NJHQI assessment and training activities. We estimate that the commitment would be for about one FTE for the year. The hospitals will also

Mr. McDonald
Page 2

agree to participate in a subsequent NJHQI evaluation by CSHP using confidential interviews and surveys.

I strongly encourage you to take advantage of this offer of free expert assistance. To participate, please return the letter of commitment with the signatures of both the Chief Executive Officer and the President of the Medical Staff, no later than December 19, 2005 to:

Joel Cantor, Sc.D.
Center for State Health Policy
Rutgers University
317 George St., Suite 400
New Brunswick, NJ 08901
Telephone: (732) 932-3105 x 228
Fax: (732) 932-0069
Email: jcantor@ifh.rutgers.edu

The Department, NJHA and Rutgers look forward to working with you in our continuing efforts to improve care for all patients in New Jersey.

Sincerely,



Fred M. Jacobs, M.D., J.D.
Commissioner

Enclosures

- c. ~~Joel C. Cantor, Sc.D., Rutgers Center for State Health Policy~~
Marilyn Dahl, Deputy Commissioner
Aline Holmes, RN, APN-C, MSN, New Jersey Hospital Association
James LaBagnarra, M.D., VP, Medical Affairs
Medical Staff President



Rutgers Center for State Health Policy

The Institute for Health, Health Care Policy, and Aging Research

Joel C. Cantor, Sc.D.
Director, Rutgers Center for State Health Policy
317 George Street, Suite 400
New Brunswick, NJ 08901

Dear Dr. Cantor:

We agree to participate in the New Jersey Hospital Quality Initiative (NJHQI) for the duration of one year. Technical assistance in quality improvement will be provided by NJHQI to **St. Joseph's Healthcare System** at no cost. In return, we commit to supporting this initiative through the following:

- Active involvement and commitment of senior hospital and medical staff leadership;
- Releasing quality improvement and other staff from their routine duties from time to time in order to engage in NJHQI assessment and training activities (approximately 1 full-time equivalent commitment for the year); and
- Participation in an NJHQI evaluation, which will involve confidential interviews and surveys of selected hospital personnel and medical staff leadership.

Signature of Chief Executive Officer

Date

Signature of Medical Staff President

Date

Rutgers, The State University of New Jersey
317 George Street, Suite 400
New Brunswick, New Jersey 08901-2008
T: 732.932.3100
F: 732.932.0066
www.cshp.rutgers.edu



Quality Institute

The New Jersey Hospital Quality Initiative was developed to help participating hospitals improve the reliability of care delivered to patients with heart failure. Improving reliability involves improving hospital practices and systems to ensure that recommended care and information is consistently delivered to every patient and in accordance with their values and preferences. Within the broad area of heart failure, specific targets for improvement will be identified by each participating hospital.

The New Jersey Hospital Association Quality Institute staff and expert consultants will work closely with each participating hospital to conduct an assessment of quality improvement needs and will provide training for hospital personnel in strategies to improve performance in selected areas.

This will be accomplished through a variety of interventions, including:

- Two (2) one-day training sessions held at the NJHA Conference Center in Princeton, NJ;
- One (1) site visit from NJHA staff in the first year;
- Approximately six (6) one-hour conference calls in the first year.

Participating hospitals will need to provide:

- Staff for chart abstraction and monitoring;
- Staff time to participate in training sessions, conference calls, and performance improvement work equal to one full-time equivalent over the course of one year.

For additional information about the assessment and training, please contact Aline Holmes, director of the Quality Institute, at 609-275-4157 or aholmes@njha.com.

Appendix B: 2009 Interview Protocol

THE CENTER FOR STATE HEALTH POLICY

**NEW JERSEY HOSPITAL QUALITY
INITIATIVE:**

**Participation of Staff and Impact on
Hospital Quality**

Telephone Questionnaire

Quality Director and Other Team Members



Before you ask any questions, you need to complete the Informed Consent form with the client.

Client Name _____

Verify Client info:

Client Phone Number _____

Client Hospital Affiliation _____

Survey outcome:

Survey conducted....1

Client refused to participate...5

(Explain _____)

Client unable to participate...6

(Explain _____)

INTERVIEWER ONLY ITEMS

Interviewer:

• _____ (name/initials)

• _____ (Date)

Data Entry:

• _____ (name/initials)

• _____ (Date)

Preamble/Consent

Greeting: Hello, my name is _____. I am calling from Rutgers University. We are conducting a survey of hospitals that participated in the New Jersey Hospital Quality Initiative. Would it be possible for me to speak with _____ (name).

This interview is being conducted to gather participants' views of their experiences with the New Jersey Hospital Quality Initiative. **The discussion will last about 25 minutes.** The interview will be audio-recorded in order to verify the accuracy of the transcriptions.

Your participation in this study is completely voluntary and there will be no penalty for not participating. If you participate, you may still choose not to answer any specific questions. The names of the people who participate in the interviews will be kept confidential by Rutgers. All information will be reported in ways that do not allow anybody to know who participated in this study. The information we collect will also be used for further research, teaching, and presentation at scholarly conferences in the area of Quality Improvement.

If you have any questions or concerns after the interview, please call the Project Coordinator for this study, Manisha Agrawal, at 732-932-4631.

If this is a convenient time, I'd like to conduct the interview now.

May I proceed?

Yes / No (circle the appropriate response) If Yes, then interviewer signs consent below:

CLIENT/PROXY GAVE VERBAL CONSENT TO PROCEED WITH THE INTERVIEW:

_____(Date: _____)
(Interviewer's printed name and signature)

May I audio-record this interview?

Yes / No (circle the appropriate response) If Yes, then interviewer signs consent below:

CLIENT/PROXY GAVE VERBAL CONSENT TO PROCEED WITH AUDIO-RECORDING:

_____(Date: _____)
(Interviewer's printed name and signature)

As appropriate, end contact, conduct interview, or schedule alternative interview.

INTRODUCTION

1. **Please describe your position in the hospital and how long you have held that position.**

2. **What was your role in the NJHQI intervention?**

3. **Which HF measure or measures did your hospital focus on in the past year?**
 - ___ Assessment of left ventricular function
 - ___ ACE-Inhibitor or ARB for left ventricular dysfunction
 - ___ Smoking cessation counseling
 - ___ Discharge instructions

4. **Do any of these HF measures differ from your focus in prior year of the project? If yes, can you specify how it's different?**

5. **(for each measure checked in #3 above, ask): What were the main strategies that your hospital used to improve performance on (specific measure)? (Probe for details)**
 - ___ Assessment of left ventricular function

 - ___ ACE-Inhibitor or ARB for left ventricular dysfunction

 - ___ Smoking cessation counseling

 - ___ Discharge instructions

6. **As a result of your participation in NJHQI, did your hospital develop any patient education materials for Heart Failure patients? (if yes, ask them to describe their purpose and ask if they are still using)**

7. **As a result of your participation in NJHQI, did your hospital develop or adopt any new standard/standing orders for Heart Failure? (if yes, ask them to describe and ask if they are still using)**

8. **As a result of your participation in NJHQI, did your hospital change the way that it conducts medication reconciliation required for discharged Heart Failure patients? (if yes, ask them to describe purpose and ask if they are still doing)**

9. **As a result of your participation in NJHQI, did your hospital make any other changes in procedures for preparing and using patient discharge instructions? (if yes, ask them to describe their purpose and ask if they are still using)**

10. **As a result of your participation in NJHQI, did your hospital change the way it interacts with patients after discharge? (if yes, ask them to describe and ask if they are still doing)**

11. **Has your hospital ever used Get With the Guidelines for Heart Failure?**
 Yes
 No (Go to que 12)

11a. About when did your hospital **first** start using GWTG for heart failure?
(record month/year)

11b. Does your hospital currently use GWTG for Heart Failure? (If no; when did you stop using (record mo/yr) and ask what is the main reason you stopped using (open ended)).

11c. Please rate the extent to which your use of **Get With the Guidelinessm** in quality improvement efforts for **heart failure** met your **expectations**? (check one box)

- Greatly exceeded expectations
- Modestly exceeded expectations
- Met expectations
- Modestly fell short of expectations
- Greatly fell short of expectations

12. **Has your hospital begun using any of the strategies or tools you developed under NJHQI for patients with conditions other than Heart Failure? If yes, what other kinds of patients or diagnostic categories?**

13. **Were there any other lessons learned from NJHQI that you found valuable for improving care for patients with diagnoses other than heart failure? If yes, what were those lessons and what other kinds of patients or diagnostic categories?**

14. **Last year, you told us that [insert response from 2008] played a primary role in the design and implementation of your heart failure quality improvement efforts. Who are the key leaders now? Are there other people still involved?**

15. **In the last year, did your heart failure quality improvement work include any training of hospital staff? If so, who was trained and what kind of training was provided?**

- _____ Case managers
- _____ Staff from Quality Department
- _____ Director of Quality Department
- _____ Medical records staff
- _____ Nursing staff (Probe: what units?)
- _____ Nursing supervisors
- _____ Physicians (Probe: house physicians, attendings, community?)
- _____ Pharmacists
- _____ Other, specify _____

16. **Which of the following people had their job responsibilities changed in the last year as a result of continuing heart failure improvement activities?**

- Case managers
- Staff from Quality Department
- Director of Quality Department
- Medical records staff
- Nursing staff (Probe: what units?)
- Nursing supervisors
- Physicians (Probe: house physicians, attendings, community?)
- Pharmacists
- Other, specify _____

17. **How many full-time equivalent nurse practitioners (NP) or other advanced practice nurses (APN) worked as part of your NJHQI project, if any? (record FTE count, exclude time spent in other duties)**

IF NONE, SKIP TO Que 18

17a) In what settings did the NPs/APNs on the NJHQI project work with patients and their caregivers?
(check all that apply)

- Emergency department
- Inpatient settings
- By telephone following discharge
- In-person visits following discharge
- Contact with patients' community cardiologist or other physician
- Other (specify: _____)

17b) How often did the NPs/APNs on the NJHQI project also work with patients' family members? (check one box)

- Usually or always
- Sometimes
- Rarely
- Never

17c) To what extent will the NPs/APNs continue to be involved in the care of heart failure patients in the future? (check one box)

- Roles expanded → (what will be added?)
_____)
- Continue in the same roles

- Roles reduced → (what will be reduced? -

- Roles will be eliminated

18. **To what extent have you been able to sustain the quality work begun under NJHQP (probe for details)?**

19. **How have hospital processes and procedures changed as a result of your participation in NJHQP?**

20. **In your opinion, have the changes you implemented as part of your participation in NJHQP led to improvements in patient care?** (Probe for documented changes in measures/outcomes.) Is there evidence you can provide supporting this?

IMPLEMENTATION BARRIERS/FACILITATORS

21. **In your opinion, what are the biggest barriers to continuing the efforts you began under your NJHQP project? (probe for details)**

22. **In your opinion, what are the factors facilitating your ability to continue the progress your hospital made under the NJHQP project? (probe for details)**

23. **Do you currently encounter resistance to continuing activities begun under NJHQP from medical staff and/or other hospital staff?**

___ Medical staff

___ Other hospital staff

If yes, what are the major complaints of the staff?

What is being done to address these complaints?

- 24. Is the cost or resource requirement of the HF quality improvement efforts a barrier to further implementation? If so, what are the major costs? (Don't need to quantify, can probe with suggestions below)**
- _____ Budget for quality initiatives
 - _____ Demands on senior staff
 - _____ Demands on quality staff
 - _____ Demands on staff involved in case finding/data entry
 - _____ Software modifications
 - _____ Other, specify _____

HRET TRAINING

- 25. Did you attend the NJQHI workshop at the New Jersey Hospital Association on May 2008, at the NJ Hospital Association?**

Yes No

25a. On a scale of 1-5 with 5 being the most valuable, please rate the value to you of the May 2008 workshop at NJHA.

_____ (specify 1-5)

- 26. Now thinking about all of the workshops sponsored by NJHQI between 2006 to 2008, how would you rate the value of these workshops to your hospital's work to improve care for heart failure patients. Again, please use a scale of 1-5, with 5 being the most valuable.**

_____ Workshops (1-5)

NJHQI Interview Protocol for Quality Director Level

26a-c. NJHQI also sponsored conference calls, distributed information through a List Serve, and facilitated interaction among the participating hospitals. Please rate the value of each of these program activities, again on a 1-5 scale, with 5 being most valuable.

- a. How would you rate the value of program conference calls:
_____ Conference calls
- b. How would you rate the value of information you received through the program List Serve:
_____ Listserv
- c. And, how would you rate the value of interaction with peers at other hospitals:
_____ Interaction with peers

CONCLUSION

27. What do you think are the most important” lessons learned through your participation in NJHQI that assisted you in accomplishing your goals for heart failure quality improvement? Please be as specific as possible.

28. What would you say were the most valuable benefits to your hospital of participating in the NJHQI?

29. If the NJHQI were just starting, what would you suggest that the program do differently?

This concludes our interview today. If there is anything else we did not discuss today that you would like to share, please feel free to contact the Project Coordinator, Manisha Agrawal, at 732-932-4631 or magrawal@ifh.rutgers.edu. Thank you very much for your time and assistance.

Appendix C: Detailed Tables: Process of Care Performance Scores

APPENDIX C
Detailed Process of Care Performance Scores

Table C1: Congestive Heart Failure Summary Performance Scores for NJHQI Hospitals and Non-New Jersey Comparison Groups (% Recommended Care)

| Invited Hospitals | Year | | | |
|--|-------------|-------------|-------------|--------------|
| | 2004 | 2005 | 2006 | 2007 |
| NJHQI Weighted ¹ Average | 67 | 71 | 85 | 88 |
| 95% Confidence Interval | (50 - 85) | (56-85) | (70-101) | (70-107) |
| Non-NJ Comparison Group Weighed ¹ Average | 68 | 71 | 80 | 87 |
| 95% Confidence Interval | (51-86) | (58-84) | (64-96) | (74-100) |
| p value | 0.82 | 0.85 | 0.13 | 0.64 |
| Barnert Hospital | 82 | 73 | 83 | not reported |
| Christ Hospital | 67 | 66 | 76 | 89 |
| Jersey City Medical Center | 62 | 78 | 91 | 96 |
| Memorial Hospital of Salem County | 57 | 59 | 67 | 91 |
| St. Joseph's Regional Medical Center | 77 | 77 | 93 | 95 |
| St. Mary's Hospital | 75 | 72 | 73 | 71 |
| Trinitas Hospital | 59 | 63 | 82 | 79 |

| Volunteer Hospitals | Year | | | |
|--|-------------|-------------|-------------|--------------|
| | 2004 | 2005 | 2006 | 2007 |
| NJHQI Weighted ¹ Average | 88 | 89 | 87 | 90 |
| 95% Confidence Interval | (71-105) | (78-100) | (79-94) | (86-94) |
| Non-NJ Comparison Group Weighed ¹ Average | 78 | 83 | 86 | 90 |
| 95% Confidence Interval | (57-100) | (64-101) | (70-103) | (76-103) |
| p value | 0.01 | 0.05 | 0.85 | 0.98 |
| Capital Health System, Mercer Division | 90 | 92 | 86 | 89 |
| Capital Health System, Fuld Division | 91 | 94 | 82 | 91 |
| Greenville Hospital | 72 | 91 | 97 | not reported |
| JFK Medical Center | 86 | 83 | 87 | 88 |
| Meadowlands Hospital | 97 | 94 | 91 | 95 |
| St. Joseph's Wayne Hospital | 76 | 83 | 84 | 91 |
| St. Michael's Medical Center | 98 | 95 | 87 | 90 |

Source: Rutgers Center for State Health Policy calculations based on data from the Centers for Medicare and Medicaid Services (see Methods section for details of sources).

¹Weighted by patient volume.

Table C2: Patients Given Assessment of Left Ventricular Function Scores for NJHQI Hospitals and Non-New Jersey Comparison Groups (% Recommended Care)

| Patients Given Assessment of Left Ventricular Function | | | | |
|--|-------------|-------------|-------------|--------------|
| | Year | | | |
| Invited Hospitals | 2004 | 2005 | 2006 | 2007 |
| NJHQI Weighted ¹ Average | 79 | 85 | 95 | 96 |
| 95% Confidence Interval | (63-94) | (67-102) | (85-103) | (89-103) |
| Non-NJ Comparison Group Weighed ¹ Average | 85 | 88 | 92 | 95 |
| 95% Confidence Interval | (71-98) | (77-100) | (81-104) | (87-104) |
| p value | 0.054 | 0.27 | 0.31 | 0.57 |
| Barnert Hospital | 85 | 77 | 83 | not reported |
| Christ Hospital | 70 | 74 | 96 | 99 |
| Jersey City Medical Center | 96 | 99 | 100 | 99 |
| Memorial Hospital of Salem County | 81 | 88 | 98 | 96 |
| St. Joseph's Regional Medical Center | 77 | 90 | 94 | 97 |
| St. Mary's Hospital | 85 | 88 | 82 | 89 |
| Trinitas Hospital | 78 | 79 | 94 | 96 |

| Volunteer Hospitals | | | | |
|--|-------------|-------------|-------------|--------------|
| | Year | | | |
| Volunteer Hospitals | 2004 | 2005 | 2006 | 2007 |
| NJHQI Weighted ¹ Average | 91 | 95 | 95 | 96 |
| 95% Confidence Interval | (77-104) | (86-104) | (86-102) | (90-100) |
| Non-NJ Comparison Group Weighed ¹ Average | 90 | 94 | 95 | 96 |
| 95% Confidence Interval | (76-103) | (86-101) | (87-103) | (89-104) |
| p value | 0.5 | 0.28 | 0.64 | 0.54 |
| Capital Health System, Mercer Division | 95 | 94 | 92 | 96 |
| Capital Health System, Fuld Division | 98 | 99 | 97 | 96 |
| Greenville Hospital | 83 | 99 | 99 | not reported |
| JFK Medical Center | 88 | 97 | 98 | 98 |
| Meadowlands Hospital | 99 | 99 | 95 | 95 |
| St. Joseph's Wayne Hospital | 80 | 84 | 90 | 92 |
| St. Michael's Medical Center | 97 | 96 | 89 | 93 |

Source: Rutgers Center for State Health Policy calculations based on data from the Centers for Medicare and Medicaid Services (see Methods section for details of sources).

¹Weighted by patient volume.

Table C3: Patients Given ACE Inhibitor or ARB for Left Ventricular Systolic Dysfunction Scores for NJHQI Hospitals and Non-New Jersey Comparison Groups (% Recommended Care)

| Patients Given ACE Inhibitor or ARB for Left Ventricular Systolic Dysfunction | | Year | | | |
|---|--|----------|---------|----------|--------------|
| | | 2004 | 2005 | 2006 | 2007 |
| Invited Hospitals | | | | | |
| NJHQI Weighted ¹ Average | | 69 | 82 | 84 | 91 |
| 95% Confidence Interval | | (50-87) | (64-99) | (61-107) | (80-102) |
| Non-NJ Comparison Group Weighed ¹ Average | | 74 | 80 | 84 | 91 |
| 95% Confidence Interval | | (54-93) | (68-92) | (71-98) | (82-101) |
| p value | | 0.28 | 0.43 | 0.96 | 0.88 |
| Barnert Hospital | | 72 | 65 | 87 | not reported |
| Christ Hospital | | 53 | 75 | 69 | 91 |
| Jersey City Medical Center | | 74 | 83 | 73 | 91 |
| Memorial Hospital of Salem County | | 68 | 78 | 93 | 96 |
| St. Joseph's Regional Medical Center | | 78 | 90 | 96 | 96 |
| St. Mary's Hospital | | 65 | 62 | 88 | 79 |
| Trinitas Hospital | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| Volunteer Hospitals | | Year | | | |
| | | 2004 | 2005 | 2006 | 2007 |
| NJHQI Weighted ¹ Average | | 80 | 84 | 84 | 87 |
| 95% Confidence Interval | | (49-109) | (71-96) | (71-96) | (75-99) |
| Non-NJ Comparison Group Weighed ¹ Average | | 79 | 88 | 88 | 91 |
| 95% Confidence Interval | | (59-99) | (77-99) | (72-103) | (77-105) |
| p value | | 0.84 | 0.10 | 0.17 | 0.17 |
| Capital Health System, Mercer Division | | 76 | 86 | 86 | 76 |
| Capital Health System, Fuld Division | | 70 | 81 | 74 | 88 |
| Greenville Hospital | | 65 | 94 | 86 | not reported |
| JFK Medical Center | | 68 | 80 | 86 | 93 |
| Meadowlands Hospital | | 97 | 100 | 96 | 87 |
| St. Joseph's Wayne Hospital | | 59 | 79 | 84 | 91 |
| St. Michael's Medical Center | | 97 | 83 | 80 | 89 |

Source: Rutgers Center for State Health Policy calculations based on data from the Centers for Medicare and Medicaid Services (see Methods section for details of sources).

¹Weighted by patient volume.

Table C4: Patient Given Discharge Instruction Scores for NJHQI Hospitals and Non-New Jersey Comparison Groups (% Recommended Care)

| Patient Given Discharge Instruction | | | | |
|--|--------------|---------|----------|--------------|
| Invited Hospitals | Year | | | |
| | 2004 | 2005 | 2006 | 2007 |
| NJHQI Weighted ¹ Average | 30 | 46 | 72 | 75 |
| 95% Confidence Interval | (-14-74) | (16-76) | (35-109) | (33-117) |
| Non-NJ Comparison Group Weighed ¹ Average | 39 | 44 | 61 | 73 |
| 95% Confidence Interval | (-2-80) | (18-71) | (27-95) | (45-102) |
| p value | 0.43 | 0.76 | 0.14 | 0.77 |
| Barnert Hospital | 80 | 69 | 81 | not reported |
| Christ Hospital | not reported | 50 | 48 | 71 |
| Jersey City Medical Center | 13 | 49 | 90 | 96 |
| Memorial Hospital of Salem County | 8 | 12 | 67 | 79 |
| St. Joseph's Regional Medical Center | not reported | 54 | 88 | 91 |
| St. Mary's Hospital | 63 | 56 | 55 | 42 |
| Trinitas Hospital | 33 | 27 | 59 | 50 |

| Volunteer Hospitals | Year | | | |
|--|--------------|----------|----------|--------------|
| | 2004 | 2005 | 2006 | 2007 |
| NJHQI Weighted ¹ Average | 89 | 79 | 76 | 81 |
| 95% Confidence Interval | (57-120) | (44-114) | (54-97) | (62-99) |
| Non-NJ Comparison Group Weighed ¹ Average | 56 | 63 | 72 | 79 |
| 95% Confidence Interval | (5-106) | (20-105) | (35-110) | (50-109) |
| p value | 0.0046 | 0.1 | 0.6 | 0.78 |
| Capital Health System, Mercer Division | not reported | 0 | 77 | 84 |
| Capital Health System, Fuld Division | not reported | 0 | 63 | 83 |
| Greenville Hospital | 56 | 80 | 97 | not reported |
| JFK Medical Center | 87 | 63 | 67 | 69 |
| Meadowlands Hospital | 99 | 88 | 82 | 100 |
| St. Joseph's Wayne Hospital | not reported | 0 | 74 | 87 |
| St. Michael's Medical Center | 100 | 99 | 85 | 83 |

Source: Rutgers Center for State Health Policy calculations based on data from the Centers for Medicare and Medicaid Services (see Methods section for details of sources).

¹Weighted by patient volume.

Table C5: Patient Given Smoking Cessation Advice/Counseling Scores for NJHQI Hospitals and Non-New Jersey Comparison Groups (% Recommended Care)

| Patient Given Smoking Cessation Advice/Counseling | | | | |
|--|--------------|---------|----------|--------------|
| Invited Hospitals | Year | | | |
| | 2004 | 2005 | 2006 | 2007 |
| NJHQI Weighted ¹ Average | 39 | 83 | 99 | 99 |
| 95% Confidence Interval | (-9-87) | (68-98) | (92-104) | (95-102) |
| Non-NJ Comparison Group Weighed ¹ Average | 64 | 81 | 93 | 96 |
| 95% Confidence Interval | (30-99) | (63-98) | (79-108) | (78-113) |
| p value | 0.01 | 0.47 | 0.07 | 0.3 |
| Barnert Hospital | 100 | 85 | 88 | not reported |
| Christ Hospital | not reported | 93 | 97 | 100 |
| Jersey City Medical Center | 17 | 83 | 100 | 100 |
| Memorial Hospital of Salem County | 40 | 64 | 100 | 100 |
| St. Joseph's Regional Medical Center | not reported | 84 | 100 | 100 |
| St. Mary's Hospital | 70 | 70 | 100 | 94 |
| Trinitas Hospital | 35 | 89 | 99 | 98 |

| Volunteer Hospitals | Year | | | |
|--|--------------|----------|----------|--------------|
| | 2004 | 2005 | 2006 | 2007 |
| NJHQI Weighted ¹ Average | 93 | 97 | 97 | 99 |
| 95% Confidence Interval | (45-139) | (83-110) | (91-101) | (95-103) |
| Non-NJ Comparison Group Weighed ¹ Average | 76 | 87 | 93 | 96 |
| 95% Confidence Interval | (37-116) | (59-115) | (71-104) | (83-110) |
| p value | 0.08 | 0.15 | 0.37 | 0.28 |
| Capital Health System, Mercer Division | not reported | 0 | 95 | 100 |
| Capital Health System, Fuld Division | not reported | 0 | 93 | 100 |
| Greenville Hospital | 74 | 100 | 96 | not reported |
| JFK Medical Center | 100 | 100 | 100 | 95 |
| Meadowlands Hospital | 0 | 75 | 100 | 100 |
| St. Joseph's Wayne Hospital | not reported | 0 | 100 | 100 |
| St. Michael's Medical Center | 100 | 98 | 97 | 100 |

Source: Rutgers Center for State Health Policy calculations based on data from the Centers for Medicare and Medicaid Services (see Methods section for details of sources).

¹Weighted by patient volume.


The Rutgers logo features the word "RUTGERS" in a bold, red, serif font. The letter "R" is significantly larger and more stylized than the other letters, with a long, sweeping tail that extends downwards and to the left.

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