Final Staff Recommendations regarding the HSCRC's Quality-Based Reimbursement (QBR) Project - based on Deliberations of the Initiation Work Group (IWG)

Health Services Cost Review Commission
4160 Patterson Avenue
Baltimore, MD 21215
(410) 764-2605
Fax (410) 358-6217

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This document represents the final staff recommendation as approved by the Commission.

Introduction

The issue of quality in health care has been considered for many years, but it was a series of Institute of Medicine (IOM) reports that made the front-page news. A 1999 IOM report, *To Err is Human: Building a Safer Health System*, found that up to 98,000 Americans die every year from preventable medical errors in hospitals. In 2000, a subsequent IOM report confirmed the findings of the 1999 report and urged greater focus, research, leadership, and expectations regarding health care quality and patient safety. The recommendations set forth in the 2002 IOM report entitled *Crossing the Quality Chasm: A New Health System for the Twenty-first Century*, went beyond medical errors and brought the quality issue to the forefront of policy activity nationally.

The IOM reports do not specifically criticize how clinicians provide care, but rather, they emphasize the need for systems that ensure the quality and safety of services, including aligning payment with better quality and outcomes. Federal and state agencies, private and public payers and other organizations have ramped up their efforts to implement new quality initiatives as well as bolster and expand existing initiatives, constituting a convergence of forces striving to improve quality (see Appendix A). The Hospital Quality Alliance[1] established in 2002 requires reporting of a set of performance measures in order for hospitals to achieve the full Medicare payment updates, and hospital performance data are published on the *Hospital Compare* website. The Deficit Reduction Act of 2005 (DRA) requires a quality adjustment in Medicare Diagnosis Related Group (DRG) payment for certain hospital-acquired conditions, including serious preventable events, and also authorize the development of a plan for a hospital value-based program to commence in FFY 2009.

The pay-for-performance project most analogous to that under the Commission's current Quality Based Reimbursement (QBR) initiative is a precursor to Medicare's national hospital value-based program, the Centers for Medicare and Medicaid Services (CMS)/Premier Hospital Quality Incentive Demonstration Project which included participation of more than 260 hospitals and raised overall quality by 11.8% in two years, as of January 2007, based on their performance on 30 nationally standardized and widely accepted care measures in five clinical areas. Variation between top and bottom performers also decreased as clinical quality improved at participating hospitals.

Since Maryland hospitals are not reimbursed like Prospective Payment System (PPS) hospitals and would not be subject to the incentives proposed under Medicare's value-based purchasing program, it is incumbent on the HSCRC to ensure that Maryland hospitals incorporate the appropriate incentives to provide the highest quality of appropriate care. Just as HSCRC is uniquely positioned to implement a comprehensive quality-based reimbursement initiative, hospitals will uniquely benefit from an initiative that covers all payers within one program, rather than participating in numerous payer-sponsored pay for performance initiatives with varying requirements, incentives and penalties. This paper provides a set of **final** recommendations from HSCRC staff based on the extensive deliberations of the Commission's Initiation Work Group (IWG). The IWG was assembled in April 2005 and consisted of individuals with the following backgrounds and affiliations: private payers, hospital financial personnel, hospital quality directors, quality and patient safety experts, academicians, and a representative from the

[1] The Hospital Quality Alliance represents a collaboration of the American Hospital Association, Federation of American Hospitals, and Association of American Medical Colleges, the National Quality Forum, the Centers for Medicare and Medicaid Services, the Agency for Healthcare Research and Quality, the Joint Commission, and other provider, purchaser consumer, and quality stakeholders.

Maryland Health Care Commission. With the assistance of the Commission's consultant on Quality Based Reimbursement, the staff and the IWG have developed a strategy and operational steps necessary for successful implementation of a project that provides rewards and incentives to Maryland hospitals for improved and sustained quality performance. It is recommended that the QBR Initiative initially focus on care provided for four clinical conditions/areas —heart failure, heart attack, pneumonia, and surgical care— which constitute approximately 15% of the hospital discharges in Maryland and approximately 30% of total Maryland hospital charges, based on fiscal year 2007 data. As the percentage of patients impacted is initially small, it will be important to expand the Initiative rapidly to monitor and incent high quality care comprehensively for Marylanders needing hospital care.

Background

Activities Thus Far

The recommendations contained in this document represent the culmination of deliberations and analysis performed by the HSCRC staff, the IWG and Commission consultants over the past several years. A detailed chronology of key activities and timing related to the development of the HSCRC Quality-based Reimbursement Initiative is provided in Appendix B.

It is important to note that in adopting the HSCRC Quality Initiative Steering Committee recommendations in February 2004, the Commission acknowledged that the delivery of high quality health care involves the convergence of access to appropriate health care, cost, and quality. The Maryland system, under the authority of the HSCRC and Maryland Health Care Commission (MHCC), is unique in the ability to affect all three of these elements in a broad manner. While pay-for-performance programs have only recently been adopted on the national level for various payers (including CMS for Medicare patients) and providers (both hospitals and physician groups), this Initiative, when implemented, would represent the broadest pay-for-performance system in the nation as it will apply to all payers of hospital services in the state. In addition, while the early development of the Maryland QBR Initiative has paralleled the national developments of CMS primarily focused on Medicare, the intent is to expand broadly to other important priority areas for Marylanders such as obstetric and women care, pediatric care, care for persons with psychiatric conditions, care for non-elderly persons with a multitude of high risk, chronic, and/or co-morbid conditions, etc.. The Commission acknowledges that the clinical research strategies utilized in these pay-for-performance systems are relatively new and ever changing thereby posing challenges to keeping current on the nuances.

The Commission adopted a mission statement, goals, and key components for the HSCRC Quality Initiative recommended by the Steering Committee, which are unchanged and that are fully stated in Appendix C.

> ***The mission of the HSCRC Quality Initiative is to help create a health care environment where Maryland hospitals provide high quality patient care in an efficient manner***

This mission statement is consistent with the goals implicit in the HSCRC's enabling statute which requires the Commission to promote and establish standards for efficient and effective hospital operation.[2]

[2] Health-General Article Section 19-219 regarding: Efficiency and Effectiveness.

Role of the HSCRC: Promote Efficiency and Effectiveness

A primary role of the HSCRC has been the establishment of financial incentives that are either missing or misaligned with the achievement of certain policy goals. Most particularly, the Commission has significant data collection and rate setting authority (further enhanced by the existence of the Medicare Waiver). It has used this authority to fulfill the statutory mandate of promoting the efficient and effective operation of Maryland hospitals.

Over the years, the Commission has concentrated its efforts on utilizing and linking underlying cost and other data on hospital operations to establish standards and incentives that promote efficient hospital production. The absence of meaningful data on quality of care largely prevented the application of these techniques to promote behaviors correlated with better care, improved outcomes, reduced unnecessary care, and improved patient safety. The considerable attention paid to this quality measurement issue nationally in recent years has at last identified measures that can allow for the establishment of Quality-related measurement standards. These measures, and other measures now on the horizon, can be the basis for the development of financial incentives to dramatically improve the overall quality of Maryland hospital care.

Additionally, the ability of the HSCRC to leverage the all-payer aspect of the system to establish both uniform and meaningful incentives for sustained quality improvement is unique both in the United States and internationally. Given these dynamics, the Commission and the hospital and payer industries in the State have a unique opportunity to provide lasting improvement in the overall value consumers receive for their health care expenditures, including improvements in the life and health of all Maryland residents.

Measurement of Health Care Quality and Quality Improvement

With the recent focus on the development of quality measurement, policy makers and providers spent considerable time debating and discussing which measures are most appropriate to use in the initial implementation of Pay for Performance (P4P) programs. The two categories of measures most discussed consist of outcome measures and process measures.

The analysis of outcomes seeks to understand the effects of health care practices and interventions on the ultimate health status of individual patients and populations. Researchers in this field have traditionally used various measures of outcomes in hopes of using their findings to develop better ways to monitor and improve the quality of care. Some examples of measures of outcomes include:

- Longevity, mortality
- Chronic disease and morbidity
- Complications (of disease or of medical care)
- Physical functional status Psychosocial functioning Quality of life
- Costs of care
- Use of specified services
- Satisfaction with care, experiences with care

Health outcomes research is generally thought to be a more comprehensive approach to quality measurement (than traditional clinical research) in that it provides a greater focus on the patient and measures what is often of greatest concern to the patient. Outcomes researchers look beyond the clinical success or failure of an intervention to define success by the effects of a treatment on various areas of a patient's life.

While health outcome measures are very important to efforts to measure health care quality reliably, there are some outstanding issues associated with their application in P4P projects. One challenge with existing health outcome measures, which limit their utility as accountability tools, relates to the issue of the adequacy of available mechanisms for risk adjustment.[3] The inputs to health care production and the treatment of patients vary widely. While risk adjustment tools are now available, the conventional view is that models that adequately and appropriately account for all the confounding factors for given health care interventions are not sufficiently tested in the quality measurement arena. Thus, there has been concern in the provider industry with the use of outcome measures and the ability of risk-adjustment to adequately account for differences in patient populations and the possible unintended consequence of risk selection.

Evidence-Based Process Measures

In addition to outcomes measurement systems, researchers and policy makers recognize the importance of adoption of specific clinical processes for high-risk procedures. There is considerable evidence in the literature linking these process measures with improved outcomes for certain high-risk procedures in the areas of Acute Myocardial Infarction (AMI), Heart Failure (HF), Pneumonia (PN), and Surgical Infection Prevention (SIP). For example, in a case study recently published in the Commonwealth Fund's *Quality Matters*, 22 hospitals in a health system that showed statistically significant performance improvement on four heart failure process measures steadily between 2002 and 2006 also had a decrease in 30-day readmission rates from 22% to under 20%, and a 40% decline in inpatient mortality rates.[4] Based on evidence such as this, there is reasonable assurance that the adoption of identified processes will result in improvement in health care outcomes and the overall quality of care provided.

One advantage of using process measures in the beginning stages of P4P initiatives is that there is no need for risk adjustment. These identified and beneficial processes can be applied to any population (regardless of risk factors) with an assurance of improved health outcomes and quality of care. Another advantage of using evidence based process measures is that hospitals in Maryland and across the nation have been reporting performance on these measures for over two years. Thus, while evidence-based process measures provide, perhaps, an indirect link to more comprehensive quality measures, these measures are now widely accepted by both providers and by consensus quality organizations, such as the National Quality Forum and Hospital Quality Alliance. Accordingly, most P4P initiatives are utilizing data on hospital performance on process measures.

Over the longer term, however, the complexities of health care may well demand a more balanced portfolio of process, structure and outcome measures in quality monitoring to fulfill the varied requirements of all participants in health care. In that sense, the HSCRC staff believes this first step provides the initial structure or "chassis" for the incorporation of other more comprehensive and meaningful measures of quality over time.

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[3] The purpose of risk adjustment when comparing outcome rates (e.g., hospitalization rates) for two different patient samples is to statistically compensate (or adjust) for risk factor differences in the two samples so that the outcome rates can be compared legitimately despite the differences in risk factors.

[4] Commonwealth Fund, *Quality Matters: Hospital Readmissions*, March 20, 2008, Volume 29. Found at: http://www.commonwealthfund.org/publications/publications_show.htm?doc_id=673140, Accessed: May 5, 2008.

The Performance Assessment Model

Overall Model and Key Components in the Analysis

The following provides a description of the key components of analysis and development of the proposed Quality Based Reimbursement project that seeks to link both reporting and payment to improvements in the quality of hospital care provided in Maryland. These components include a discussion of the data used in the development of the model, a description of the performance assessment model itself and the link to payment including the provision of both rewards and incentives. They also include a general comment on proposed plans for further development of quality measurement and QBR in future years.

Development of the Performance Model for the HSCRC's QBR should include the following steps:

1) Individual hospital submission of data on the performance on all selected QBR process measures that apply to its patient population and service mix. The IWG has identified 19 generally accepted evidence-based process measures for use in this project. These measures will be used as the basis for public reporting, incentive/reward payment, and future measure development;
2) Calculation of a performance score on each measure (for which it has a minimum number of cases) for each hospital;
3) Division of measures into clinical "domains" (e.g., AMI, HF, PN, and SIP) weighting each measure equally. The score by domain reflects the percentage of points earned out of the total possible points for which a hospital is eligible. A hospital's QBR total performance score is determined by aggregating the scores across all domains;
4) Translation of the total score into the percentage of QBR incentive/reward payments available through the use of an "exchange function," which aligns payments with desired policy goals.

The Data Used (Process Measures)

Realizing that the choice of measures needed to be rooted in a strong scientific base, as well as to minimize any new data collection by hospitals, the IWG reviewed all available measures for which data were reported by Maryland hospitals. The scientific dimension of the measures required that a quantifiable relationship exist between the standardized processes specific for each of the 19 measures and providing high quality care. Hence the measures chosen for the Alpha Phase of the QBR were all "evidence-based" and field-vetted.

As noted, the measures were further classified into four clinical domains (AMI, HF, PN and SIP) and three categories of care (effectiveness, patient-centered, and safety/cost). Just as the measures have been field-vetted, these categories also represent the most rational grouping of hospital processes that have been shown, through numerous studies, to be most amenable to improvement via feedback on better practice models and comparative analysis.

Yet, the 19 measures represent "processes of care" and not "outcomes from the care." The distinction is important since evidence-based processes are expected to be uniformly carried out across all hospitals, while outcomes of care may vary for reasons beyond the application of better practices. For example, patient's acuity of disease, timeliness of access to care, and the

availability of up-to-date Health Information Technologies may need to be considered when interpreting outcomes of care data. Since these data were not readily available, HSCRC and the IWG agreed to proceed with process measures in paving the way for inclusion of outcome measures and methodologies in the next revisions to the QBR.

Comparative analysis is crucial to changing organizational performance. The decision to initiate the QBR with process measures was also based on the ability to benefit from other national initiatives using the same data. Hence, not only will better practice models be available to Maryland hospitals, but also the opportunity to compare Maryland hospitals' baseline performance profiles with comparable institutions nationwide.

Case Volume, Reporting, and Auditing

There is currently variation across Maryland hospitals in the number of cases reported for each measure as well as in the number of measures on which they report for the heart failure, heart attack, pneumonia and surgical care domains. Factors that influence the reported volumes include:

- The volume of patients admitted that meet the denominator criteria for inclusion (i.e., patients coded with the diagnosis or procedure code for which the measure applies)[5];
- Related to the services the hospital provides, the extent to which the hospital needs to transfer certain patient groups;
- As CMS and the Joint Commission have outlined sampling criteria for each of the four clinical domains as an option for hospital data collection and submission, the extent to which the hospital samples cases for submission and reporting versus reports all cases; and,
- The types of surgical care cases for which the hospital collects and submits on the surgical quality measures.[6]

Recognizing the unique position of small hospitals, the performance assessment model, hospital scoring approach, and payment translation proposed below are designed to take into account small case volume hospital issues by both not rewarding nor penalizing the hospitals for reporting on a small number of measures when it is out of their control.

Related to the sampling issue, HSCRC has had longstanding experience with collecting comprehensive, complete data in setting hospital rates with very positive results, and therefore anticipate we will move in that same direction for the quality measures over time. This approach will be more feasible for hospitals as they transition to automated record keeping.

The current source of quality data is the CMS QIO Clinical Warehouse**.** To validate that data submitted on the quality measures is consistent with the information in the patient clinical record, CMS' approach to auditing to date entails contracting with Clinical Data and Abstraction Center (CDAC) vendors that request and review random samples of five patient charts across the four clinical topics per quarter. A hospital's data is considered to be "validated" if its overall validation (agreement) score is greater than or equal to 80%. Going forward, HSCRC and

[5] For example, if a patient with heart failure does not smoke, the smoking cessation measure would not apply to them.

[6] MHCC requires that Maryland hospitals submit data that are reported on the Hospital Performance Guide on patients undergoing hip, knee and colon procedures. Under Medicare, Prospective Payment System (PPS) hospitals are required to submit data on patients undergoing an expanded list of procedures. The majority, but not all, Maryland hospitals are currently reporting on the expanded list of procedures.

MHCC intend to collect quality measures data directly from hospitals as well as validate the accuracy of the data submitted. To this end, HSCRC has worked together with MHCC on a data vendor request for proposal and anticipate bringing on board a data vendor late in FY 2009.

Performance Assessment Model

The performance assessment model is the methodology that will be used for scoring hospital performance and computing each hospital's total performance score that eventually will be translated into either incentive or reward payments. Each hospital's score would be determined on an annual basis. The model described below combines scores on process measures across four clinical domains (AMI, HF, PN and SIP) and calculates each hospital's total score, which then (relative to other hospital performance) will determine payment.

The proposed model evaluates hospital performance on each measure based on the higher of an "Attainment Score" in the most recent measurement period, or an "Improvement Score" based on a comparison of that hospital's performance in the most recent period relative to a base period. The IWG and the HSCRC are recommending this approach to encourage the broadest range of hospitals to engage in quality improvement activities, even those hospitals that begin with lower levels of absolute performance. The proposed model blends these multiple objectives with the intent of motivating all hospitals to improve their quality of care. It should be noted that Medicare's Premier Demonstration project did not include incentive payments for improvement. Focusing exclusively on attainment appears to have concentrated the distribution of rewards on a narrow segment of providers (those who were already performing at higher performance levels even in the absence of financial incentives). Experts at CMS appear now to believe that the incorporation of both incentive and reward payments holds the best possibility for encouraging all providers to improve their care delivery procedures and quality performance.

For each measure annually (based on the previous 12 month performance of all hospitals in the State), a "Benchmark" and an "Attainment Threshold" would be determined. The Benchmark is a reference point used to define a high level of performance. The Attainment Threshold is the minimum level of performance required to receive attainment points (rewards). The Attainment Range is the scale between the Attainment Threshold and the Benchmark. Hospitals whose scores fall into this range receive reward payments. The Improvement Range is the scale between the hospital's prior year score (baseline) on a particular measure and the benchmark. This improvement will be the basis for that hospital's incentive payment.

In considering the performance of hospitals on the basis of the selected process measures, the IWG identified several measures for which all hospitals were performing at a very high level. Where hospital performance is concentrated at high values, a measure is said to have "topped off." It is important to distinguish "topped-off measures from "non-topped off" measures because the methodology should not provide a reward for very small variations in scoring. For example, it may not be appropriate to provide a greater attainment reward to a hospital that scores .983 than a hospital that scores .980. A "topped-off" measure is considered to be one where it is difficult to distinguish between the scores between the 75^{th} percentile and the 90^{th} percentile. Using this definition, a "topped-off" measure is considered to be one where the 75^{th} percentile is within 2 standard deviations of the 90^{th} percentile.

Despite this circumstance, given the relative small number of process measures being used for this analysis, the IWG and staff believed it was important to retain these topped off measures in the analysis. Special rules concerning the scoring of performance on these topped off measures, however, have been developed.

Translating a hospital's score (both topped off and not-topped off measures) into incentive and reward payments will require: 1) the development of an exchange function to translate the QBR total performance score for any given hospital into the percent of available reward/incentive payments available; and 2) identification of the magnitude of funds available (or the funds that hospitals are "at risk" for) relative to their performance and their ultimate incentive/reward payments.

The following section describes in more detail these steps - from data collection, to score development, to the link to payment in more detail.

Constructing a Hospital's Performance Score

Constructing a hospital specific performance score has four major steps:

1) Collecting hospital specific data for each of the 19 selected quality measures. This has been accomplished thus far by accessing the national quality warehouse data base through which all Maryland hospitals currently report the necessary data. In future years, the HSCRC and MHCC will be collaborating on the procurement of a vendor to obtain these and other necessary data directly from Maryland hospitals.
2) Use of current year's data to derive hospital's quality measures as a ratio of successes over opportunities (maximum of 19 quality measures per hospital). As these are process measures, risk adjustment is not considered necessary. As noted, the final recommendation calls for weighting all 19 quality measures equally.
3) Use a prior year's quality measures to determine topped off measures and calculate thresholds and benchmarks:
    - The Attainment Threshold is the score at which reward points begin to be assigned, while the Benchmark is the score for which full rewards points are assigned.
    - Measures are categorized as "topped off" or "not-topped off". The threshold for a not topped off measure is the median and the benchmark is the 95^{th} percentile. This equalizes the ability to obtain points across all not-topped off measures.
    - Topped off measures are defined as those whose 75^{th} percentile is within 2 standard errors of the 95^{th} percentile.
    - Topped off measures are scored with more lenient thresholds and benchmarks to avoid differentiating performances and assigning points based on non-significant differences.
4) Combining quality points at a hospital to determine its overall performance score:
    - The hospital's performance measure is the ratio of its earned points divided by its available points;
    - A hospital's available points will be 10 times the number of quality measures scored (i.e., having 10 opportunities or more). This number of eligible quality measures will vary by hospital;
    - To avoid assessment based on a narrow perspective, there should be a minimum number of scored measures for a hospital. Based on an analysis of stability and variation, the minimum to be employed by CMS for its VBP initiative is 5;

- Since topped off measures are less discriminating (i.e., easier to receive the full 10 points), there should be a limit to the contribution of topped off measures in overall performance scores. This is not currently a major problem in Maryland, since the percentage of topped off measures among the State's hospitals varies for the most part between 25% and 33%. A few Maryland hospitals are disadvantaged because only a small percentage of their eligible measures are from the topped off category. It may be advisable to adjust for this low representation of topped off measures. Adjusting for the low representation of topped off measures could be accomplished through:
    - Relaxing the "10 opportunity rule"; extending the time period for reporting to more than a year; or, using some formula that combines a hospital's own score on the topped off measure with the State's overall average score (give hospital the lower of its own score and the State average score).

Methodology for Translating Performance Score to Payment

Translating performance score to payment involves decisions regarding: overall funding levels and the amount of hospital revenue placed "at-risk" under the initiative; the exchange rate or function used to translate performance into payment; and a series of technical issues relating to the characteristics of the exchange rate function and potential adjustments to the analysis. The following outlines the key policy and technical issues considered by the IWG and staff in the establishment of the recommendations presented below.

Policy Issues Identified and Discussed:

1) Identifying the quality initiative's funding source, establishing the total amount at risk (the funding pool), checking whether performance varied sufficiently by hospital type to require peer groups, and determination of the desired variation in payback to the hospitals including, perhaps setting of some maximum reward and determining whether some performance groups should be identified for added incentive.
2) Based on how aggressive it wishes to be, the Commission will determine how much to withhold (e.g., .5% or 1% of the Update Factor) and the desired variation in payback among hospitals (e.g., should it establish a range from 50% to 150% payback or the smaller range of 85% to 115%).
3) Shape and parameter values for exchange function:
    - Whether low performing hospitals should be provided with added incentive to improve next year;
    - Actual variation in payback is not strictly determined by initial withhold. It will also depend on differences in performance among Maryland hospitals;
    - Commission may set a maximum payback to assure equality.

Technical Issues Identified and Discussed:

1) Specifying an exchange function to translate hospital performance score into percentage return of the original holdback. Choice in shape of exchange function along with choice of key parameter values allow hospitals' payback to align with policy decisions.
2) Need for peer groups: Examination of 2005, 2006, and 9 months of 2007 QIO data performance showing differences by type of hospital indicates no need for peer groups;
3) General shape of exchange function (e.g., concave downward function, straight line, s-shaped, etc.);
    - Concave downward function providing increased incentive for improvement for lower performing hospitals;
    - Straight line function provides same increase in return for improvement regardless of current performance level;
    - "S"-shaped curve – right portion is similar to concave downward function but left portion builds in a delay before significant payback is realized.
4) Key parameters in exchange function construction:
    - Value on horizontal axis where exchange function begins to rise (reflecting start of payback);
    - Value along horizontal axis where exchange function reaches complete payback of original withhold;
    - Whether (and where) the exchange function eventually flattens out reflecting a maximum payback percentage.

Figure 1 below illustrates a theoretical concave downward exchange function, showing how differences in performance scores lead to differences in payback, and how key parameters reflect specific policy decisions.

Figure 1: Hypothetical Exchange Function illustrating effect of key parameters

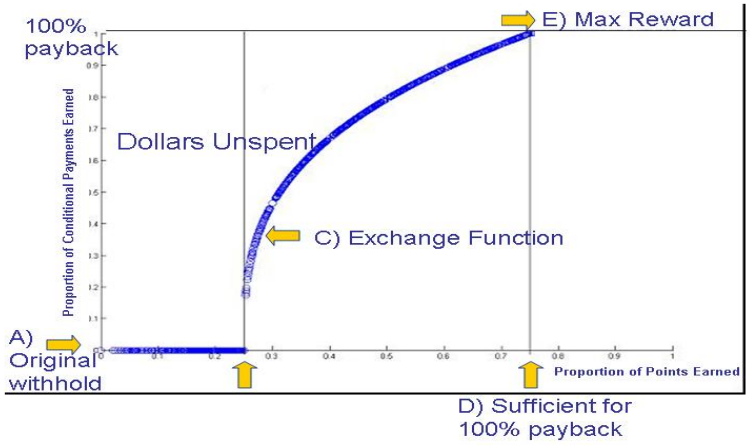
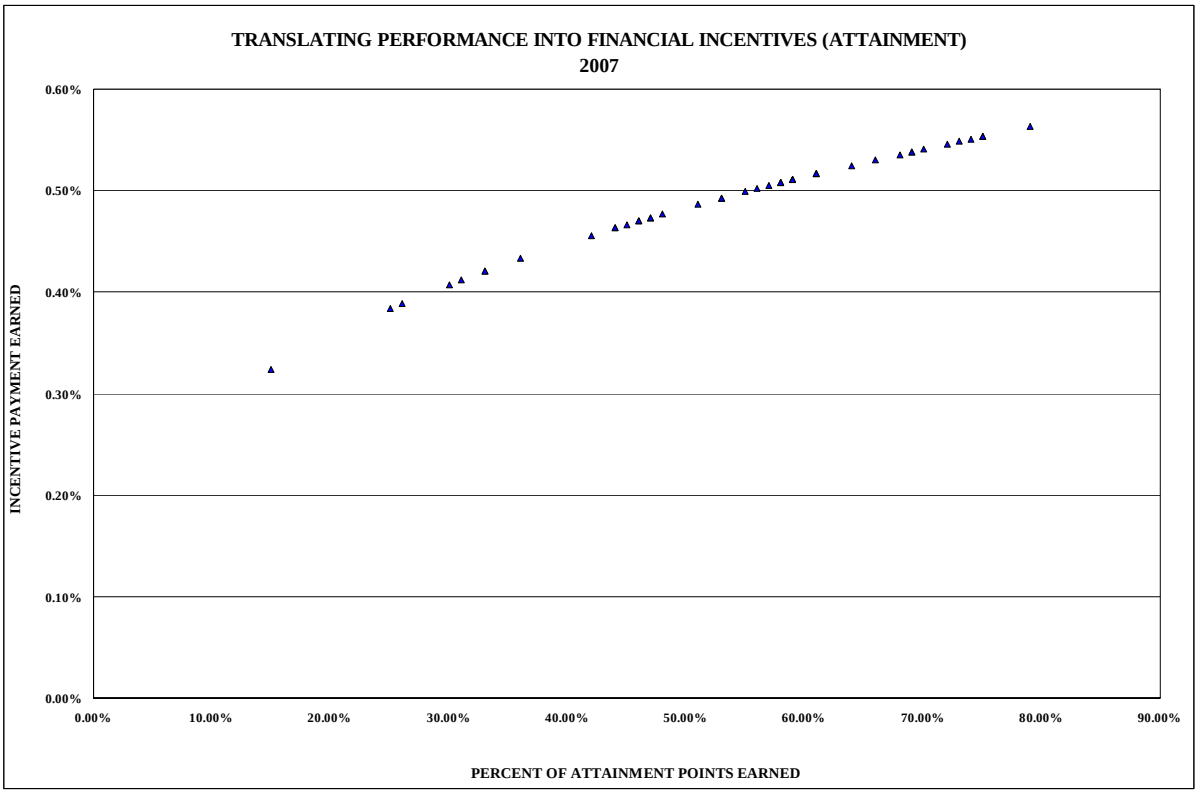


Figure 2 below illustrates how actual Maryland hospital performance scores map to paybacks based on a possible exchange function choice (concave downward). Key findings from the figure include: 1) despite a potential payback range between 0.0% and 0.7%, all but two Maryland hospitals would receive between .40% and .60% return (based on an original withhold of .5%); 2) for the current set of quality measures (i.e., the 19 process measures), overall performance among Maryland hospitals did not vary greatly. Hospitals' performance varied sufficiently by measure to result in all hospitals ending up with similar overall scores; and, 3) greater variation could be achieved, if desired, by increasing the withhold (e.g., using 1.0% instead of .5%) or shifting the exchange function right, so that more hospitals map to the steeper part of the exchange curve.

Figure 2: Translating Performance to Financial Incentives – Maryland QIO (2006-2007)



Samples of Scoring and Translation to Payment

Figures 3 through 6 provide hypothetical examples, based on the recommendations of this report, of how the performance scores would be calculated and how these scores would be translated to payment. If the Commission were to begin adjusting rates in FY 2010 based on performance, to compare two full years of data the Commission could use CY 2007 data to determine, for each measure, the 50th percentile of scores to identify the threshold for attainment scores and the 95th percentile for the top-end benchmark. This method would be used for non-topped off scores only. Those measures that are considered topped-off would use a threshold of 65th percentile and a benchmark of the 90th percentile.

These thresholds and benchmarks would be used in scoring for attainment using CY 2008 data

and in scoring for improvement based on comparisons of CY 2007 and CY 2008 data. If the threshold and benchmark parameters for AMI-3 (ACE Inhibitor or ARB for left ventricular systolic dysfunction), for example, were .87 and 1.00 respectively, this would mean that a hospital may achieve reward points for attainment when a hospital has complied with the evidence-based practice on at least 87% of their appropriate cases. The proposed methodology would assign points between 1 and 10 equally between 87% and 100% compliance. For improvement scores, the Commission would calculate compliance for each measure in both the base and the performance years. If the score in the performance year (the second year) is higher than the base year (the first year), the difference is calculated and points are assigned from 1 to 10 based on the ratio of the improvement difference compared to the total difference between base year score and benchmark. The greater of attainment points and improvement points is the reward to that hospital for that measure. The same calculations are conducted for all of the 19 measures and the sum of the points earned per measure (the maximum of attainment or improvement points) yield a hospital's total composite score. Since there are 19 measures, the maximum amount of points achievable is 190. However, most hospital report less than 19 measures so the potential is 10 times the number of measures reported.

Below is a sample of how an AMI-3 score could be derived for 3 hospitals.
If, for example, 100 AMI patients during the course of the year, each patient would be treated and data would be recorded relating to whether the evidence-based procedures were provide or whether the patient falls into an exclusion category. If the patient is excluded for any or all of the AMI measures, that case would not be included in the data received for this project. Therefore, a hospital may only be reporting on 400 of the possible 600 measures (6 AMI measures x 100 patients) for the 100 patients, for example.

Figure 3: How Points are Determined

AMI-3: Threshold - .87 Benchmark – 1.00

Hospital	Year 1 Performance	Year 2 Performance	Attainment Points	Improvement Points	Greater of Attainment and Improvement
A	.788	.935	4	6	6
B	.897	1.00	10	10	10
C	*	*	*	*	*

* Did not report at least 10 cases

If a hospital did not report any cases for which AMI-3 applied they would not get a score on this measure which would change the denominator of total points that are achievable. A total AMI score for these hospitals could be determined follows:

Figure 4: How a Score for Each Measure is Determined

Hospital	AMI-1 Greater of Attn. and Improv.	AMI-2 Greater of Attn. and Improv.	AMI-3 Greater of Attn. and Improv.	AMI-4 Greater of Attn. and Improv.	AMI-5 Greater of Attn. and Improv.	AMI-6 Greater of Attn. and Improv.	Total AMI Points
A	10	10	6	10	10	0	46
B	10	10	10	10	10	0	50
C	10	*	*	*	*	7	17

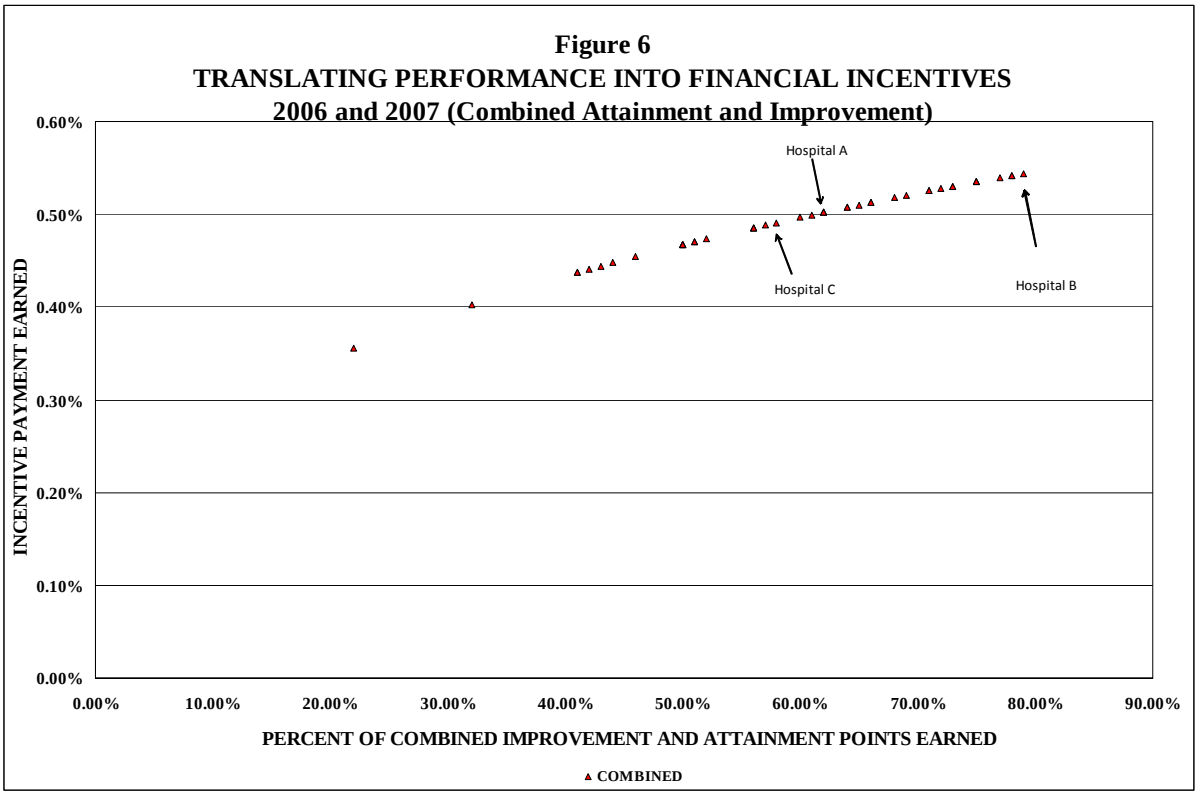
* Did not report at least 10 cases

The total points for each clinical domain are added to determine the total amount of points eligible. The total amount of points is divided by the total number of points eligible. Since the maximum value of each measure is 10 points, the total number of points eligible is the number of measures times 10.

Figure 5: How to Final Score is Derived

Hospital	Total AMI Points	Total PN Points	Total CHF Points	Total SIP Points	Total pts for all Domains	Total # of Measures reported	Total Points/ Measures
A	46	25	19	21	111	18 (180 pts)	.62
B	50	36	35	21	142	18 (180 pts)	.79
C	17	26	16	10	69	12 (120 pts)	.58

Figure 6 below translates the score calculated above into the percentage of the withheld update factor that will be returned to hospitals based on performance. Using .5% of the update factor as the amount retained to reward performance on the selected measures, the figure below would indicate that Maryland hospitals would receive back between .35% and .55% for scores on performance between 22% and 79%.

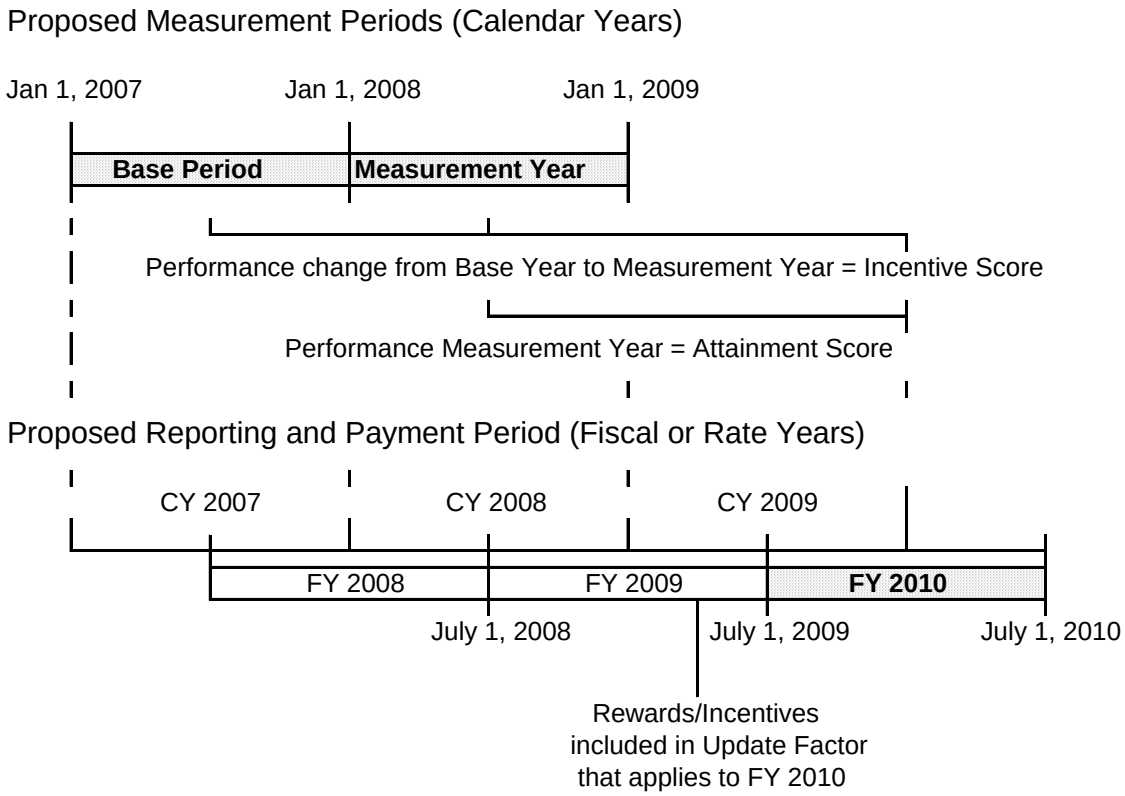


Timing of the QBR Initiative

The efforts of the IWG were structured to meet a targeted deadline of July 1, 2008 (FY 2009) as formal initiation of the HSCRC's QBR project. Hospitals in Maryland and nationally, however, have been submitting data on selected process measures to the national data warehouse since 2005. These historical data are the data used for the simulations and analysis presented above. Since a primary objective of the QBR initiative as outlined by the HSCRC's steering committee, was the establishment of both reward (attainment) and incentive (improvement) payments, use of data from a period prior to FY 2009 will be required. It is also desirable to have full 12 month periods of data available from hospitals.

To enable the use of both reward and incentive payments performance on the selected process measures for CY 2008 (the "Measurement Period") will be used to calculate rewards for attainment and performance on improvement will be based on changes in performance from the "Base Period" to the "Performance Year." The current proposal is to have both the Base year and the Measurement year cover a full 12 month period. Hospitals would realize payments related to the higher of their attainment or improvement scores beginning in FY 2010 (Rate Year beginning July 1, 2009). Figure 3 presents the proposed timing of the project.

Figure 7: Proposed Timing



Reporting on Hospital Performance, Transparency and Confidentiality

Public Reporting

In addition to providing financial incentives for hospitals, the IWG and the staff contemplate that the HSCRC will wish to publicly report on the performance of Maryland hospitals on the selected performance measures. Reporting on quality related performance has and will continue to be an important part of any initiative designed to improve quality of care.

At this stage it is contemplated that two reporting mechanisms will be adopted: 1) Reporting back to the hospitals: The attainment, improvement, and composite scores will be reported back to the each hospital. Reference rates will also be provided (e.g., Maryland median scores, national statistics for each of the measures; and, 2) Public reporting: A press release by HSCRC will likely initiate this phase, after the hospitals have received their data and the staff has solicited comments. Following the press release, it is possible that the hospitals' relative performance scores and profiles will be incorporated with other public reporting/accountability activities such as MHCC's public reporting sites.

Thus far, the IWG has focused its attention primarily on methodology and payment issues. Further deliberations and work must be devoted to the issue of public reporting, and going forward we expect to continue to work closely with MHCC in light of their substantial experience in public reporting of quality performance data and information. Work Group members stressed the desire to have publically reported scores be accompanied with volume levels for each measure to provide a context for consideration by consumers and purchasers.

Transparency and Confidentiality

As noted, one primary responsibility of the HSCRC is to maintain public accountability and transparency of the Rate Setting System. Accordingly, virtually all the data collected by the Commission are publicly available. Data on quality performance present some unique challenges however. These data are collected at the individual patient level and thus patient confidentiality is a significant concern. The HSCRC and IWG have strictly adhered to the confidentiality requirements established by the Centers for Medicare and Medicaid Services (CMS). The Commission will continue to rigorously protect the confidentiality of patient level data. However, this priority must also be balanced by the HSCRC's desire to provide the necessary level of transparency on hospital performance and operation. These issues will continue to be discussed with in the IWG and a newly created Evaluation Work Group (EWG) in hopes of developing mechanisms to assure both confidentiality and transparency as this project moves forward. The functions of the EWG are shown in Appendix E.

Health Information Technology

The HSCRC Steering Committee that reported to the Commission in 2004 recommended that infrastructure support be considered to ensure that Maryland hospitals have the appropriate technologies to provide health care services in an efficient and effective manner. The Commission funded a study to establish a typology of health information technology, understand the efficacy of such technologies, and determine the extent to which Maryland hospitals are utilizing certain technologies. The Commission should continue to develop this study and determine how best to encourage the adoption and use of the most effective technologies.

Health information technology also plays a role in the ability of hospitals to report certain data in

a timely manner. For example, moving away from sampling for certain performance indicators to complete reporting may be facilitated by the availability of certain technologies. The EWG will examine the feasibility of removing sampling in the future. Certain members of the Work Group stressed the need for HIT development and the concept of infrastructure support to continue to be considered as the Initiative moves forward.

Assessment of Performance in Future Years

Outcomes of Care Measurement

Outcomes of care and other appropriate indicators will be explored next thru the Evaluation Work Group (EWG). The goal of this parallel activity is to build upon the experience of using process measures, and design a true continuum of measurement that will increase the rationale for linking performance to payment. Outcome measures will need a new set of focus approaches, such as patient level data which are acuity adjusted, as well as more epidemiological research to establish associations between processes and outcomes.

Final Recommendations

The following final recommendations apply to the first year of implementation (CY 2007 and CY 2008 data collection periods and FY 2010 payment period).

A. Data Measures

1) Utilize current set of 19 process measure indicators (see Appendix D for a list of the 19 process measures) covering four domains (AMI, HF, PN, and SIP);
2) Include topped off measure indicators in the analysis;
3) Adjust thresholds (make more lenient) for topped off measures (0.65 for threshold/0.90 for boundary);
4) Establish a mechanism to allow credit to hospitals who do not report topped off measures (or do not meet the 10 patient minimum) by giving that hospital the lower of its own score (for those reporting on less than 10 patients) or the State average score on that measure;
5) Provide equal scoring weight to all process measure indicators and provide equal scoring weight for each domain;
6) Incorporate new definitions of existing process measures as they become available (these new definitions will reflect the current standard of practice); and,
7) Establish one index for each process measure for purposes of scoring but it is anticipated that reporting will be on performance for each domain separately.

B. Performance Assessment Model and Constructing a Hospital Performance Score

1) Utilize the Opportunity Model for scoring purposes. Under an Opportunity Model approach, a hospital's available points will be 10 times the number of quality measures scored (i.e., having 10 opportunities or more). Its performance measure is the ratio of its earned points divided by its available points;
2) Do not utilize peer grouping for the Performance Model at this time but continue to

consider this adjustment in future QBR performance models;

3) Establish the scale for calibrating performance based on the prior year's experience so that thresholds and bench marks are known in advance;

4) Establish the threshold for Attainment at the 50th percentile; Benchmark at 95th percentile; and,

5) Count (for purposes of scoring) the "higher of" either Attainment or Improvement points on each process measure for each hospital – on a 10 point scale for each measure.

C. Funding Parameters and Translating Scores into Payment

1) Apply rewards and incentive payments in FY 2010 as part of the FY 2010 Update Factor for individual hospitals;

2) Maintain overall system revenue neutrality for FY 2010 (i.e., rewards and incentive payments will not add to overall system payment levels);

3) Designate the amount of funding "at-risk" based on further deliberations of HSCRC staff and the hospital and payer industries and the IWG. It is anticipated that approximately 0.5% (or approximately $60 million) of system revenue will be applied to reward and incentive payments in the Rate Year 2010;

4) Scale reward and incentive payments on a continuous basis (represented Figure 2);

5) Hospitals reporting on less than 5 measures should not receive scaled reward or incentive payments and should receive the regular update factor;

6) Utilize an exchange rate function (cubed-root functional form) for translating scoring into rewards/incentives without high or low restrictions on eligibility or rewards/incentives achieved; and,

7) Establish a rule to adjust for "down and up" year to year performance that might otherwise result in higher payment for a given hospital relative to a hospital that did not experience such variation as follows: For any individual hospital on any individual process measure, the base-line for improvement will be that hospital's best previous score on that measure.

D. Data Related Issues and Future Activity

1) Utilize calendar year 2007 as the Base Period and calendar year 2008 as the Measurement Period;

2) Establish a mechanism where the Commission can obtain necessary data directly from hospitals through its own vendor arrangement. Going forward, the funding aspects will be discussed and determined over the course of the spring of 2008. In addition to the work of the HSCRC and the IWG, the Maryland Health Care Commission has worked with HSCRC staff in implementing a contract with a data vendor to collect quality data for both MHCC's quality performance guide and the HSCRC quality-based reimbursement initiative beginning in FY 2009;

3) Move over time toward use of complete data and away from sampling;

4) Assure public accountability by providing accessibility to data given necessary restrictions on confidentiality;

5) Carefully plan and manage the public release of quality-related scoring information;

6) Establish a system for developing new measures, retiring old measures, and recommending other adjustments to the data and scoring (Evaluation Work Group); and,

7) Investigate the feasibility in future years of incorporating additional funding ("new money") into the system if Maryland as a state can achieve certain benchmarks vs. the performance of hospitals nationally on the selected performance measures.

Appendix A- Key National Public Reporting and Pay for Performance Efforts to Improve Quality

- The **National Committee for Quality Assurance (NCQA)** has issued sets of performance measures widely used by health plans and, more recently, for physicians.
- The **National Quality Forum (NQF)** convenes consumer, purchaser, provider and quality stakeholders to reach consensus on and endorse national performance measures and practices for various care settings and clinical conditions.
- The **Agency for Healthcare Research and Quality (AHRQ)** has developed and supported use of evidence-based performance indicators for hospitals and other providers.
- The **Leapfrog Group**, representing many large private and public health purchasers that provide benefits to about 34 million Americans, has tied reimbursement to a series of performance indicators including the use of a computer-based physician order entry (CPOE) system, the referral patterns to hospitals with high performance scores for complex medical procedures, and the level of ICU staffing
- The **Joint Commission** incorporates quality elements in its hospital accreditation process, requires hospital reporting on four core measure sets for accreditation, and publishes hospital performance on core measures online on *Quality Check.*
- The American Hospital Association, Federation of American Hospitals, and Association of American Medical Colleges have been collaborating with NQF, CMS, AHRQ, the Joint Commission, and other provider, purchaser, consumer and quality stakeholders since 2002 in the **Hospital Quality Alliance; Medicare** has required reporting of a set of performance measures in order for hospitals to achieve the full payment updates over the past few years, and hospital performance data are published on the *Hospital Compare* website.
- **Medicare's Hospital Quality Incentive Demonstration Project** available to hospitals participating in *Premier's Perspective Online* quality measurement system (in Federal Fiscal Years 2004, 2005 and 2006). Premier is an alliance of 200 hospitals and healthcare systems nationally and provides various resources to approximately 1,500 hospitals, including the bulk purchasing of equipment and supplies. *Premier's Perspective Online* is a database in which cost and quality information is collected and stored, and from which results can be comparably assessed. This project showed that pay for performance initiatives can work to encourage evidence based practices. The next phase, the Value-based Purchasing initiative, will be designed to confirm whether the similar results can be replicated nationally.
- The Deficit Reduction Act specified that the Secretary of HHS shall develop a plan to implement a **Medicare Value Based Purchasing** program for payments (i.e., pay-for-performance or P4P program) under the Medicare program for subsection (d) hospitals beginning with FY 2009. Congress specified that the plan should include consideration of the following issues:
    - The on-going process for developing, selecting, and modifying measures of quality and efficiency in hospital inpatient settings;
    - The reporting, collection, and validation of quality data;
    - The structure of value-based payment adjustments, including determining thresholds or improvements in quality that would substantiate a payment adjustment, the size of such payments, and the sources of funding for the value based payments; and,
    - Disclosure of information on hospital performance.

Appendix B- QBR Initiative Development Chronology

- *Spring of 2003*-- Commission charged staff with examining pay-for-performance concepts and developing recommendations on how such a system might operate under Maryland's unique hospital rate setting system.
- *Spring2003-Fall 2003*-- Staff review of relevant literature on health care quality and patient safety.
- *Summer2003-- Fall 2003*-- Staff met with representatives of key organizations engaged in quality improvement, including the Centers for Medicare and Medicaid Services (CMS), Agency for Healthcare Research and Quality (AHRQ), Maryland Health Care Commission (MHCC), National Committee for Quality Assurance (NCQA), Maryland Hospital Association (MHA), the Delmarva Foundation, Johns Hopkins School of Public Health, and the University of Maryland School of Pharmacy.
- *October 2003*-- Commission established the HSCRC Quality Initiative Steering Committee to identify issues and lay the groundwork for a P4P system for Maryland hospitals.
- *October 2003-February 2004*-- Steering Committee held three meetings and conducted conference calls to discuss mission, vision and goals statements for the Initiative; how major issues should be addressed; and how pay-for-performance could be administered in the State.
- *February 2004 HSCRC Meeting*-- Commission adopted the recommendations of the Steering Committee to implement a Quality Initiative, including a mission statement, goals and key components.
- *February 2004- December 2004*—Consultant procured to review the findings and recommendations of the Steering Committee, to assess the feasibility and desirability of each recommendation.
- *January 2005 HSCRC Meeting*-- Consultant's report and recommendations reported to the Commission and released for public comment.
- *February 2005 HSCRC Meeting*-- Commission concurred with the overall operational plan described in the consultant's report deciding to refer to its program going forward as a Quality-Based Reimbursement Initiative rather than a pay-for-performance program to emphasize the focus on improving health care quality.
- *April-October 2005*—Per Steering Committee recommendation adopted by the Commission, Initiation Work Group (IWG) was appointed and met monthly, accomplishing the following:
  - Reviewed and endorsed the work and recommendations of the Steering Committee and the aforementioned consultant's feasibility report.
  - Reviewed findings regarding other national and regional pay-for-performance programs and considered a wide range of clinical measures developed or endorsed by the various key entities (see Appendix A).
- *October 2005*--Commission procured a consultant to assist the Commission and the IWG to develop a design and methodology to initiate the Quality-Based Reimbursement Program.
- *Winter 2005-2006*-- IWG considered various design issues, agreed upon Alpha Pilot design, and selected an initial set of measures.
- *Fall 2006*—IWG and Commission commenced with Alpha Pilot kicking off with a hospital forum to introduce the pilot to hospital representatives, and analyzed the data refining the scoring, weighting, and composite measure methodology.
- *2007-Spring 2008*—During this period thus far:
  - IWG reviewed various data modeling methodologies using data accessed through a data use agreement with the State's Quality Improvement Organization, the Delmarva Foundation.
  - Beta phase of the projects has modeled data from all Maryland hospitals for Calendar Years 2005, 2006, and 2007.

- IWG has considered both the opportunity model in which each process measure stands on its own (after applying appropriate exclusions) as well as the appropriateness model which considers whether all appropriate care was provided for each domain.
- IWG has considered methods to recognize the impact of topped-off measures and whether indicators should be weighted or grouped by peers.
- Commission has also considered scoring based on both attainment and improvement.
- Created an IWG subcommittee to focus on financial and payment issues and to help assure an additional level of transparency for all interested parties.

Appendix C- QBR Initiative Mission, Goals and Key Components

The mission of the HSCRC Quality Initiative is to help create a health care environment where Maryland hospitals provide high quality patient care in an efficient manner

The goals of the HSCRC Quality Initiative are to:

- Work with Maryland hospitals to enhance the quality of patient care by providing financial support and rewards/incentives consistent with evidence-based health services research;
- Select and maintain a set of measure that appropriately reflect the delivery of quality health care services provided at Maryland hospitals;
- Collect data that will support the generation of accurate and reliable quality measures;
- Better understand the relationship between quality and cost; and
- Become a model for enhancing health care quality in the hospital setting while remaining consistent with broader quality initiatives.

In accomplishing these goals, the Commission has indicated that its Quality Initiative should include the following components:

- Funding for rewards for hospitals performing the best, incentives for hospitals that improve the most; and temporary infrastructure support for hospitals that do not have the means to perform well.
- Creation of an Initiation Work Group to make recommendations on:
  - An appropriate set of quality measures;
  - The appropriateness of an initial pilot project;
  - Data and reporting needs for recommended measures;
  - A composite scoring system that appropriately weighs the measures and addresses outlier and sample size issues;
  - Which quality measures shall be subject to financial rewards/incentives;
  - A reward and incentive system for Maryland hospitals;
  - Eligibility requirements for financial infrastructure support, subject to Commission approval.
- The creation of an Evaluation Work Group to:
  - Examine quality research, measures, and outcomes nationally and make recommendations to the Commission/Staff on changes and additions;
  - Continue to review data needs and make recommendations for future changes;
  - Make recommendations on the most appropriate way to audit quality data internally and externally;
  - Evaluate whether the HSCRC Quality Initiative is meeting its goals in general, and whether the measures are indicative of quality outcomes; and
  - Investigate the long-term feasibility of an interoperable data system that would allow for the horizontal and vertical assessment of patient outcomes across all modes of care.
- A data collection policy that stresses accomplishing the goals of the Initiative but, when practicable, limits the additional collection and reporting burden on hospitals;
- The implementation of a composite system of scoring performance on quality measures; and
- Additional staffing and contractual support to the HSCRC in developing and administering the Initiative.

Appendix D – Process Measures Selected

Clinical Measures

1. **AMI -1 Aspirin at arrival**
2. **AMI- 2 Aspirin prescribed at discharge *****TOPPED OFF *******
3. **AMI- 3 Angiotensin converting enzyme inhibitors (ACEI) or angiotensin receptor blockers (ARB) for left ventricular systolic dysfunction (LVSD)**
4. **AMI- 4 Adult smoking cessation advice/counseling ****** TOPPED OFF *****
5. **AMI- 5 Beta blocker prescribed at discharge ******* TOPPED OFF *******
6. **AMI– 6 Beta blocker at arrival**
7. **PN -2 Pneumococcal vaccination**
8. **PN- 3a Blood cultures performed within 24 hours prior to or 24 hours after hospital arrival for patients who were transferred or admitted to the ICU within 24 hours of hospital arrival**
9. **PN -3b Blood culture before first antibiotic – Pneumonia (Questions remain on this measure.)**
10. **PN- 4 Adult smoking cessation advice/counseling ****** TOPPED OFF *****
11. **PN- 5b Pneumonia patients who receive their first dose of antibiotics within 4 of hours after arrival in the hospital**
12. **PN- 7 Influenza vaccination**
13. **HF- 1 Discharge instructions**
14. **HF- 2 Left ventricular systolic function (LVSF) assessment**
15. **HF- 3 ACEI or ARB for LVSD**
16. **HF- 4 Adult smoking cessation advice/counseling ****** TOPPED OFF *****
17. **SIP- 1 Prophylactic antibiotic received within one hour prior to surgical incision (by surgery type for 8 procedures.)**
18. **SIP- 2 Prophylactic antibiotic selection for surgical patients (by surgery type for 8 procedures.)**
19. **SIP -3 Prophylactic antibiotics discontinued within 24 hours after surgery end time (48 hours for CABG) (by surgery type for 8 procedures.**

Appendix E – Functions of Evaluation Work Group

Introduction

In response to the concerns regarding quality in health care broadly voiced over the last several years, in 2003 the Maryland Health Services Cost Review Commission began working with key stakeholders to design and implement a statewide hospital Quality-based Reimbursement (QBR) Initiative that begins to align payment with better quality and outcomes. Since Maryland hospitals are not reimbursed like Prospective Payment System (PPS) hospitals and would not be subject to the incentives recently proposed under Medicare's value-based purchasing program to be implemented nationally, it is incumbent on the HSCRC to ensure that Maryland hospitals incur the appropriate incentives to provide the highest quality of care appropriate.

Establishing the Evaluation Work Group

In February 2004 the HSCRC adopted the mission and goals statements and key components for the QBR Initiative that are fully stated in Appendix A. Among the key components is the establishment of an Evaluation Work Group (EWG) to conduct periodic program assessments to determine if the Initiative is meeting its goals, and recommend ways to continuously update and improve the HSCRC Quality Initiative. Specifically, the EWG will:

- examine quality research, measures and outcomes nationally and make recommendations to the Commission/Staff on changes and additions;
- continue to review data needs and make recommendations for future changes;
- make recommendations on the most appropriate way to audit quality data internally and externally;
- evaluate whether the HSCRC Quality Initiative is meeting its goals in general and whether the measures are indicative of quality outcomes; and
- investigate the long-term feasibility of an interoperable data system that would allow for the horizontal and vertical assessment of patient outcomes across all modes of care.

As the Initiation Work Group for the QBR Initiative is completing its work through the Spring of 2008, HSCRC is seeking input on recommendations for EWG participants with the appropriate background and who have the willingness and time to serve on the Work Group.