

High Performer Project Team

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Under contract with the Centers for Medicare & Medicaid Services (CMS), Health Services Advisory Group, Inc. (HSAG) is conducting a Special Study on *Identification and Synthesis of Components Essential to Achieving "High Performer" Status in Various Provider Types*. This review of published literature and other pertinent information is the second task in this Special Study; its purpose is to define, identify, and characterize hospitals that perform exceptionally well on Seventh Scope of Work (7th SoW)[‡] and proposed Eighth Scope of Work (8th SoW) process indicators which are part of the management of three conditions: (1) pneumonia, (2) heart failure, and (3) acute myocardial infarction (AMI). Synthesis and dissemination of the results can facilitate efforts to improve quality in all hospitals and to provide tools that Quality Improvement Organizations (QIOs) can use in working with hospitals. The importance of this project has increased with the passage on December 8, 2003, of the Medicare Prescription Drug, Improvement, and Modernization Act of 2003 (Medicare Modernization Act), which provides financial incentives to hospitals to voluntarily provide CMS with quality data to be used for public reporting purposes.

In addition to the medical literature, the review included information from Arizona hospitals participating in the Three State Pilot (3SP)[†] program, as well as descriptions of awards for (or recognition of) high performance used by other QIOs and other organizations interested in quality standardization. An initial review of 317 abstracts from articles published between 2000 and 2003 failed to identify any that addressed questions regarding what defines "high performer" or what constitutes high performance with regard to the three conditions from the 7th SoW. As the review proceeded, HSAG developed a working definition of a high performing hospital. A high performing hospital is one that:

- Achieves a performance score (proportion of services provided) of at least 90 percent, on at least one indicator, when there are two indicators.
- Achieves a performance score of at least 90 percent, on at least two indicators, where there are three or more indicators.
- Achieves a 95th percentile score on the "hard" indicator(s).*
- Achieves a 95th percentile score on the "easy" indicator(s).*
- Achieves a 90th percentile score, on all indicators between the easy indicator and the hard indicator, when there are more than two indicators.

[‡] Scope of Work (SoW) refers to three-year contract periods in which quality improvement organizations conduct activities on behalf of the Centers for Medicare & Medicaid Services (CMS). The 7th SoW covers the period November 1, 2002, through October 31, 2005.

[†] The Three State Pilot (3SP) refers to a three-state pilot project launched in December 2002 by the U.S. Department of Health and Human Services, Centers for Medicare & Medicaid Services. The quality improvement organizations in Arizona, Maryland, New York were asked to test the most effective ways to communicate with consumers about hospital quality of care.

* For purposes of this review, a "hard" indicator is defined as one that few, if any, hospitals do well on, and an "easy" indicator is defined as one on which the vast majority of hospitals do well.

- Sustains these standards for two consecutive six-month or four consecutive quarterly periods.

Based on the results of the initial review, the search protocol was revised to focus on two specific areas, each with its own research question(s):

1. Performance measurement:
 - What statistical methods, based on existing quality indicators, have been used for profiling and ranking institutions, and for classifying their performance?
 - Do these methods discriminate among institutions?
 - Are they meaningful to decision makers?
2. Key clinical indicators of quality performance:
 - To what extent have clinical conditions and related performance measures from the current 7th SoW and proposed 8th SoW been the subjects of published research identifying high performance in hospitals, nursing homes, home care agencies, and physician offices?

Performance Measurement

Articles addressing performance measurement were of three types:

- Articles using datasets to profile high performing institutions, using a variety of profiling methods
- Articles evaluating performance measures used for profiling
- Theoretical articles discussing the application of statistical techniques in profiling

Profiling techniques included:

- Bayesian hierarchical modeling^{1,2}
- Data Envelopment Analysis (DEA)
- Stochastic Frontier Analysis (SFA)^{3,4}
- hierarchical generalized linear models (HGLM)⁵
- Achievable Benchmarks of Care (ABC)⁶
- Standard descriptive techniques applied to cross-sectional data⁷⁻⁹

Of these, DEA, SFA, and probably Bayesian methods, as well, were judged too complex for purposes of this review. ABC benchmarking was, by far, the easiest to use and understand; it also lends itself to modification, permitting its use with smaller sample sizes. One study found that there was poor association between Joint Commission on Accreditation of Healthcare Organizations (JCAHO) measures and a set of measures, largely financial in nature, derived from Medicare data, thereby pointing out the fact that high performance in one area does not assure high performance in other areas. Measures used in profiling hospitals, nursing homes, and physician providers were predominantly outcomes measures, such as mortality rates,^{1,10-14} complication rates,¹²⁻¹⁴ and patient satisfaction.^{9,15}

Recent methodological literature emphasizes the advantages of process over outcomes indicators. Outcomes are most appropriate when emphasis is on *how* something is done rather than on *whether*

it is done. The major limitation on process indicators has to do with sample size and the dependence of results on clusters of patients attended by a sample of different physicians that was not randomized. Hierarchical logistic regression techniques are recommended to minimize systemic variation, reduce the number of outliers, and improve separation between and within cluster variability.^{16,17,18}

Key Clinical Indicators of Quality Performance

Key clinical indicators of quality performance of hospitals relating to the management of AMI and heart failure were overwhelmingly related to mortality; however, one article pointed out that mortality was not useful in distinguishing between hospitals. For pneumonia, timeliness of blood culture and antibiotic administration were the most commonly cited process indicators. Pneumonia management was cited as an index of emergency room (ER) quality, as a measure of improvement in *small* hospitals, and as a measure of statewide public health practice. Process-of-care indicators for heart disease and pneumonia have been used successfully to measure improvement in hospital care. In the areas of nursing home care, home care, and physician care, the issues in which researchers show the greatest interest are pressure sores in nursing home patients and diabetes screening in physician office patients. Performance measures were used to explore compliance with best practices for these conditions and to calculate risk-adjusted pressure ulcer rates to profile nursing homes.

Representatives from rural hospitals in Arizona believed their hospitals would never be viewed as institutions delivering quality care if they were separated out from larger hospitals when quality was measured. They believed that an important characteristic of a high performing hospital was that its performance exceeded that of other hospitals, regardless of hospital size or location. All hospital representatives thought that reporting data to consumers was best accomplished through the use of composites, supplemented by graphics, which showed the individual indicators making up the composite. These hospital representatives were concerned that achieving the level of improvement sufficient for voluntary public reporting would require a methodology with face validity. They failed to agree on the feasibility of weighting clinical indicators, but they did not disagree with the idea that doing well on an indicator that hospitals had trouble with was worth more as a quality measure than doing well on an indicator on which all hospitals did well.

Key Quality Characteristics Associated With High Performers

To complete the task of identifying key quality characteristics, literature and non-literature quality-oriented sources of information were reviewed. These included a convenience sample of published articles; nonpublished manuscripts; business-oriented standardization groups, including the International Organization for Standardization (ISO) programs—such as the National Institute of Standards and Technology's Malcolm Baldrige Award; and accrediting bodies such as JCAHO. Additionally, nine QIOs that had a formal recognition and awards program for health care organizations were queried to ascertain their measurement strategies of performance. HSAG then compared the performance domains deemed important by these organizations to further clarify characteristics of high performers to be included in the qualitative phase (Task 5) of this Special Study.

Summary of Findings

Findings Regarding Key Quality Characteristics Associated With High Performers

A number of organizational characteristics and quality improvement practices are thought to be associated with institutional high performance as evidenced by the respective assessment frameworks established by three of the most well-known and accepted health care quality management and accreditation programs: Baldrige, ISO, and JCAHO. Although these programs differ in their approaches to measuring quality, they focus on many of the same domains of organizational quality as follows: cultural; structural; strategic; leadership; systems; customer and market; measurement, analysis, and knowledge management; human resources; and business results.

Together, these nine domains of organizational quality have been studied to varying degrees in health services research over the past three decades. The studies have addressed the question of which organizational characteristics and quality improvement practices are associated with institutional high performance. Studies have been directed largely toward understanding relationships between organizational structure attributes and cost, service mix, and staffing. We will continue to be hampered by our efforts to improve quality until we gain an understanding of the linkages between structure, process, and outcome.¹⁹ What is becoming more clear is that what matters is not whether a hospital possesses the knowledge of quality improvement (QI) principles, tools, and techniques, but the extent to which progress is made in implementing them.²⁰ Complexity theory suggests that understanding can only be achieved when we study the organizational attributes in concert, rather than individually.²¹

Findings Regarding Key Clinical Indicators of Quality Performance

The measurement of high performance is very much a work in progress. While growing demand for professional and public accountability has led to a proliferation of health care "report cards" in one form or another,^{22,23} the technical aspect of such reporting remains a challenge. Outstanding issues include the problematic use of outcomes measures due to problems of inadequate and often competing risk adjustment schemas; sampling problems of process measures including the clustering of hospital patients with the same condition by attending physicians; need for more flexibility in the use of summary or composite measures; and the desirability for, but continuing lag in, the use of electronic records. Other difficult problems include controversy over weighting of indicators; lack of a method of determining the reliability of performance profiles; the need to incorporate patient satisfaction into performance measures; and the incorporation of more relevant structural measures, such as nurse staffing levels. The public reporting of data calls attention to the importance of methodological issues, even though the literature does not support the hope that consumers can or will use performance data in choosing providers.

Conclusions

Neither the published medical literature nor material from quality rating organizations directly addressed the Special Study's focus on hospitals that are high performing in their management of the three conditions from the 7th SoW. However, with the concurrence of the review findings, the

hospital meetings, conversations with consultants, and among the collaborators to this Special Study, it has become possible to identify four principles that will guide HSAG in proceeding to a final definition of high performer and the development of the algorithm to identify them. These principles are:

1. Hospitals that provide the same service should be held to the same standard, regardless of size or geographic location.
2. Performing well on an indicator on which others perform poorly (a “hard” indicator), while performing as well as any on an indicator on which others do well (an “easy” indicator), is basic to a definition of high performance.
3. Performing well on “hard” indicators is more important than performing well on “easy” indicators.
4. High performance must incorporate sustained excellence over time.

The information synthesized from the current review has reaffirmed the underlying need, and established a high degree of feasibility, related to the challenge of designing a scientifically sound and credible structure by which high performing health care providers can be defined, identified, and studied. The results of this special study provide direction and opportunity to move the health care field one step closer to the ultimate goal of understanding the linkages and operant mechanisms by which organizational characteristics mediate quality performance. Such an understanding would afford unlimited opportunity for QIOs to provide assistance for improving health care quality to all stakeholders by replicating successful models.

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