



[www.uppermidwestrhrc.org](http://www.uppermidwestrhrc.org)

*Ira Moscovice, PhD, Director  
Mary Wakefield, PhD, Deputy Director*

# **The Implementation of Pay-For-Performance in Rural Hospitals: Lessons from the Hospital Quality Incentive Demonstration Project**

Walter Gregg, MA, MPH, University of Minnesota  
Ira Moscovice, PhD, University of Minnesota  
Denise Remus, PhD, RN, Premier, Inc.

September 2006

---

*A partnership of the University of Minnesota Rural Health Research Center and the  
University of North Dakota Center for Rural Health*

---

**The Implementation of Pay-For Performance in Rural  
Hospitals: Lessons from the Hospital Quality  
Incentive Demonstration Project**

Support for this paper was provided by the Office of Rural Health Policy, Health Resources and Services Administration, PHS Grant No. 5U1CRH03717-02-00

**TABLE OF CONTENTS**

EXECUTIVE SUMMARY..... ii

BACKGROUND ..... 2

    The Growth of P4P Strategies ..... 2

    Concerns over P4P Applications in Rural Environments ..... 3

    The Hospital Quality Incentive Demonstration Project..... 5

METHODOLOGY ..... 6

RESULTS..... 8

    Participation in the HQID Project and Operational Capacity..... 8

    Benefits and Concerns of Participation in the HQID Project..... 10

    Inpatient Clinical Areas – The Challenges ..... 12

    Staff Motivational and Behavioral Change Efforts to Improve Performance ..... 19

    Types of Technical Assistance that Helped the Most ..... 22

    Resources Important for Successful Participation in Future P4P Programs ..... 23

    Advice for Hospital Administrators Interested in Participating in Future  
    P4P Programs ..... 25

    Future Performance Improvement Areas for Rural Hospitals ..... 26

LIMITATIONS OF STUDY ..... 26

DISCUSSION ..... 28

REFERENCES..... 33

## EXECUTIVE SUMMARY

Interest in using pay-for-performance (P4P) strategies for improving health care quality performance has surged in recent years. The number of P4P efforts underway in the United States has grown significantly from approximately 37 programs in 2003 to 75 by mid-2004, to more than double that amount in 2005 (AAA, 2005). Although P4P programs are still in their relative infancy, there is little doubt that the implementation of P4P will soon be a national health care priority (Devers, 2002; Berwick et al., 2003; Rosenthal et al., 2004). Provisions for a value-based purchasing program for prospectively paid hospitals were signed into law in February 2006 under the Deficit Reduction Act of 2005. Under these provisions the Secretary of Health and Human Services is directed to begin expanding the number of quality measures that hospitals report to CMS starting fiscal year 2007, to increase the penalty for not reporting to two percent of the annual market basket increase for PPS hospitals, and to establish a national P4P initiative for PPS hospitals beginning fiscal year 2009.

Currently, CMS is in the final phase of a three-year demonstration, the Hospital Quality Incentive Demonstration (HQID) Project, designed to test the effectiveness of financial incentives for improving the quality and cost of care provided to Medicare beneficiaries. The experiences from this program will inform the design and development of a hospital value-based purchasing program mandated under the Deficit Reduction Act of 2005.

Although the development of P4P strategies in healthcare has grown rapidly over the past decade, caution has been urged in their application without a greater understanding of their potential impact on providers and health care delivery systems. Concerns over the possible impact of P4P initiatives for rural providers and communities have focused on the differences that exist between the larger rural and urban facilities participating in P4P programs and smaller rural hospitals serving communities that are more isolated. Differences in the availability of information system infrastructure, medical and clinical staff resources, and capital as well as the narrower scope of services and lower patient volumes of smaller, more isolated hospitals may require a different set of strategies to achieve the goals of a national P4P initiative. However, information on rural hospital experiences with P4P programs is lacking. Given the momentum behind developing a national P4P policy and the lack of information concerning how smaller rural hospitals fare under P4P strategies, the HQID presented an excellent opportunity for filling an important gap in our knowledge of the implementation of P4P.

This paper reports the findings of a national study designed to identify institutional, organizational, and environmental factors that influence the experience of rural hospitals in the HQID project. Implications of those findings for future P4P program development and strategies for helping program participants are also discussed.

Data for the study were collected between October and December of 2005 using a structured telephone survey administered to hospital quality managers and senior

program staff from CMS and Premier, Inc. Each hospital included in the survey staffed 100 or fewer beds, is a member of a healthcare or hospital system, and is located in a non-metropolitan (rural) county as defined by Office of Management and Budget criteria. Specific attention is given to the issues surrounding the ability of these hospitals to comply with HQID criteria for three common clinical conditions: 1) acute myocardial infarction (AMI); 2) congestive heart failure (CHF); and 3) community acquired pneumonia (PN). Thirteen quality managers representing all fifteen small rural hospitals participating in the HQID were included in the study along with four quality managers from rural hospitals that decided not to participate in the HQID and seven senior project staff from Premier, Inc. and CMS.

Many of the measurement issues reported by the quality managers from the participating hospitals revolved around their facility's ability to accurately and consistently collect quality measurement data, analyze those data, and translate the findings into effective behavioral change interventions. Even though all hospitals participating in the HQID had prior experience working with Premier, Inc.'s data software, only two of the rural hospitals in the study possessed any degree of electronic medical record capacity. For the most part, data collection, analysis, and performance improvement interventions were accomplished by individuals using a paper-driven information system.

Many respondents discussed their on-going efforts to influence physician and other hospital staff behaviors to assure that the required HQID quality process measures were documented for each AMI, CHF, or PN patient. This is not surprising since the quality manager is the individual responsible for the collection of the data and its transmission to Premier, Inc. for validation and then to CMS for ranking and bonus payments, and the physicians and nurses are the point of origin for the data related to the patient encounter. Over time, program stakeholders (e.g., quality managers, physicians, nurses, ancillary staff) exhibited considerable ingenuity and innovation in developing and implementing processes and protocols to help medical and clinical personnel meet the needs of their patients and at the same time fulfill the data requirements of the HQID.

Developing a supportive and motivated executive staff and board trustee mindset was considered very important by a number of respondents to create the corporate culture needed to generate enthusiasm among hospital staff and to maintain a focused performance improvement effort. It also was important to cultivate a supportive relationship with those individuals with access to necessary resources, and to keep the process adaptable to changing patient and staffing needs. The early involvement of key staff and physicians is central to achieving success.

Cultivating a corporate culture that supports and encourages personal investment and commitment to project goals is particularly important for small rural hospitals because many of the clinical staff on which the quality processes depend are not motivated by the hospital bonuses provided by CMS under the HQID. Although, greater degrees of success (i.e. motivation and participation) were reported when internally generated

financial incentives were used, a number of respondents reported achieving success and staff buy-in using non-financial incentives. Since few small rural hospitals will have the resources to support financial incentives, it will be important for rural hospital administrators, boards, and quality departments to identify factors that motivate their staff and design approaches with that knowledge in mind.

Key findings and challenges for rural hospitals participating in P4P initiatives include:

- The influence of bonus payments incentives is limited for hospitals with low inpatient volumes. A large number of rural hospitals that may participate in future P4P programs will be low inpatient volume facilities.
- Non-financial incentives can make a difference, especially for physicians and nurses who are more motivated by feedback on the quality of care they are providing to their patients. The close-knit community culture of many small, remote rural communities may work to the advantage of rural hospitals through more selective and effective peer influence.
- Physicians and nurses need feedback on the care they are providing. The more frequent, clear, and accurate the feedback, the more effective it will be in helping them improve their daily performance. The lack of information infrastructure, automated systems, and greater demand being made on the limited number of physicians available may be a disadvantage in rural hospitals.
- The provision of provider feedback can only foster performance improvements to the degree to which the necessary tools, education, and guidance are made available to reinforce and maintain the effort. The relative lack of resources for building education and guidance infrastructure in smaller rural hospitals will make the task much harder for freestanding rural hospitals compared to those in systems or urban facilities.
- Physician and nurse involvement is critical for successful participation in P4P programs. Difficulties recruiting and retaining physicians and nurses common to many small rural hospitals may undermine efforts to engage them in non-clinical direct care activities.
- Limited clinical staff will make it difficult to meet added staffing needs of P4P, especially in terms of nursing resources. Small rural hospitals can benefit from defined skill sets for quality management staff that maximize nursing time for direct patient care.
- Limited availability of pharmacists, phlebotomists and laboratory staff will add challenges to meeting critical timing and sequencing requirements of P4P initiatives.

- Limited capital reserves and access to capital markets of small rural hospitals will be a significant barrier to the adoption and implementation of the information technologies and infrastructure needed for P4P participation.

Key issues identified for future P4P Initiatives include:

- Future P4P programs need to be relevant for small rural hospitals in the clinical areas targeted for performance improvement.
- Financial incentives based on a competitive or balanced-budget design will make it difficult for low performers to achieve program goals. Balancing incentives geared to meeting or exceeding defined performance thresholds with incentives designed to reward improvement regardless of the defined thresholds and/or geared to work independent of patient volume may further incentivize small hospital participation and success.
- The support of medical staff for program standards can be strengthened through early program education and having a process to accommodate changes in evidence-based criteria. This could be difficult for rural hospitals having the majority of their medical staff comprised of physicians from surrounding solo private practices who have become accustomed to more autonomous practices.
- Future national P4P programs should include design features that accommodate varying degrees of information system sophistication to guide and encourage local markets with limited IT systems to build capacity through participation (e.g., include IT adoption as part of the P4P initiative and provide state or federal grants and/or low or no interest loans to speed adoption and implementation).
- The development of a national P4P initiative should be coordinated with the work of the National Quality Coordination Board (as recommended by the IOM) to facilitate the standardization of the many data collection and reporting requirements of hospitals and providers (e.g., quality standards of other payers and possibly large employers as well as JCAHO, NQMC, NQF, HQA and others).
- Incentives should be provided to hospital and healthcare systems, networks, and alliances to foster greater sharing of resources and expertise toward a coordinated health information infrastructure capacity for small rural providers.

In the fall of 2005, the Upper Midwest Rural Health Research Center (UMRHRC) surveyed seventeen rural hospital quality managers and seven senior project staff about their experiences with the Hospital Quality Incentive Demonstration (HQID) project. The HQID is a three-year demonstration, co-sponsored by the Centers for Medicare and Medicaid Services (CMS) and Premier, Inc., a nationwide alliance of not-for-profit healthcare providers. The purpose of the demonstration project is to test the effectiveness of financial incentives for improving the quality of inpatient care. The project's design is based on a competitive bonus pay-for-performance (P4P) strategy, a budget neutral approach that provides Medicare bonus payments for hospitals that meet defined performance improvement goals based on the latest evidence-based medical research.

The HQID is part of a growing wave of efforts by employers, health plans and others to instill greater value in their health purchasing dollars. In the past seven years, the number of P4P programs in use has jumped from just over 35 programs in 2003 to well over 100 by 2005 (AAA, 2005). A number of factors are behind this rise in popularity including a growing number of health care policy experts supporting their use, recent Medicare legislation providing incentives for exploring and testing P4P approaches, and a general frustration with the inability of current policy to appreciably influence the quality and cost effectiveness of inpatient health care services. During this time, caution has also been urged in the application of P4P strategies without a greater understanding of their potential impact on providers and health care delivery systems, particularly on rural providers and communities. Although P4P plans are still in their relative infancy and much remains to be learned on how best to implement them, it appears that the implementation of P4P will soon be a national health care priority (Devers, 2002; Berwick et al., 2003; Rosenthal et al., 2004).

Elements of this policy, for prospectively paid hospitals, were put in place in February 2006 with the enactment of the Deficit Reduction Act of 2005 (Public Law 109-171). Provisions of P. L. 109-171 direct the Secretary of Health and Human Services to establish a "value-based" purchasing program for PPS hospitals beginning fiscal year 2009. To date, much of the data upon which hospital P4P initiatives have been based has been drawn from the experiences of larger, urban facilities. Larger hospitals with their larger patient volumes offer the greatest gains in cost savings and treatment outcomes. However, it leaves a significant gap in our understanding of the implications of such strategies on more isolated and resource challenged facilities such as small rural hospitals with smaller patient volumes, limited information infrastructure, and fragile workforce and capital resources.

This project helps fill some of the gaps in understanding the capacity for smaller rural hospitals ( $\leq 100$  beds) to participate in P4P programs similar to the HQID. In the following discussion, key findings of the study are presented along with insights on the potential issues small rural hospitals may face in future P4P programs, as well as suggestions for supporting their successful participation in such programs.

## **BACKGROUND**

### **The Growth of P4P Strategies**

Many strategies have been used over the years to improve health care quality performance with mixed results (Laffel and Blumenthal, 1989; Evans et al., 1997; Chassin, Galvin, and the National Roundtable on Health Care Quality, 1998; MedPAC, 2003, 2004; Devers, Pham, and Liu, 2004). Existing payment strategies have, at best, had little impact on quality of care and, at worst, may have discouraged quality efforts by failing to cover the costs of the effort or reducing future revenue if improvement did occur through reduced future service use (Bazzoli, 2004; MedPAC, 2005). Studies continue to document gaps in health care quality across all payers, in the prevention of acute illness episodes, in the ability to track and correct medical errors, and between evidence-based medicine and the care provided for specific conditions (Kohn, Corrigan and Donaldson, 1999; DHHS, 2000; IOM, 2001; Jencks, Huff, and Cuerdon, 2003; McGlynn et. al., 2003; MedPAC, 2004). Recognition of these gaps coupled with the realization that existing reimbursement methodologies are doing little to improve the quality and cost effectiveness of healthcare has generated considerable interest in alternative approaches (Devers, 2002; Rosenthal et al., 2004; PWC, 2005).

Some approaches, such as Hospital Compare, rely on public reporting while other approaches initiated by the Joint Commission of Healthcare Organizations (JCAHO), Leapfrog and voluntary organizations like the National Quality Forum (NQF) are exploring new measurement strategies and systems. Other efforts include tiered benefit design giving consumers incentives to select higher quality cost efficient providers, shared risk payment models, and disease management (Rosenthal, 2005). A growing number of quality and reimbursement experts believe that the most promising alternative approaches do not focus on the behavior of health care providers but on the structures and systems that guide their practice (IOM, 2001). In a recent open letter to Congress, a large number of prominent health services researchers, policymakers, and practitioners stated that the issue at hand was ... “not the dedication of health professionals but the lack of systems ... that reduce errors and reinforce best practices.” They went on to say that ... “We have concluded that such systematic changes will not come forth quickly enough unless strong financial incentives are offered to get the attention of managers and governing boards ... payment for performance should become a top national priority” (Berwick et al, 2003). P4P approaches provide a vehicle for accomplishing this by using accepted measures of performance and the provision of incentives to encourage adherence to the prescribed processes (Fernandopulle et al., 2003).

Pay-for-performance establishes different payment levels for health care providers based on their performance along a set of accepted measures of quality and/or efficiency. Although widely varying among P4P efforts, there are four key components to P4P approaches including agreed upon quality measures to benchmark performance, data collection procedures to gather the patient encounter information for comparison to the benchmarks, a reporting process for disseminating the quality-based performance

information to key stakeholders (e.g., providers, consumers, and payers), and an incentive payment methodology for leveraging key provider behaviors to enhance quality and efficiency performance.

By 2003, approximately thirty-seven P4P projects were implemented by health plans and purchasers (largely employers) (Rosenthal et al., 2004). Policy analysis building on the Institute of Medicine (IOM) reports, *To Err is Human* (Kohn, Corrigan, and Donaldson, 1999) and *Crossing the Quality Chasm* (IOM, 2001), encouraged a major surge in efforts to explore alternative strategies for improving the quality and costs of health care. The Medicare Payment Advisory Commission (MedPAC) recommended that the Secretary of Health and Human Services encourage “demonstrations to evaluate provider payment differentials and structures that reward and improve quality” (MedPAC, 2003). In the same year, the Medicare Prescription Drug Improvement, and Modernization Act passed and contained provisions linking annual market basket increases for PPS hospitals to quality data reporting. This provided incentives to promote P4P efforts, and the IOM was directed to continue evaluating performance measures and to develop a strategy for aligning payment and performance within Medicare (NCQA, 2003; Tieman, 2004). By mid-2004, the number of P4P programs in the country had increased to 75 and by early 2005, there were more than twice that amount underway (AAA, 2005).

In February 2006, the President signed the Deficit Reduction Act (DRA) of 2005, Public Law 109-171. Provisions of this new law direct the Secretary of Health and Human Services to establish a “value-based” purchasing program for PPS hospitals by fiscal year 2009. The law also directs the Secretary to begin expanding the number of quality indicators that hospitals are required to report to CMS beginning in fiscal year 2007 and again in 2008. It also increases the penalty for non-reporting hospitals from less than one percent to two percent of the market basket update beginning in fiscal year 2007 (42 USC 1305). These provisions were originally proposed as part of Senate Bill 1356 introduced by Senators Grassley (R-IA) and Baucus (D-MT) during the summer of 2005 as the Medicare Value-Based Purchasing (MVP) Act of 2005. This focus on hospital performance improvement is likely just the first of many future efforts to expand P4P to other providers of health care. The original text of the MVP of 2005 also included value-based purchasing proposals for physicians, Medicare Advantage plans, end-stage renal disease providers, and home health providers as well as for a pilot project for cost-based Critical Access Hospitals. The Congressional Budget Office (CBO) calculated a five year savings for the MVP at \$4.5 billion (U.S. Senate 2005).

### **Concerns over P4P Applications in Rural Environments**

The growth in the use of P4P strategies and the enthusiasm for their expansion into other health care sectors, while rapid, has not been without some concern. In addition to concerns from the professions about the nature of the assumptions underlying the quality measures, the source and use of financial incentives, or infringement of professional judgment (AACE, 2005; Elliott, 2005; and Weber, 2005), policymakers have raised concerns about the general applicability of P4P strategies in rural

environments. The core assumptions and operational experiences of P4P strategies largely reflect an urban focus. This focus may not always match conditions commonly found in rural areas of the country. Differences in provider availability, the selection of clinical areas for quality measurement, availability of transportation, hours of operation, and the general health status of the local population can place unique demands on rural providers that need to be accounted for in the design of performance improvement efforts (IOM, 2006).

Common factors that can reduce demand or supply in rural communities include the small area population, declining and disproportionately older residents, low incomes, high unemployment and poverty rates, and physical isolation (MedPAC 2001). On average, the rural hospitals serving these areas are smaller than urban facilities and tend to address a narrower focus of clinical issues resulting in a stronger reliance on staff to deal with conditions not seen frequently or with staff performing functions traditionally falling within the purview of more specialized practitioners (Moscovice et al 2004). Rural areas also tend to have a smaller per capita supply of physicians than urban settings contributing to high workloads both in terms of hospital/clinic hours and in terms of on-call responsibilities. High day-to-day demands on physician and other practitioner resources contributes to problems of staff burnout, complicates recruitment and retention efforts, and makes the acceptance of additional responsibilities such as those related to being a physician champion and leader in quality performance improvement programs like the HQID more problematic than in suburban and urban hospitals.

Rural hospitals serving remote and isolated communities have less predictable patient volumes and more fragile resources compared to their larger rural and urban counterparts. Most importantly, smaller rural hospitals commonly lack the financial resources to develop an information infrastructure capable of reducing their dependence on human resources and improving their ability to minimize data recovery and analytic errors that can create difficulties for participants in P4P programs.

As stressed by the National Advisory Committee on Rural Health and Human Services (NACRHHS) in its report on the implications of the IOM studies, the solution lies not in the application of separate standards of quality but to the recognition that their application may require different strategies for different contexts (NACRHHS, 2003). A context that is shaped by the often-unique economic, demographic, and health care supply characteristics of rural areas. These contextual differences influence the operational characteristics of rural hospitals creating variation across hospital types in terms of their capabilities, care processes, and the types of care management issues they face (Moscovice et. al. 2004).

The NACRHHS has been a leading voice in recommending that efforts to expand the application of P4P strategies should proceed with caution until policymakers and program developers have a better understanding of their implications for rural providers and communities. These words of caution have an added meaning and urgency as early reports of success with the HQID are reported. Recently, CMS Administrator Mark

McClellan commenting on the first year results of the HQID announced that "...we are seeing increased quality of care for patients, which will mean fewer costly complications – exactly what we should be paying for in Medicare" (CMS 2005).

### **The Hospital Quality Incentive Demonstration Project**

Launched in October 2003, the HQID is co-sponsored by CMS and Premier, Inc., a nationwide alliance of not-for-profit healthcare systems and hospitals that provides performance improvement services in the areas of supply chain, clinical, and operational data, and insurance. Premier, Inc. was a natural partner for the project because of its software data system *Perspective Online™*, the largest clinical comparative database of its kind, and the more than 500 Premier, Inc. affiliated hospitals that had extensive experience using the data system. Although Premier, Inc. hospitals continued to use the software data system to report a wide range of clinical data, the HQID focused on a narrower set of 34 nationally recognized quality measures associated with five of the highest volume inpatient conditions seen by U.S. hospitals. The five conditions included myocardial infarction (AMI), coronary artery bypass graft (CABG), congestive heart failure (CHF), community acquired pneumonia (PN), and hip and knee replacement (Premier, Inc., 2004). The purpose of the HQID is to assess whether providing financial incentives to hospitals that demonstrate high-quality performance among these specific clinical conditions can improve patient outcomes and reduce the overall costs of care (i.e., Medicare expenditures).

Participation in the HQID was voluntary and open to any Premier, Inc. client having a history of submitting data through the *Perspective Online™* data base system. Between March 2003 when the announcement was made and October of 2003 when the project was launched, over two hundred and sixty client hospitals volunteered to participate in the demonstration. While some hospitals or their systems elected not to participate, others expressed interest but were not eligible.

Participating hospitals use the *Perspective Online™* system to report quality performance measurement data on the five clinical conditions to Premier, Inc.'s Healthcare Informatics unit for analysis and verification before being submitted to CMS for final verification and scoring (CMS, 2004).<sup>1</sup> Primary responsibility for data collection, abstraction, submission, and, when necessary, performance improvement intervention, lay with individual hospital quality department managers. Following data verification, hospitals are individually scored for each clinical condition based on the proportion of patients needing and receiving specified quality performance measures. Hospital composite scores for each condition are calculated on an annual basis by rolling-up each of the individual quality process measure scores. Hospitals are then sorted by CMS according to their composite scores in descending order to identify their decile ranking.

---

<sup>1</sup> Data may also be sent to the Standard Data Processing Systems (SDPS) Clinical Warehouse, the CMS agent for the demonstration.

Hospitals in the top 20 percent of the distribution for a clinical condition receive an additional Medicare payment for the patients treated under that condition — the top decile get a two percent bonus and the second decile receive a one percent bonus added to their Medicare payments for the measured condition. The total Medicare bonuses provided during the first year of the demonstration were approximately \$8.9 million with a range across hospitals from \$900 to \$847,000 (CMS, 2005). By the end of the three year project, hospitals that have not achieved performance improvements above a calculated project baseline (year one cut-off scores for the 9th and 10th deciles) will have their Medicare payments adjusted downward for the appropriate clinical condition. Those scoring below the 9th decile baseline level will be reduced by one percent and those below the 10th decile receive a two percent reduction.

## **METHODOLOGY**

Data for this study were collected between October and December of 2005 using a structured telephone survey administered to hospital quality managers and senior program staff from CMS and Premier, Inc. Potential respondents were identified by Premier, Inc. and provided with a letter of introduction describing the nature and purpose of the UMRHRC project. Survey staff from the UMRHRC attempted to contact each potential respondent to obtain permission for them to be surveyed and to schedule a convenient time to conduct the survey. Fifteen rural hospitals participating in the HQID, 11 rural hospitals that did not participate, and eight senior staff persons from Premier, Inc. and CMS comprised the potential set of respondents. Each hospital in the survey had 100 or fewer staffed beds, was a member of a health care or hospital system, and was located in a rural area as defined by the Office of Management and Budget.

Survey hospitals were limited to those with 100 beds or less for two major reasons. In the U.S., rural hospitals having 100 or fewer beds represent the majority of facilities serving rural communities (~80% as of 2004) and should provide information that will be applicable to the range of rural facilities that may participate in future P4P programs. This size range also represents a common eligibility category for programs established by CMS to address the unique operating conditions of rural communities (e.g., designation as a small Medicare Dependent Hospital, Sole Community Hospital, and participation in the federal swing bed hospital program).

For a variety of reasons (e.g., limited access to specialists, infrastructure support, and low patient volumes), small rural hospitals rarely treat patients in need of hip and knee surgery and never provide coronary artery bypass graft surgery. Therefore, our investigation is naturally limited to patients with acute myocardial infarction, heart failure, and community acquired pneumonia. Special attention is given to the challenges faced by hospital quality department managers in meeting HQID project criteria for data submission and performance improvement efforts in these three clinical areas. There are a total of nineteen process measures across the three clinical areas that the surveyed hospital quality managers were required to collect, abstract, analyze, use to develop performance improvement interventions, and submit to Premier, Inc. for

validation and scoring under the HQID (see Appendix I for a list of the process measures and clinical conditions).

Specific survey protocols were developed for each respondent category (e.g., quality managers from participating rural hospitals, non-participating rural hospitals, and CMS/Premier, Inc. project staff). Respondents from participating hospitals described factors contributing to the involvement of their facility, previous performance improvement experiences, the resources that facilitated their participation in the HQID, the challenges they faced in collecting, analyzing, and acting on the clinical condition performance measures, and their suggestions on what rural hospitals need to be successful in similar P4P initiatives. Representatives of non-participating hospitals were asked to describe the circumstances surrounding the decision not to participate, estimates of the resources and technical assistance that would be needed for rural hospitals of similar size to participate in a similar P4P program, and advice for administrators and board members of rural hospitals considering participation in a P4P program. Senior program respondents were asked to describe their observations of rural hospital issues that became evident during the implementation of the project, program-related issues that arose during implementation, and their perceptions of the needs of rural hospitals participating in future P4P programs.

Respondents included 13 of the 15 HQID participating hospitals, seven of the eight senior project staff, and four of the 11 non-participating hospitals. While the quality managers from all fifteen hospitals were interviewed, program experience data represent only thirteen facilities. Two of the participating quality managers were each responsible for two Premier, Inc. hospitals. Since each quality manager indicated that the program experiences of their two facilities were quite similar and we wanted to avoid overburdening the survey respondents, the larger of the two duplicate hospitals were not reported on. Of the seven non-participating hospitals not included in the survey, two were the responsibility of quality managers from hospitals already surveyed, two were not interested in participating in the survey, and the remainder could not be scheduled before the end of the study period. One senior project staff person could not be scheduled before the end of the study period.

The list of participating hospitals provided by Premier, Inc., included two hundred and sixty-two hospitals distributed across 38 states. Just under twenty percent (n=49) of the HQID participants operated within a non-metropolitan county classified as rural for the purposes of this study. One-third of all participating rural hospitals had 100 or fewer staffed beds. The sample of surveyed rural hospitals had an average size of 49-staffed beds and an average daily census (ADC) of approximately 28 patients. Five of the facilities surveyed were Critical Access Hospitals (CAHs) of which three participated in the HQID. CAHs had an average bed size of 22 and an ADC of 11 patients. The average bed size of non-CAH hospitals was 59 with an ADC of approximately 35 patients. Almost half of the participating rural hospitals were located in the southern states of Florida, Georgia, North Carolina, Texas, and Virginia, almost 40 percent were located in the western states of California, Montana, and Washington, and the remainder were located in the Midwestern states of Illinois and Wisconsin.

## RESULTS

The following section summarizes information collected from all survey respondents related to the participation of rural hospitals in the HQID. Although the number of survey respondents is small, the surveyed facilities represent the universe of small rural hospitals participating in the HQID. The analytical approach used to assess experiences with the HQID drew heavily on qualitative and experiential methodologies and provides an unfolding story that has implications for similar sized rural hospitals that may find themselves faced with a future P4P initiative.

### **Participation in the HQID and Operational Capacity**

Participation in the HQID was voluntary. Premier, Inc., as a healthcare and hospital system alliance, disseminated the invitation to participate in the HQID through its member systems. Three quarters of the surveyed hospitals reported that the key reason they became involved in the demonstration was because of the influence of their system headquarters. The majority of the surveyed hospitals had participated in performance improvement efforts at least at the department level and most had participated in system-wide improvement efforts prior to their involvement with the HQID.

Respondents were asked to describe pre-existing and HQID-developed capacities that most helped them meet project guidelines (Table 1). A critical component that helped hospitals successfully participate in the HQID was the buy-in and involvement of their physicians. One of the senior program staff interviewed related that a common issue raised by hospital administrators was that they had “no control over the physician practices – we can’t control their documentation style.” This emphasis on physicians or other hospital staff responsible for the documentation of patient encounter data was a common theme among the survey responses of the quality managers. This could be expected since they are ultimately responsible for collecting and initially verifying the patient encounter data that is reported to Premier, Inc. and eventually to CMS for hospital ranking and incentive payment calculations. If the data are not entered into the patient chart at the time of the initial encounter the hospital quality manager cannot determine if the data were omitted inadvertently or the result of poor quality performance, without further investigation.

As suggested in the NACRHHS and the IOM reports, it is the structural and systematic strategies that have the most influence over the behaviors of providers and ultimately the accurate collection and analysis of patient encounter data. Almost two thirds of the existing resources as well as HQID developed resources critical for success were structural and system-focused in nature.

Existing resources focused on having identified and accepted physician champions, or having physicians with prior experiences with profiling efforts, and physicians that were

**Table 1**

**Resources Most Important for Participating in HQID**

|  |     |
|--|-----|
| <b><u>Before Participation</u></b>                             |     |
| Quality processes and philosophy in place                      | 31% |
| Physicians already on board                                    | 24% |
| System support geared to performance needs                     | 15% |
| Decision making and monitoring structures in place             | 15% |
| Disease-focused performance improvement underway               | 15% |
| <b><u>During Participation</u></b>                             |     |
| Modified or created new forms and protocols                    | 47% |
| Created new staff position to take on program responsibilities | 20% |
| Access to data collection and analysis tools                   | 20% |
| Developed staff process for coordinating efforts               | 13% |

generally open to peer review and problem-solving approaches. Experience with prior quality and performance improvement efforts ranked high as an existing resource critical for program success. These experiences involved hospital specific efforts such as developing pneumonia pathways, performance improvement committees, and nurse decision-making groups that exposed people to the principles and elements of performance improvement as well as developing useful processes and protocols for later use in the HQID. They also stemmed from system-initiated activities such as the development of quality teams, provider protocols, operational definitions, and other resources. Many respondents commented on the importance of their system affiliation as a pre-existing asset. One respondent noted, “Our hospital would not have been able to participate in the HQID without the explicit support of our system.” One system’s initiative used an internal incentive program linking executive, managerial, and physician bonuses to performance goals. With the vast majority of the physicians directly employed by the system, this more individual and timelier incentive strategy was particularly effective.

The modification of existing forms and protocols along with the creation of new ones represented the most common critical resources developed while participating in the HQID (e.g., protocols/forms for admission and discharge, and the development of standing orders to cover situations when direct physician oversight could not always be assured). The availability of data collection and analytic tools and technical assistance was ranked equally with the need for additional staff to handle HQID responsibilities. However, the small number of respondents identifying added staffing needs also identified the existence of a heavy workload for the quality manager that included responsibilities in other non-quality related areas.

## **Benefits and Concerns of Participation in the HQID**

### Benefits

Respondents were asked to describe up to three important reasons for their hospital’s participation in the HQID, listing the most important reason first. The most important reasons given for participating in the demonstration included the ability to benchmark with similar hospitals, prepare for what many referred to as the “wave of the future,” and prove themselves as a quality provider to local providers and consumers. Just under one third of the reasons concerned preparation for anticipated national P4P policy initiatives. Twenty-two percent were associated with the ability to improve the quality of patient care and a similar amount were related to either benchmarking with similar hospitals or demonstrating quality performance to others. Very few (16%) mentioned the potential receipt of the Medicare financial bonus.

Those respondents that raised the issue of financial incentives generally mentioned the issue in reference to its limited importance because of their low patient volumes. For them, the HQID was not a pay-for-performance program; it was an opportunity to prepare for what many considered to be the inevitable development of a nationwide P4P program and to improve patient quality of care in the process. The minimal impact

of financial incentives for some hospitals participating in the demonstration is evident in the first year's Medicare bonuses that ranged between \$900 and \$847,000. For hospitals with a low patient volume, the one or two percent increase in Medicare reimbursement for a specific subset of patients does not generate a significant amount of revenue.

Respondents were asked to rank the degree to which their hospital had benefited from participation in the HQID. The ranking was based on a five-point scale where one represented strongly disagree and five strongly agree with the following statement – *the financial and other benefits of participating in the CMS-Premier, Inc. Demonstration Project were worth our investment of time, effort, and resources to make our hospital's participation a success.* Those responding with a one or two and those responding with a four or five were asked to describe the reasons behind their response. Almost two-thirds of the respondents felt that their investments in time and resources were well worth the benefits of participation.

Approximately 45 percent of the respondents that strongly agreed with the statement did so because project activities had a direct impact on improving the quality of patient care. An equal number strongly agreed because of the infrastructure and process elements put in place that facilitated quality of care improvements (e.g., communications infrastructure, program-related protocols etc.). For some, participation was a beneficial experience in itself "...it provided a focus – there is so much that can be done when given a deadline that would not have been accomplished otherwise. Participation allowed us to develop an achievable set of goals and generate the support to drive the improvements from those goals with hospital and medical staff." For others, it was often difficult to include financial gains with perceived benefits. One respondent commented "...it is really a mixed bag. I would score it a 2 for financial benefits since we invested much more than we have been able to realize. However, in terms of services to patients it would be a 5 – every patient deserves a high standard of care."

### Concerns

Almost every hospital faced at least some concerns when considering participation in the demonstration project. Some of these concerns could have been caused by the lack of detail in the agreement offered to the client hospitals (i.e., the terms and conditions of participation). While the vagueness of the terms and conditions was, in part, intentional to provide flexibility, it was acknowledged that the flexibility could also have created a barrier to participation .

Concerns tended to fall into one of two categories – not having enough resources to do the job right, and being "held captive" by small patient volumes. By far the most common concern about participating in the HQID was the ability to access the resources needed to be successful (e.g., having sufficient time to implement the necessary activities, having the staff and infrastructure, or just being able to afford the vendor fees for data analysis and reporting from Premier, Inc.). Concerns over the potential tarnishing of a hospital's reputation due to chance events were palpable,

especially for hospitals that had physicians that questioned the logic underlying the quality measures and scoring process. Although low volume hospitals can certainly attain a high ranking under the HQID scenario, their overall performance can be dramatically influenced by a single mistake or omission whereas larger facilities are not as vulnerable to changes in individual performance scores.

When asked to describe the degree to which hospital executives were comfortable with the public reporting of their HQID performance data, respondents were split. Those that were comfortable with publicly reported performance data were either strongly committed to transparent operations, used the reports as a way to inspire staff, or were confident that their performance would be beyond misinterpretation. Those uncomfortable with public disclosure were largely concerned about people misunderstanding the meaning of scores based on a small volume of patients.

### **Inpatient Clinical Areas – The Challenges**

Each of the participating quality managers were asked to rank the degree to which they were challenged to comply with the quality process measures for the clinical areas. Respondents ranked the degree to which they were challenged in terms of both collecting data and achieving performance improvements. A five-point scale was used where one represented no challenge at all and five represented a major challenge in meeting the quality measurement criteria. Challenges with data collection focused specifically on the ease with which hospital staff could locate the information in a patient's record and not on the availability of the data in the record. Challenges with performance improvement included both getting physicians, nurses and other involved hospital staff to record needed information as well as the efforts to educate them about the importance of following particular evidence-based criteria. Tables 2 through 4 describe challenges for collecting the necessary data and effecting performance improvements for each process measure and clinical condition. Scores are presented to portray the relative challenges faced by the survey hospitals in their efforts to meet the HQID criteria for participating hospitals. The results are discussed in turn for each of the three clinical areas with the exception of quality measures associated with smoking cessation and counseling. These results are similar across clinical areas and are discussed together at the end of this section.

The most prevalent challenge reported by the quality managers was obtaining the necessary clinical information to complete the data collection and analysis process required to submit completed and verified reports to Premier, Inc. and subsequently to CMS for scoring, ranking, and incentive payments. The locus of the challenge in the eyes of the quality managers was with the attending physicians and nurses responsible for recording what happened during patient encounters. Although not a direct indication of poor quality care, data omissions, if left uncorrected could lower a hospital's composite score even when care was provided in compliance with the program's quality standards. For example, a physician might forego prescribing aspirin for a patient with AMI because that patient is known to be taking an anti-clotting medication (e.g., Coumadin). Although the decision not to give aspirin to the patient was medically

appropriate, failing to document the contraindication for aspirin (i.e., a regimen of Coumadin) registers as a quality problem if the data cannot be found in the patient's medical chart. For many quality managers poor documentation habits is one of the most common, and difficult to correct, challenges they face in trying to meet HQID participating guidelines. As one quality manager stated "...the main issue was getting our emergency room physicians to record why they did not give aspirin – their reasoning was not in question, we just needed it documented as to the contraindications." This issue was particularly difficult for those hospitals contracting with emergency room staffing services where physicians were rotated and were more difficult to educate on documentation issues and requirements.

### Acute Myocardial Infarction (AMI)

Meeting the HQID quality measurement goals for patients with acute myocardial infarction was uneven for participating hospitals. Largely the result of extremely high transfer rates for this condition (some rates as high as 80 percent), very few hospitals treated their AMI patients from admission through post-hospital discharge. Even the hospitals that retained some AMI patients throughout their course of stay could not always complete the required quality process measures. For example, some respondents reported that the majority of their AMI patients were from surrounding nursing homes. These patients were often categorized as DNR or were too frail to be a candidate for thrombolysis or cardiac catheterization. In fact, the number of hospitals treating AMI patients eligible for cardiac catheterization was so small that it was not possible to calculate a meaningful result for that process measure (Table 2).

The most commonly reported challenge for those hospitals providing a full spectrum of services for AMI patients involved prescribing beta-blockers at discharge. A number of factors were identified as contributors to the challenge including patient age (over 80), refusal to take medication because of side effects, and not giving the patient a prescription because he/she did not have the money to pay for the medication. Some respondents speculated that physicians would then proceed to the next item on the discharge list without commenting on the exact reason why the medication was not prescribed resulting in the lowered quality process measure score for the hospital. Others reported challenges with coordinating EKG procedures and the delivery of thrombolytics and/or obtaining the correct time for catheterization procedures.

### Congestive Heart Failure (CHF)

Patients with congestive heart failure present a special set of challenges for meeting accepted standards of practice because of their frequent admissions and prior knowledge about their medication regimens (ACE Inhibitors) and diagnostic test (echocardiogram) results. This led to issues related to the provision of left ventricular function (LVF) assessments and discharge instruction criteria (Table 3). CHF patients are admitted as or more frequently than AMI patients and more frequently than PN patients, are less likely to be transferred than AMI patients, and tend to have more non-

**Table 2**

**Acute Myocardial Infarction:  
Level of Challenge for Data Collection and Performance Improvement\*  
(n=13)**

| <b>Quality Measure</b>  | <b>Data Collection</b> | <b>Performance Improvement</b> |
|---|------------------------|--------------------------------|
| Aspirin provided at arrival   | 1.5                    | 2.2                            |
| Aspirin prescribed at discharge   | 1.9                    | 2.2                            |
| Beta blocker provided at arrival  | 2.0                    | 2.5                            |
| Beta blocker prescribed at discharge  | 2.5                    | 2.5                            |
| Angiotensin converting enzyme inhibitor (ACEI) or angiotensin receptor blocker (ARB) provided at arrival for LSVD | 1.8                    | 2.2                            |
| Thrombolytic agent received within 30 minutes of arrival  | 1.2                    | 2.3                            |
| Percutaneous coronary intervention (PCI) received within 120 minutes of arrival                                   | NA                     | NA                             |
| Adult smoking cessation/advice counseling   | 2.6                    | 2.9                            |
| Overall   | 1.9                    | 2.4                            |

\* Level of challenge for data collection and achieving performance improvement on a one to five scale where one represents no challenge and five represents a major challenge.

**Table 3**  
**Congestive Heart Failure:**  
**Level of Challenge for Data Collection and Performance Improvement\***  
**(n=13)**

| Quality Measure   | Data Collection | Performance Improvement |
|---|-----------------|-------------------------|
| Left ventricular function (LVF) assessment at arrival   | 3.3             | 3.3                     |
| Angiotensin converting enzyme inhibitor (ACEI) or angiotensin receptor blocker (ARB) provided at arrival for LSVD | 1.9             | 2.5                     |
| Detailed discharge instructions   | 2.3             | 3.3                     |
| Adult smoking cessation/advice counseling   | 2.7             | 3.1                     |
| Overall   | 2.6             | 3.0                     |

\*Level of challenge for data collection and achieving performance improvement on a one to five scale where one represents no challenge and five represents a major challenge.

hospital related physician encounters (office visits and ER visits) than either AMI or PN patients. As one respondent commented "...getting information when the procedure was conducted in-house during the current visit has not been a problem. It is when it has occurred previously that the problem occurs. The physician will know if it was done before the current visit but often does not mention it."

A number of respondents pointed to the often-busy work environment of attending physicians as a source of distraction and a contributor to documentation omissions. As patient volumes rise, physicians can become distracted and overloaded focusing less on the managerial aspects of care (e.g., detailed documentation) and more on the immediate care needs of the patient. Information on the patient encounter is recorded in the patient record but only that information that is directly related to the services provided. A few respondents noted that similar distractions also contribute to oversights in recording verbal instructions or changes in medication regimens. In the case of verbal instructions, the discharge nurse or case manager responsible for providing the patient with written discharge instructions needs to assure that all appropriate information is made available. Tardy physician summaries can make this task especially difficult. In terms of medications, the existing prescriptions are in the patient's chart and are known by the patient and physician. The higher priority placed on explaining new medications can often outweigh the importance of checking to make sure the patient still understands what needs to be done with existing medications.

Monitoring CHF process indicators became particularly challenging following the addition of angiotensin receptor blockers (ARBs) as an accepted standard of practice. The HQID protocols were designed prior to the acceptance of ARBs. The added standard created a recording problem for project participants as physicians began to administer ARBs instead of ACEIs. In large part, the delay in adding ARBs to the project's quality measures was the result of a prior agreement between CMS and Premier, Inc. that project standards be based on national standards and specifications. Premier, Inc. could not implement the new ARB standard until January 2005 when it was officially incorporated into the national specifications.

#### Community Acquired Pneumonia (PN)

Four areas presented a challenge for hospitals treating PN patients. The four areas include pneumococcal screening and vaccination prior to discharge, influenza screening and vaccination prior to discharge, obtaining a blood culture prior to administration of the first antibiotic, and initial antibiotic selection for PN in immunocompetent patients (Table 4). These issues were particularly challenging because of the precise timing needs for administering antibiotics, the personal formulary preferences of attending physicians, and the difficulties surrounding the assessment and vaccination of PN patients over a relatively short stay. Performance improvement challenges for screening and vaccination of influenza and pneumonia and obtaining appropriate blood cultures before administering antibiotics were among the greatest challenges of any quality process indicator reported for HQID.

**Table 4**  
**Community Acquired Pneumonia:**  
**Level of Challenge for Data Collection and Performance Improvement\***  
**(n=13)**

| Quality Measure  | Data Collection | Performance Improvement |
|--|-----------------|-------------------------|
| Initial antibiotic selection for PN in immunocompetent patients      | 1.6             | 2.8                     |
| Blood culture performed before first antibiotic received in hospital | 2.2             | 3.2                     |
| Initial antibiotic received within 4 hours of arrival                | 1.6             | 2.5                     |
| Oxygenation assessed 24 hours prior to are after arrival             | 1.1             | 1.0                     |
| Influenza screening and vaccination prior to discharge               | 2.4             | 3.2                     |
| Pneumococcal screening and vaccination prior to discharge            | 2.5             | 3.4                     |
| Adult smoking cessation advice counseling                            | 2.5             | 2.9                     |
| Overall  | 2.0             | 2.7                     |

\*Level of challenge for data collection and achieving performance improvement on a one to five scale where one represents no challenge and five represents a major challenge.

One of the larger challenges facing hospitals trying to meet the needs of PN patients has been the coordination of attending and ancillary staff to meet timing and sequencing requirements (e.g., blood cultures, initial antibiotics, immunization assessments, and administration). Most of the issues raised by the respondents could be traced back to an initial encounter in the emergency department where coordination was particularly challenging because of fluctuations in ED staff availability, ED patient volumes and the critical needs of specific patients. Triage times often suffer when the ED is especially crowded and handling the emergent needs of other patients can delay time to diagnosis and associated treatments for PN patients. Difficulties maintaining optimum staffing levels for pharmacy, phlebotomy, and lab technicians further undermine the ability to coordinate care and can contribute to delays and sequencing problems that lower hospital quality scores, as can communication issues between physicians and nurses attending to immediate patient needs.

Nurses have been reluctant to step into former physician controlled activities because of the resistance of some physicians. In other instances, the physician/nurse relationship has been undermined because some physicians have historically not acknowledged assessments conducted by nurses while others prefer to conduct assessments and immunizations in their private practice offices. This would increase the likelihood of missing data since the physician is likely to treat the patient with knowledge of the prior assessment but the results of the assessment are not contained in the patient's hospital record.

### Smoking Cessation and Counseling

The initial challenges associated with smoking cessation and counseling activities were similar across all hospitals. Data collection issues on smoking cessation and counseling were related to having too many possible entry points in a patient's record (e.g., nursing notes, education notes, and discharge summary notes), not enough detail to assess the level of care provided (due to prior information on the patient), and using an incomplete approach to collect information from the patient about their smoking history. Multiple chart locations usually can be handled easily with additional training for the chart abstractors. Problems with asking the correct question were also a relatively straightforward issue. However, getting attending physicians and nurses to record all information remained a common challenge for all clinical areas.

In many ways, obtaining the wrong information by asking the wrong questions can be more harmful than not documenting the correct information. Recording the wrong information often resulted when nurses and physicians asked patients if they smoked rather than asking them if they smoked within the last twelve months. Without a specified time for a reference, it was not possible to determine how much, if any, support a patient needed. Documentation problems could also result from other factors such as a patient's willingness to pursue quitting. One respondent noted that because of patients advanced age, few are interested in quitting regardless of the approach used. Already overtaxed staff nurses were prone to move on to their next

responsibilities, "...staff nurses do not seem to take ownership in the process. We tried to educate them – but many feel they do not have the time."

By the project's second year, most hospitals had been able to make significant strides in collecting the necessary performance information. Much of this gain was due to the enactment of hospital-wide smoking policies where every patient was evaluated for smoking and offered counseling. All patient charts were given specific locations for the smoking evaluation and cessation data and checklists were often added to aid hospital staff in the correct implementation of adopted procedures. Admitting and discharge staff received training in how best to approach patients to get information and provide support.

### **Staff Motivational and Behavioral Change Efforts to Improve Performance**

Although Premier, Inc. provided performance related data, best practices, and other information including the very well received *Rapid Improvement Programs*<sup>2</sup>, participating hospitals assumed the core responsibility of making important system changes to educate and motivate staff to improve performance. Respondents outlined a two step process including a preparation phase and an intervention/maintenance phase. During the preparation phase, the main focus was on the education of key staff on the nature and purpose of the HQID and the staff's responsibilities in helping their hospital succeed as a program participant. The predominant strategy during this phase was the inclusion of key staff in the design and development process early on and demonstrating those aspects of the process that each person would be responsible for completing. Such motivational and educational efforts were also used later during the intervention and maintenance phase to assess problematic behaviors and re-establish expectations and staff responsibilities.

Achieving performance gains required structural approaches such as the hospital-wide smoking policy, the use of standing orders, and targeted encounters with specific physicians and nurses. The use of standing orders to guide non-physician medical personnel to prescribe or deliver vaccinations in cases of PN was particularly successful. Respondents noted that physicians and nurses were often very open to strategies that could help them improve their ability to care for their patients. Difficulties emerged when the rationale for the change was largely defined by participation in the HQID. By-and-large, the HQID financial incentive was not effective for physicians and nurses; institutional incentives were too far removed from the clinicians role as healers to matter that much. Most physicians were characterized by the quality managers as responsive to the need for documenting activities related to the quality process measures. Whenever a respondent commented about a persistent problem working with physicians or nurses they also noted that this was not characteristic of all physicians and nurses but usually reflected on-going efforts with the same people over time. Those most likely to fall into this category were older physicians that complained

---

<sup>2</sup> Premier's Rapid Improvement Programs is a resource rich web-based technical assistance tool that makes the cumulative knowledge of high performing HQID hospitals available in the form of best-practices, down-loadable forms, templates, proven methodologies, order sets, case studies, and access to on-line experts.

about “cookbook” medicine and had not been included in the early planning and decision-making phase of program participation in the HQID.

### Motivational Efforts

Strategies used to engage staff and increase their buy-in for the HQID included making presentations before the board of trustees, executive staff meetings, and meetings of department managers. In addition to using power-point presentations, storyboards, one-on-one efforts for staff that missed initial presentations, instrumental devices were also used including posters, graphs, ‘blast-emails,’ newsletters, and postings on department information boards throughout the hospital. However, most respondents pointed out that their initial efforts focused primarily on the staff that would be directly involved with HQID activities. This was partly due to the shortage of time and personnel to implement activities prior to the start of the HQID but for some, it was admittedly a strategic oversight. Approximately 30 percent of the respondents indicated they would broaden their reach and intensify their efforts at educating more of the hospital staff if they could do it all over again.

### Behavioral Change for Performance Improvement

Considering that the attending physicians and nurses are the source of the data used by the quality managers to carry out their HQID responsibilities, it is not surprising that their most common target of performance improvement interventions was attending physicians, and emergency department physicians in particular. Attending physicians were the target of sometimes intense and challenging interventions involving staff education and face-to-face accountability tactics. The quality managers frequently reported using a stepwise, structured intervention starting with groups and drilling down to individuals as specific personnel were identified. Some directors reported using specific rates of compliance in their face-to-face encounters. However, most recognized the difficulty approaching a physician from the knowledge base and professional status of a non-physician. When facing particularly intractable physicians, hospital quality managers used a graduated approach. For example, one hospital provided education on the prescribed quality criteria by reviewing scored patient charts with the medical staff every quarter. Physicians having difficulty adhering to program guidelines were given follow-up education by providing an abstract review for each of their patients. If the problem persisted, the patient reviews were brought to the monthly meetings of the hospital’s peer review committee. Finally, the peer review committee sent letters to the physicians in question.

Maintaining performance improvement can be exhausting if the focus is repeated individual interventions. Most agreed that it was critical to develop a supportive relationship with the hospital executive staff and board trustees to provide the legitimacy and normalcy needed to maintain momentum and to intervene when necessary. The ability of quality managers to develop and maintain this supportive corporate culture was improved when they kept the hospital leadership up-to-date on key mileposts and when the information was provided in the language and style of management, not

quality performance improvement (e.g., when jargon was kept to a minimum). Keeping key staff and board representatives in the loop took many forms. In one instance, a hospital developed a color-coded performance card, similar to many dashboard tools, to disseminate performance improvement information at department manager meetings, hospital board meetings, and on the hospital's internal website. In this case, the system's corporate color was used to indicate top performance followed by green, yellow, and for poor performance, the color red. Another facility distributed project findings every quarter using a chart listing all quality process measures and goals along with three boxes. One box indicated the performance measure goal, the second indicated department performance above 90 percent of the goal, and the third indicated the facility's cumulative score for that measure.

Maintaining supportive executive and board member relationships also was important for creating hospital incentive programs with financial incentives as well as professional and peer recognition. One hospital instituted a bonus system linked to the performance of physicians and managers in meeting project goals. Another used "cafe money" to be used by staff to purchase items in the hospital cafeteria and gift shop. Winners were identified as contributing to the overall success of the hospital's participation in the HQID. Another hospital benefited from its system headquarters through an incentive program that provided the entire hospital staff with an end of the year bonus if their facility met or exceeded its predetermined performance goals. The program was labeled "Success Sharing" and at one point provided a bonus of approximately \$400 per staff person. Incentive programs provide personal motivation and can provide opportunities to apply additional leverage. For example, in the Success Sharing incentive program the quality manager was able to use reference to the program to elicit desired behaviors. "I used it during our education session – if I saw anyone getting 'deer eyes' I would ask 'did you get a success sharing check – they would naturally answer yes, then I would say well you are part of the process of getting those checks so listen up and participate."

Systematic efforts that restructured the processes followed by hospital staff were particularly useful such as standardized admission and discharge forms, and reminder stickers placed on inpatient charts. One respondent described using a detailed pre-printed order sheet modified for all of the Premier, Inc. process measures in a boxed area at the very beginning of the order sheet. Another reported using a disease specific protocol (e.g., chest pain) containing specific check off points listing all of the possible treatment options (e.g., administering aspirin or beta-blockers). It also provided a space to indicate the contraindications that led them to not follow the prescribed protocols.

Issues surrounding discharge-related problems were addressed in a similar way using standardized discharge forms that included all relevant performance measure indicators. Specific spaces were provided for physicians and nurses to describe why their response did not fit into the pre-printed categories. The effective use of admission or discharge forms required an educational and promotional investment far greater than was necessary to introduce the staff to the elements and purpose of the HQID. Staff

education was also important in addressing the need for obtaining the correct timing of procedures and diagnostic reports.

Virtually all of these strategies are labor intensive. This was also evident in respondent comments about the importance of having additional staff. In one instance, a case manager was hired (with her time split between HQID and other hospital-related duties) to follow patients covered under the HQID guidelines. The case manager reviewed patient charts prior to discharge, took notes on missing or incomplete information, and forwarded the notes to the attending physician for completion before the patient was discharged. Another hospital expanded this model by engaging a case manager, floor nurses, and ancillary staff to remain alert to the patient's chart and to communicate any information in need of completion to a responsible central manager.

Others have used various staff strategies to compensate for gaps in ancillary coverage (e.g., training nurses to provide EKGs at times when there was no coverage in the diagnostic lab). In one instance, a hospital was running into problems with its blood cultures and administering of the first antibiotic. Following a patient's blood draw in the ED, the specimen was sent to the hospital's laboratory where it would be dated and timed according to its arrival in the lab. The arrival time was frequently twenty to thirty minutes after the blood draw and caused errors in the sequence of blood culture and first antibiotic. Nurses were trained to manually date and time the specimen before it left the ED. In addition the quality manager had posters placed all over the ED and laboratory underscoring the need to include times, educating the staff that took the samples from the ED to the lab to not leave the ED without a draw time, and educating the lab staff to not accept the sample without a collection time.

### **Types of Technical Assistance that Helped the Most**

The important role of Premier resources in providing needed technical assistance was recognized by virtually all program participants. Real-time assistance through regional contacts and the use of the data extraction tool were particularly helpful as were the best practice models provided during Premier's scheduled meetings and through the recently released compact disc set. Several also mentioned the useful partnerships that were developed with their Quality Improvement Organizations (QIOs) including products/tools and hands-on technical assistance.

About half of the respondents identified additional assistance that would have helped them with the HQID. While the majority focused on the data delays that plagued the early phases of the project<sup>3</sup>, other comments focused on the difficulties of working with physicians and nurses including suggestions on planning and conducting interventions and the availability of evidence-based research to give legitimacy to the criteria that physicians were expected to follow under the HQID.

---

<sup>3</sup>Delays in the availability of data and problems of validation resulted from using JCAHO data for the base line year and HQID data for the first full year of operation.

## **Resources Important for Successful Participation in Future P4P Programs**

Respondents were asked to identify up to three assets that would help similar rural hospitals to successfully participate in future P4P programs like the HQID. Half of all the responses to this question focused on the need to secure adequate staffing both in terms of dedicated FTEs (36%) and skills capacity (14%) to handle abstraction, data collection, and performance improvement efforts. Comments regarding dedicated staff included reallocating existing staff resources and hiring new staff members. In addition, many respondents pointed to the importance of having an effective quality manager that can take charge to supervise not only the back-office work that needs to be done but also the on-going participation and buy-in of the clinical staff. The second most important area mentioned by respondents was information infrastructure needs and program-related tools (Table 5). Staffing needs were inversely related to the level of health information technology (HIT) available. To be successful, a hospital must assure consistency in data collection and reporting. Without significant government subsidies or an effective system partner, similar-sized rural hospitals would have few options beyond using creative and innovative human resource strategies to meet their data collection and analysis needs (Table 5).

Staff resource strategies involved adding people that are dedicated, highly motivated and have strong skill sets. They need to know how to collect, organize, and analyze data and understand the implications of the data measures for hospital operations. Staff responsibilities such as data abstraction do not have to be met by a full time person nor do they need to be filled by a trained nurse. However, the position for fulfilling these responsibilities needs to be dedicated to permit the staff person the flexibility to address P4P issues as they arise and to follow them through to conclusion. The staff in that position should also have a range of appropriate experiences such as coding, data extraction, and reporting to carry out the specific program tasks. Experience with physician progress notes and nurse admission forms would be helpful. Ideally, the position would be filled by an experienced MIS person who is able to work with staff to help identify problem areas, make timely changes, and monitor the process to ensure the timely completion of activities.

Respondents identified a number of assets that have been helpful in meeting the program requirements of the HQID (Table 5). Following staffing needs, the next most important resource identified by the respondents involved HIT and program-specific tools. Comments about HIT were usually broad (e.g., electronic infrastructure, information technology infrastructure). Suggestions involving program-related tools were more specific. For example, several commented on the value of using a real time reporting tool (like Premier Inc.'s) to work with physicians and nurses while others mentioned having access to a P4P website or network group for useful models and lessons learned. Another suggestion involved the use of an extraction tool that provided links (on-line rather than paper manual) to evidence-based criteria and operational definitions that could be accessed rapidly and used for interventions with physicians, nurses, and other hospital staff.

**Table 5**

**Resources Important for Rural Hospital Participation in  
P4P Programs  
(n=22)**

|   |     |
|---|-----|
| Additional trained staff                  | 50% |
| Information technology and specific tools | 23% |
| Technical assistance links                | 18% |
| Supportive leadership                     | 9%  |

## **Advice for Hospital Administrators Interested in Participating in Future P4P Programs**

The advice given by respondents for administrators and board members of rural hospitals contemplating participation in future P4P initiatives fell into three general categories – the logistics of making the process work, the required resources, and the opportunities for improving patient care.

The key to effective planning is education. It should begin with the hospital board and executive staff on what, when, why and how to enhance their support of the efforts that will take place. During this process, communication needs to be clear “...do not use acronyms, this just confuses people and distances them from the process as well as undermines your ability to communicate about the program and generate support.” Staff should be involved in the project development process. The project should be discussed all the time and all should understand what is going to happen (from those in the boardroom to housekeeping). Physicians are the key to success and physician champions should be identified as soon as possible to help motivate and educate the medical staff early in the process.

One needs to be sensitive to human resource needs when estimating the resources needed for data extraction and analyses. This is not a task that can be done in between patients nor is it a task that can be handled by committee. It needs to be completed by a dedicated position that is given support and backup to be flexible and continuous. Above all, the process should not be underestimated. A hospital will likely need to hire at least a part-time person to handle the additional workload. It is not an “other duties as assigned” job.

The attraction to participate in a P4P program like the HQID is not related to financial gain. Hospitals with fewer than 100 beds usually have patient volumes too low for the Medicare bonus to offset their investment in time and money to do it right. It is critical for hospital administrators to understand why they are deciding to participate. Participation “...should be because of improvements in patient care – you are not going to make money out of this.” Respondents cautioned that it is easy for small hospitals to assume that because of their low volumes, reporting really does not make any sense. However, one person responded that “It is important to set the bar at 100 percent for any patient you see – this is what it is all about, quality of care for each patient.”

Finally, hospitals should also be open to working with Quality Improvement Organizations. While the majority of respondents highlighted the valuable support provided by the tools made available through Premier, Inc. and the project staff, a number (38%) also identified their Quality Improvement Organizations (QIOs) as key partners in making their HQID participation a success. Hospitals considering participation in future P4P efforts should keep their QIO in mind as a source of valuable support and expertise.

## **Future Performance Improvement Areas for Rural Hospitals**

Most respondents thought expansion into other areas for P4P made sense because it is a great focusing mechanism for hospitals. There was recognition of the need to target other important care areas. However, one facility was concerned about the impact of suggesting additional areas and the likelihood that CMS would consider holding them accountable. That hospital's resources were already stretched to the limit.

Recommendations for additional performance improvement areas reflected the common demographic characteristics and case mix of rural communities (Table 6). Chronic conditions ranked at the top of the list for other P4P areas to apply to rural hospital settings. The pattern of increasing incidence of chronic diseases is one of the factors that has contributed to the growing interest in the application of P4P strategies.

The suggested areas provided a snapshot of smaller rural hospital case mix with a focus largely on the elderly closely followed by services for the very young with the remaining emphasis on general surgical, emergency, and specialty clinic services. Cross-cutting areas such as pain management, infection management, stroke, and rehabilitation were also recommended for an expanded P4P framework. Whatever conditions are considered, they will need a set of accepted quality performance standards, a means to measure the degree to which those standards are met, and criteria that can be universally accepted by physicians and that are flexible as evidence-based practices evolve over time.

## **LIMITATIONS OF THE STUDY**

Before discussing the implications of the findings of this study it is important to consider several key aspects of the study (i.e. the prior history of the study hospitals, their system linkage, and the voluntary nature of the HQID). Successful participation in a P4P initiative like the HQID depends heavily on the information systems capacity of the participating hospital. Hospitals with sufficient information infrastructure, trained staff, and resources to maintain the system will have fewer difficulties participating in a P4P program than hospitals that do not. Each of the Premier, Inc. hospitals eligible to participate in the HQID was considered eligible because they had a history of working with the Premier, Inc. alliance and its tailored software data system *Perspective Online*. The vast majority of small rural hospitals do not possess automated data systems nor do they have access to the capital reserves needed to develop and maintain such a system. Since the study hospitals tend to have a greater health information capacity than the average rural hospital, the study findings may underestimate both the learning curve needed and the capital investment required to function smoothly under similar data requirements in future P4P programs.

Research on the benefits of system linkage for small rural hospitals has demonstrated that compared to free-standing hospitals, system-linked facilities have access to resources and expertise that can be critical to their day-to-day survival. Although less than forty percent of all rural hospitals are members of a formal healthcare or hospital system, all of the hospitals in the study were members of a system. The vast majority of

**Table 6**

**Additional Areas for Rural Hospital Performance Improvement  
(n=20)**

|  |     |
|--|-----|
| Chronic disease (e.g. diabetes, CVA, COPD) | 30% |
| Pregnancy and child birth                  | 25% |
| General surgical infection                 | 25% |
| Emergency room                             | 10% |
| Patient transfers                          | 5%  |
| Specialty clinics                          | 5%  |

study hospitals reported instances where system support proved critical to their successful participation in the HQID. Similar findings have been reported for hospitals participating in another CMS hospital quality initiative, Hospital Compare. In an assessment of the early experiences of Hospital Compare, four of the six “free-standing” hospitals interviewed in the study needed to divert resources from other tasks to meet the needs of the HQI initiative, only three of the twenty-five system-linked hospitals needed to do so (Felt-Lisk, Lee, and Maxfield 2004:36). The greater likelihood of system assistance for the Premier, Inc. hospitals may underestimate the ability of small rural hospitals to overcome barriers to participation in future P4P programs without external support.

The voluntary nature of the HQID must also be taken into account when reviewing the study findings. The vast majority of study hospitals participated in the HQID because their system headquarters advised, insisted or required their participation. On the one hand, the voluntary nature of the HQID may have created a biased sample of participants having system headquarters that were more invested than usual in P4P strategies and tactics and that already were engaged in active performance improvement efforts. On the other hand, the lack of enforced procedures and processes that would have been available had the HQID been a required CMS initiative could have made it more difficult for quality managers to gain executive and medical staff support than would be the case in the “value-based purchasing” initiative scheduled for 2009.

In addition, while poor performers often opt out of voluntary performance improvement programs, they will not have that option with a mandatory initiative. However, the inclusion of less prepared participants will increase the resource requirements for achieving performance improvements across the board with a nationally required P4P initiative.

Finally, our study is largely based on the reported experiences of hospital directors of quality. Although directors of quality have significant responsibility for their hospital’s participation in the HQID, their experiences cannot reflect the full continuum of events that shaped their hospital’s program experience. In order to clarify the factors driving successful participation in the short run and long run, further research should be conducted to expand the scope of inquiry to include hospital administrators, physician and nurses. This will provide a better understanding of the work environments, organizational and professional cultures, and communication styles within which hospitals are attempting to improve the quality of care they provide.

## **DISCUSSION**

A number of issues have been identified as potentially challenging for the future participation of small rural hospitals in P4P programs. Most issues are directly related to the capacity of participating hospitals to collect the necessary quality performance data. Study findings suggest that the degree to which small rural hospitals can participate successfully in similar P4P programs will depend on their ability to implement

needed structural and systemwide changes. Changes that minimize documentation errors by supporting the medical and clinical staff in fulfilling their duties will promote the involvement of key staff in program planning and implementation, and motivate administrators, board members, and physicians to sustain their efforts over time. These challenges will likely be greatest during the early stages of program participation (i.e., before adoption of new or modified procedures and protocols).

The involvement of administrators, board members, and key medical staff are critical to this early transition period. The influence of financial incentives, at least from the findings of this study appears limited. Researchers have found little evidence to support the effectiveness of paying for quality and have speculated that this is because the incentives have not been large enough nor focused enough to leverage the targeted provider behaviors (Nahra et al, 2006; Rosenthal et al, 2006). The findings of this study also point to the limited impact of financial incentives for changing key provider behaviors. For small rural hospitals with low patient volumes, the accrued incentive bonuses will be small with little or no likelihood of trickling down to influence staffing behaviors. For the providers of care, the incentive most likely to influence the achievement of desired behavior goals is linking those goals to the delivery of appropriate, high quality care for their patients. Those few rural hospitals that implemented their own internal incentive programs reported marked success. However, few small rural hospitals will have the resources necessary to support such efforts. Most will need to develop performance improvement efforts based on non-financial incentives such as peer recognition and institution accolades that reinforce the role of healer and samaritan. To be successful in future initiatives, rural hospital administrators, boards, and quality departments will need to invest time and energy into identifying those factors that most motivate their staff and design approaches with that knowledge in mind.

Many of the major issues faced by quality directors in trying to meet HQID requirements are related to their hospital's scale of operations more than their geographic location (e.g., staff relations, scope of service and practice, and patient volume). Similar findings have been reported from assessments of the Hospital Compare program (Felt-Lisk, Lee, and Maxfield, 2004; Laschober, 2006). The number one problem reported in the Med-Vantage national survey of P4P sponsors was statistical and data problems related to small numbers (Baker and Carter, 2005). This suggests that these issues may well be common across quality performance improvement programs (e.g., both public reporting and financial incentive-based internal efforts) and likely across hospital types. However, given the large number of rural hospitals operating with 100 or fewer beds (~80% of all rural hospitals) and the existence of often unique factors in rural operating environments that can depress demand and supply, this is a significant issue for rural America and one that can not be handled by using a different set of quality standards.

Although each of the issues and barriers discussed above represent challenges for the participation of small rural hospitals in P4P programs like the HQID, the context in which these hospitals operate will be a key determinant of their success. For example, the health professional recruitment and retention difficulties commonly experienced in rural

areas may complicate efforts to address the human resource issues. This will especially be the case for smaller rural hospitals seeking to replace retiring physicians but unable to find the amenities and jobs to also lure their spouses and families. Staffing levels will be harder to maintain and practitioner burnout harder to avoid making it more difficult to find physician champions and others able to give extra time to non-patient care activities. Nurses are often in short supply increasing the tension between the provision of patient care and the paper work needed to meet P4P program data requirements. Differences in hospital scope of services and availability of specialists in rural facilities may contribute to the poor showing of rural hospitals in the area of AMI (Kahn et al 2006). Their lack of capital and barriers to capital markets will challenge their efforts to: 1) hire non-clinical staff with the skill sets needed to carry out the documentation and analytical responsibilities that often are completed by the nursing staff; or, 2) move away from a human resource system to automated patient records. Many of the difficulties rural hospitals will face in managing these program issues will stem from their ability to allocate sufficient resources (e.g., staff, expertise, capital).

There are real costs imposed on health care providers and delivery systems to collect the information necessary to implement quality improvement initiatives such as the HQID. While these barriers and issues are no doubt shared by urban and rural hospitals alike, smaller rural hospitals are at a greater disadvantage because of their limited resources and access to trained personnel, with free-standing facilities at most risk.

Any discussion about the potential needs and capacity of small rural hospitals to participate in P4P programs such as the value-based purchasing program outlined in Public Law 109-171 for fiscal year 2009 should consider the following findings and challenges from this study:

- The influence of bonus payment incentives is limited for hospitals with low inpatient volumes. A large number of rural hospitals that may participate in future P4P programs will be low inpatient volume facilities.
- Non-financial incentives can make a difference, especially for physicians and nurses who are more motivated by feedback on the quality of care they are providing to their patients. The close-knit community culture of many small, remote rural communities may work to the advantage of rural hospitals through more selective and effective peer influence.
- Physicians and nurses need feedback on the care they are providing. The more frequent, clear, and accurate the feedback, the more effective it will be in helping them improve their daily performance. The lack of information infrastructure, automated systems, and greater demand being placed on the limited number of physicians available may be a disadvantage in rural hospitals.
- The provision of provider feedback can only foster performance improvements to the degree to which the necessary tools, education, and guidance are made

available to reinforce and maintain the effort. The relative lack of resources for building education and guidance infrastructure in smaller rural hospitals will make the task much harder for freestanding rural hospitals compared to those in systems or urban facilities.

- Physician and nurse involvement is critical for successful participation in P4P programs. Difficulties recruiting and retaining physicians and nurses common to many small rural hospitals may undermine efforts to engage them in non-clinical direct care activities.
- Limited clinical staff will make it difficult to meet added staffing needs of P4P, especially in terms of nursing resources. Small rural hospitals can benefit from defined skill sets for quality management staff that maximize nursing time for direct patient care.
- Limited availability of pharmacists, phlebotomists and laboratory staff will add challenges to meeting critical timing and sequencing requirements of P4P initiatives.
- Limited capital reserves and access to capital markets of small rural hospitals will be a significant barrier to the adoption and implementation of the information technologies and infrastructure needed for P4P participation.

Finally, key issues identified for future P4P Initiatives include:

- Future P4P programs need to be relevant for small rural hospitals in the clinical areas targeted for performance improvement.
- Financial incentives based on a competitive or balanced-budget design will make it difficult for low performers to achieve program goals. Balancing incentives geared to meeting or exceeding defined performance thresholds with incentives designed to reward improvement regardless of the defined thresholds and/or geared to work independent of patient volume may further incentivize small hospital participation and success.
- The support of medical staff for program standards can be strengthened through early program education and having a process to accommodate changes in evidence-based criteria. This could be difficult for rural hospitals having the majority of their medical staff comprised of physicians from surrounding solo private practices who have become accustomed to more autonomous practice.
- Future national P4P programs should include design features that accommodate varying degrees of information system sophistication to guide and encourage local markets with limited IT systems to build capacity through participation (e.g., include IT adoption as part of the P4P initiative and provide state or federal grants and/or low or no interest loans to speed adoption and implementation).

- The development of a national P4P initiative should be coordinated with the work of the National Quality Coordination Board (as recommended by the IOM) to facilitate the standardization of the many data collection and reporting requirements of hospitals and providers (e.g., quality standards of other payers and possibly large employers as well as JCAHO, NQMC, NQF, HQA and others).
- Incentives should be provided to hospital and healthcare systems, networks, and alliances to foster greater sharing of resources and expertise toward a coordinated health information infrastructure capacity for small rural providers.

## REFERENCES

- American Academy of Actuaries. "Pay for Performance: Rewarding Improvements in the Quality of Health Care." Issue Brief. Washington, DC: AAA, 2005.
- American Association of Clinical Endocrinologists. "Pay-for-Performance in Health Care: An Analysis of the Arguments for and Against." A Report from the Future of Health Care Task Force, The American Association of Clinical Endocrinologists, July 2005.
- Baker, G., and Carter, B. *Provider Pay-for-Performance Incentive Programs: 2004 National Survey Results*. Med-Vantage, Inc., San Francisco, CA., First Quarter Report, 2005.
- Bazzoli, G. "Forward to Special Issue on Paying for Quality." *Medical Care Research and Review*, Vol. 61, No. 3: 5s – 9s, (Supplement to September 2004)
- Berwick, D., DeParle, N., Eddy, D., Ellwood, P., Enthoven, A., Halvorson, G., Kizer, K., McGlynn, E., Reinhardt, U., Reischauer, R., Roper, W., Rowe, J., Schaeffer, L., Wennberg, J., and Wilensky, G. "Paying for Performance: Medicare should Lead." *Health Affairs* 22:8-10, 2003.
- Centers for Medicare and Medicaid Services (CMS). *The Premier Hospital Quality Incentive Demonstration: Rewarding Superior Quality Care*. CMS Fact Sheet, 2004. <http://www.cms.hhs.gov/HospitalQualityInits> (Accessed March 2004).
- Centers for Medicare and Medicaid Services (CMS). *Medicare Demonstration Shows Hospital Quality of Care Improves with Payments Tied to Quality*. Medicare News, 2005. <http://www.cms.hhs.gov/apps/media/press/release> (Accessed December 2005).
- Chassin, M., Galvin, R., and the National Roundtable on Health Care Quality. "The Urgent Need to Improve Health Care Quality." *Journal of the American Medical Association* 280:1000-1005, 1998.
- Department of Health and Human Services. *Healthy People 2010, Understanding and Improving Health*. Washington, DC: Government Printing Office, 2000.
- Devers, K. "Quality Improvement by Providers: Market Developments Hinder Progress." *Health Affairs* 21:210-209, 2002.
- Devers, K., Pham, H., and Liu, G. "What is Driving Hospital's Patient-Safety Efforts?" *Health Affairs* 23:103-115, 2004.
- Elliott, B. "Pay for Performance and the Hospital Quality Initiative." *Del Med Journal* 77: 289 – 296, 2005.

Evans, R., Pestotnik, S., Classen, D., Clemmer, T., Weaver, L., Orme, J., Jr., Lloyd, J., and Burke, J. "A Computer-Assisted Management Program for Antibiotics and other Antiinfective Agents." *New England Journal of Medicine* 338:232-238, 1998.

Felt-Lisk, S., Lee, M., and Maxfield, M. "Hospitals' Early Experience with the National Voluntary Hospital Reporting Initiative." Mathematical Policy Research, Inc. Washington, DC, May 2004.

Fernandopulle, R., Ferris, T., Epstein, A., McNeil, B., Newhouse, J., Pisano, G., and Blumenthal, D. "A Research Agenda for Bridging the Quality Chasm." *Health Affairs* 22:178-190, 2003.

Institute of Medicine, Committee on the Quality of Health Care in America. *Crossing the Quality Chasm: A New Health System for the 21<sup>st</sup> Century*. Washington, DC: National Academy Press, 2001.

Institute of Medicine, Committee on Redesigning Health Insurance to Congressional Mandates. *Performance Measurement: Accelerating Improvement*. Washington, DC: National Academy Press, 2006.

Jencks, S., Huff, E., and Cuerdon, T. "Change in the Quality of Care Delivered to Medicare Beneficiaries, 1998-1999 to 2000-2001." *Journal of the American Medical Association* 289:305-312, 2003.

Kahn, C., Ault, T., Isenstein, H., Potetz, L., and Gelder, S. "Snapshot of Hospital Quality Reporting and Pay-For-Performance Under Medicare." *Health Affairs* 25:148-162, 2006

Kohn, L., Corrigan, J., and Donaldson, M. (Eds.) *To Err is Human: Building a Safer Health System*. Institute of Medicine, Committee on Quality of Health Care in America. Washington, DC:National Academy Press, 1999.

Laffel, G. and Blumenthal, D. "The Case for Using Industrial Quality Management Science in Health Care Organizations." *Journal of the American Medical Association*, 262:2869-2873, 1989.

Laschober, M. "Hospital Compare Highlights Potential Challenges in Public Reporting for Hospitals." Mathematica Policy Research, Inc., Issue Brief, Number 2: Trends in Health Care Quality, Washington, DC, March 2006.

McGlynn, E., Asch, S., Adams, J., Keeseey, J., Hicks, J., DeCristofaro, A., and Kerr, E. "The Quality of Health Care Delivered to Adults in the United States." *New England Journal of Medicine* 348:2635-2645, 2003.

Medicare Payment Advisory Commission (MedPAC). *Report to Congress: Medicare in Rural America*. Washington, DC: Government Printing Office, 2001.

Medicare Payment Advisory Commission (MedPAC). *Report to Congress: Variation and Innovation in Medicare*. Washington, DC: Government Printing Office, 2003.

Medicare Payment Advisory Commission (MedPAC). *Report to Congress: Medicare Payment Policy*. Washington, DC: Government Printing Office, 2004.

Medicare Payment Advisory Commission (MedPAC). "Pay for Performance in Medicare." Testimony before the U.S. Senate Committee on Finance by Mark E. Miller, Ph.D., Executive Director of the Medicare Payment Advisory Commission, July 2005. Washington, DC: Government Printing Office, 2005.

Moscovice, I., Wholey, D., Klingner, J., and Knott, A. "Measuring Rural Hospital Quality." Minneapolis, MN: Rural Health Research Center Working Paper Series #53, University of Minnesota, 2004.

Nahra, T., Reiter, K., Hirth, R., Shermer, J., and Wheeler, J. "Cost-Effectiveness of Hospital Pay-for-Performance Incentives." *Medical Care Research and Review* 63:49s – 72s (Supplement to February 2006).

National Advisory Committee on Rural Health and Human Services (NACRHHS). *Health Care Quality: The Rural Context*. A report to the Secretary, USDHHS, 2003.

National Committee for Quality Assurance (NCQA). "Medicare Bill Contains Important Quality Reporting, Pay-for Performance Provisions." NCQA News, 2003. website <http://www.ncqa.org/Communications/News> accessed March 2004.

Premier, Inc. "The Hospital Quality Incentive Demonstration Project." <http://www.premierinc.com/all/informatics/qualitydemo> accessed March 2004.

PriceWaterhouseCoopers (PWC). "Pay for Performance's Small Steps of Progress." 2005. <http://www.pwc.com/healthcare>. Accessed November 2005.

Rosenthal, M., Fernandopulle, R., Ryu Song, H., and Landon, B. "Paying for Quality: Providers' Incentives for Quality Improvement." *Health Affairs* 23:127-141, 2004.

Rosenthal, M., and Frank, R. "What is the Empirical Basis for Paying for Quality in Health Care?" *Medical Care Research and Review* 63: 2: 135 – 157, 2006.

Rosenthal, M. "Testimony before the House Subcommittee on Employer-Employee Relations Hearing on Examining Pay-for-Performance measures and Other Trends in employer-Sponsored Health Care." May 2005, [http://www.house.gov/ed\\_workforce/hearings/109th](http://www.house.gov/ed_workforce/hearings/109th), (Accessed April 2006).

Tieman, J. "MedPAC for Quality-Based Pay." *Modern Healthcare* 34:14, 2004.

U.S. Senate. "A Bill to Amend Title XVIII of the Social Security Act to Provide Incentives for the Provision of High Quality Care Under the Medicare Program: The Medicare Value Purchasing (MVP) Act of 2005." <http://thomas.loc.gov>. (Accessed April 2006).

Weber, D. "The Dark Side of P4P." *The Physician Executive Special Report: Pay for Performance*. November/December: 20 – 25, 2005.

**APPENDIX I**

**HQID Quality Measures and Sources**

| CLINICAL CONDITION                | QUALITY MEASURE  |
|-----------------------------------|--|
| Acute Myocardial Infarction (AMI) | <ol style="list-style-type: none"> <li>1. Aspirin at arrival <sup>1,2,3,4</sup></li> <li>2. Aspirin prescribed at discharge <sup>1,2,3,4</sup></li> <li>3. Angiotensin converting enzyme inhibitor (ACEI) for left ventricular systolic dysfunction (LVSD) <sup>1,2,3,4</sup></li> <li>4. Adult smoking cessation advice/counseling <sup>1,2,3</sup></li> <li>5. Beta blocker prescribed at discharge <sup>1,2,3,4</sup></li> <li>6. Beta blocker at arrival <sup>1,2,3,4</sup></li> <li>7. Thrombolytic agent received within 30 minutes of arrival <sup>1,2</sup></li> <li>8. Percutaneous coronary intervention (PCI) received within 120 minutes of arrival <sup>1,5</sup></li> </ol>  |
| Congestive Heart Failure (CHF)    | <ol style="list-style-type: none"> <li>1. Left ventricular function (LVF) assessment <sup>1,2,3,4</sup></li> <li>2. Discharge instructions <sup>1,2,3</sup></li> <li>3. Angiotensin converting enzyme inhibitor (ACEI) for left ventricular systolic dysfunction (LVSD) <sup>1,2,3,4</sup></li> <li>4. Adult smoking cessation advice/counseling <sup>1,2,3</sup></li> </ol>   |
| Community Acquired Pneumonia (PN) | <ol style="list-style-type: none"> <li>1. Percentage of patients who received oxygenation assessment within 24 hours prior to or after hospital arrival <sup>1,2,3,4</sup></li> <li>2. Initial antibiotic selection for PN in immunocompetent patients <sup>1,2,3</sup></li> <li>3. Blood culture collected prior to first antibiotic administration <sup>1,2,3</sup></li> <li>4. Influenza screening/vaccination <sup>1,2</sup></li> <li>5. Pneumococcal screening/vaccination <sup>1,2,3,4</sup></li> <li>6. Antibiotic timing, percentage of PN patients who received first dose of antibiotics within four hours after hospital arrival <sup>1,2,4</sup></li> <li>7. Adult smoking cessation advice/counseling <sup>1,2,3</sup></li> </ol> |

- Source:
1. National Quality Forum Measure
  2. CMS 7<sup>th</sup> Scope of Work Measure
  3. JCAHO Core Measure
  4. Hospital Quality Alliance; Improving Care through Information (HQA)
  5. The Leapfrog Group Proposed Measure