

STATE OF MARYLAND
DEPARTMENT OF HEALTH AND MENTAL HYGIENE

Frederick W. Puddester
Chairman

Kevin J. Sexton
Vice Chairman

Joseph R. Antos, Ph.D.

George H. Bone, M.D.

C. James Lowthers

Herbert S. Wong, Ph.D.



Robert Murray
Executive Director

Stephen Ports
Principal Deputy Director
Policy & Operations

Gerard J. Schmith
Deputy Director
Hospital Rate Setting

HEALTH SERVICES COST REVIEW COMMISSION

4160 PATTERSON AVENUE, BALTIMORE, MARYLAND 21215

Phone: 410-764-2605 · Fax: 410-358-6217

Toll Free: 1-888-287-3229

www.hsccr.state.md.us

473RD MEETING OF THE HEALTH SERVICES COST REVIEW COMMISSION

December 8, 2010

EXECUTIVE SESSION

9:00 a.m.

1. Dimensions Update

PUBLIC SESSION

9:30 a.m.

- 1. Review of the Public Minutes of November 3, 2010**
- 2. Executive Director's Report**
- 3. Docket Status – Cases Closed**
 - 2090N – Memorial Hospital at Easton
 - 2095A – John Hopkins Health System
- 4. Docket Status – Cases Open**
 - 2096N – Maryland General Hospital
 - 2097N – Laurel Regional Medical Center
- 5. Draft Recommendation on Potentially Preventable Readmissions Methodology**
- 6. Draft Approval and Evaluation Template for Admission-Readmission Revenue (ARR) Arrangements**
- 7. Update on Status of a State-only Physician Loan Assistance Repayment Program**
- 8. Legal Report**
- 9. Hearing and Meeting Schedule**

H.S.C.R.C's CURRENT LEGAL DOCKET STATUS (OPEN)

as of October 25, 2010

A: PENDING LEGAL ACTION : NONE
B: AWAITING FURTHER COMMISSION ACTION: NONE
C: CURRENT CASES:

Docket Number	Hospital Name	Date Docketed	Decision Required by:	Rate Order		Analyst's Initials	File Status
				Must be Issued by:	Purpose		
2096N	Maryland General Hospital	11/22/2010	12/22/2010	4/21/2011	HYP	CO	OPEN
2097N	Laurel Regional Medical Center	11/23/2010	12/23/2010	4/22/2010	HYP	CO	OPEN

PROCEEDINGS REQUIRING COMMISSION ACTION - NOT ON OPEN DOCKET

None

STATE OF MARYLAND
DEPARTMENT OF HEALTH AND MENTAL HYGIENE

Frederick W. Puddester
Chairman

Kevin J. Sexton
Vice Chairman

Joseph R. Antos, Ph.D.

George H. Bone, M.D.

C. James Lowthers

Herbert S. Wong, Ph.D.



Robert Murray
Executive Director

Stephen Ports
Principal Deputy Director
Policy & Operations

Gerard J. Schmith
Deputy Director
Hospital Rate Setting

HEALTH SERVICES COST REVIEW COMMISSION

4160 PATTERSON AVENUE, BALTIMORE, MARYLAND 21215

Phone: 410-764-2605 · Fax: 410-358-6217

Toll Free: 1-888-287-3229

www.hscrc.state.md.us

To: HSCRC Commissioners

From: Dianne Feeney

Re: Modifications to the Maryland Hospital Preventable Readmissions (MHPR) Draft Recommendations

Date: December 1, 2010

This is to advise the Commissioners of the most recent changes to the MHPR Draft Recommendations document. As staff has continued to work with the industry to address the technical data issues, it has become apparent that we are not able to implement the MHPR initiative as of January 1, 2011. Therefore, we have made a modification to the section entitled "Timing Considerations Related to Base and Performance Measurement Periods" on page 16 of the document. In the 10/27/10 version of the document, the text indicated staff was recommending initial implementation of the initiative as of January 1, 2011. The revised text indicates we are recommending implementation of the initiative as of March 1, 2011, consistent with draft recommendation #8 on page 18 of the document regarding the timing of the initial full fiscal year of the initiative, and with the approved case mix lag recommendation approved in June of 2010.

**Draft Staff Recommendation on Rate Methods and Financial Incentives
relating to Reducing Maryland Hospital Preventable Readmissions
(MHPRs)**

Health Services Cost Review Commission

December 1, 2010 Revised

This document represents a revised draft recommendation to be presented to the Commission on December 8, 2010.

1.0 - Background

Inpatient hospitalizations are one of the most costly categories of health care costs in the United States accounting for between 20-25% percent of total health care expenditures.¹ The Institute of Medicine has estimated that approximately 3% of US hospitalizations result in adverse events, and almost 100,000 patients die annually due to medical errors.² Reducing rates of hospital readmissions has, thus, attracted considerable attention from policy-makers as a way of improving quality and reducing costs.

Until recently, there has been limited information on the frequency and pattern of hospital readmissions and little ability to appropriately link hospital performance to payment in a responsible and meaningful way. Also, standard prospective payment systems, such as Medicare's Inpatient Prospective Payment System (IPPS) or Maryland's Charge per Case system (CPC) fail to provide incentives for hospitals to appropriately control the frequency of readmissions. Although the HSCRC incorporated a volume-related payment adjustment in 2008, there are few financial incentives for hospitals to invest in the necessary infrastructure to reduce unnecessary readmissions by reducing medical errors during the inpatient stay (that may lead to a repeat admission) or more actively cooperate with other providers to improve coordination of care post discharge.

Cost Implications of Readmissions and Wide Variation of Readmission Performance

In the Medicare program, inpatient care accounts for 37 percent of spending,³ and readmissions contribute significantly to that cost: 18 percent of all Medicare patients discharged from the hospital have a readmission within 30 days of discharge, accounting for \$15 billion in spending.⁴

In Maryland, the rate of readmissions is based on analysis of 2007 readmission data using the Potentially Preventable Readmissions (PPR) methodology:

- The top performing hospitals had risk/severity adjusted 15-day rates of readmission just below 4%
- The bottom performing hospitals had risk/severity adjusted 15-day rates of readmission just above 8%
- The 15-day readmission rate overall was 6.74%
- The 30-day readmission rate overall was 9.81%
- For readmissions in 15 days, there were \$430.4 million (5.3%) estimated associated charges
- For readmissions in 30 days, there were \$656.9 million (8.0%) estimated associated charges

¹ Catlin, A. et al. "National Health Spending in 2006: A Year of Change for Prescription Drugs," *Health Affairs*, January/February 2008, Vol. 27, No. 1, pp. 14-29.

² To Err is Human, The Institute of Medicine, November, 1999.

³ Medicare Payment Advisory Commission. 2006. *Healthcare Spending and the Medicare Program: A Data Book*. Washington DC: Medicare Payment Advisory Commission, p.9.

⁴ Medicare Payment Advisory Commission. 2007. *Report to the Congress: Promoting Greater Efficiency in Medicare*. Washington, DC: Medicare Payment Advisory Commission, p. 103.

According to a recent national study on readmissions of Medicare patients, Maryland appeared to have the second highest readmission rate (22%) of any jurisdiction in the U.S., with the District of Columbia at 23.2% (see **Appendix I** for a copy of this article and analysis).⁵

Factors Contributing to Unnecessary Readmissions

Multiple factors contribute to the high level of hospital readmissions in the U.S. generally and in Maryland in particular. They may result from poor quality care or from poor transitions between different providers and care settings. Such readmissions may occur if patients are discharged from hospitals or other health care settings prematurely; if they are discharged to inappropriate settings; or if they do not receive adequate information or resources to ensure a continued progression of services. System factors, such as poorly coordinated care and incomplete communication and information exchange between inpatient and community-based providers, may also lead to unplanned readmissions.

Hospital readmissions may also adversely impact payer and provider costs and patient morale. Some hypothesized in the 1980s that Medicare's implementation of IPPS would encourage physicians to discharge patients "sicker and quicker." That did not turn out to be a significant problem for the quality of inpatient care; yet, patients were discharged earlier, which may theoretically increase the risk of readmissions, resulting in greater costs to payers. Moreover, preliminary analysis suggests that the majority of readmissions are for medical services rather than surgical procedures, suggesting that hospital readmissions may not be profitable to hospitals.⁶

Reducing readmissions, then, represents a unique opportunity for policymakers, payers, and providers to reduce health care costs while increasing the quality of patient care. Identifying best practices and policy levers to reduce avoidable readmissions would likely improve quality, reduce unnecessary health care utilization and costs, promote patient-centered care, and increase value in the health care system. Moreover, as some individuals are at greater risk of readmissions as a result of individual characteristics, care coordination efforts that reduce hospital readmissions may help eliminate disparities in health care.

Clearly, there is an urgent need at both a state and national level to develop a set of payment reforms that can provide strong financial incentives for hospitals to reduce their rates of Potentially Preventable Readmissions (PPRs).⁷ The increasing focus in linking payment and quality (i.e., the

⁵ Jenks SF, Williams MV, Coleman EA, Rehospitalizations among Patients in the Medicare Fee-for-Service Program. *New England Journal of Medicine*. 360:1418-28, April 2, 2009.

⁶ Interviews with Stephen F. Jencks, M.D., M.P.H., Mark V. Williams, M.D. and Eric A. Coleman, M.D., M.P.H. May 2005.

⁷ Potentially Preventable Readmissions (PPRs) represent a categorical model developed by 3M Health Information Systems which categorizes and identifies return hospitalizations that may have resulted from the process of care and treatment or lack of post admission follow-up rather than unrelated events that occur post discharge.

overall value of the care provided) is motivated by the dramatic escalation in health care costs and the past inability of policymakers to measure and compare health outcomes.

If readmission rates are to serve as an overall measure of both quality and cost, it is necessary to apply an analytic approach that focuses on those readmissions that could have potentially been prevented. As the nation's only "All-Payer" rate setting system, and with its current use of the highly sophisticated All-Payer-Refined Diagnostic Related Grouping risk-adjustment and case mix classification system (APR-DRGs), the Maryland hospital payment system is uniquely positioned to make use of these readmission measurement systems and link relative hospital performance to financial incentives in a meaningful and productive way.

The following recommendation is intended to describe an approach for incorporating such a system of incentives into the Maryland hospital "All-Payer" payment system beginning in FY 2011.

2.0 - Using Payment Incentives to Reduce Unnecessary Readmissions in Maryland

Basic Principles for the Establishment of Payment Incentives

In developing its method for the incorporation of payment incentives for hospitals to reduce unnecessary readmissions, the HSCRC first identified a set of basic principles to help guide the Commission's overall effort.

1) Fairness in Measurement: First, there should be a focus on the development of appropriate adjustment factors to take into account systematic and less-controllable issues and factors that influence readmission rates that all hospitals may experience. Factors that were found to significantly influence readmission rates include age, the presence of mental health and substance abuse secondary diagnoses, disproportionate share effects (Medicaid status), and hospital location (hospitals near the state border will naturally have a higher proportion of their patients readmitted to hospitals outside of Maryland).

2) Broad Level of Applicability and Fairness in the Application of Rewards and Penalties: As the HSCRC learned during the course of development of its Maryland Hospital Acquired Conditions (MHACs) initiative, basing payment rewards and penalties on a hospital's relative rate of performance avoids problems generated by a focus on individual cases. Since readmissions are often the result of problems in the care processes relating to coordination and communication between hospitals and post-discharge care providers, a focus on systematic differences in readmission rates across hospitals (comparison of actual readmission rates relative to expected readmission rates by hospital) is appropriate and allows for a much broader level of application. However, a reward/penalty system that applies only to relative hospital performance in a given year does not address year to year changes in individual hospital readmission rates. The Commission may wish to consider the

application of a hybrid system of rewards and penalties, focusing both on relative hospital performance and year to year changes in hospital performance.

3) Prospective Application: During the process of the MHAC development, the HSCRC also realized the importance of prospective application of payment incentive programs linked to quality improvement. Individual hospital PPR rates should be compared to expected PPR rates (risk adjusted), and established targets should be set from a previous year so they are known in advance.

4) Emphasis on Infrastructure Development to Assist Hospitals in Reducing PPRs: A substantial effort should be made to facilitate hospitals' development of infrastructure and knowledge regarding best PPR-reducing mechanisms/strategies. The HSCRC and other entities (the Hospital Association - as demonstrated in states like Florida) can play a vital role in providing infrastructure support to hospitals to help them identify and implement best practices associated with readmission reduction.

5) Appropriate Level of Financial Incentive: Another important realization from the MHAC policy development process was the need to arrive at an appropriate level of financial risk for providers when establishing the link between provider payment and performance. For MHACs, the Commission decided to place hospitals under only a moderate level of risk in the early stages of the initiative. This was because the HSCRC wanted to give hospitals sufficient time to understand the methodology and make use of the available data tools to analyze their performance and put in place the clinical and operational changes necessary to improve performance.

The same arguments also apply to the introduction of payment incentives related to reducing PPRs. However, unlike MHACs, the incentives for reducing readmissions must take into consideration the significant counter-incentives the hospital will face in lost revenue from fewer readmissions. Eventually, the amount of revenue at risk for reducing PPRs must be sufficiently large to counterbalance loss of revenue due to reduced readmissions.

3.0 - Maryland Uniquely Positioned to Link Payment to Reduced Readmissions

Given the HSCRC's use of and experience with the APR-DRGs mechanism for both risk adjustment and revenue constraint, it is natural that the HSCRC might wish to consider the use of a complementary tool (Potentially Preventable Readmissions) as the basis for linking payment to performance related to the reduction of Maryland hospital readmissions. APR-DRGs and PPRs are products of 3M Health Information Systems and have been used in a number of other jurisdictions to measure and monitor rates of preventable hospital readmissions rates.

The following sections briefly identify and define the key components and steps involved in the application of the PPR methodology to measure relative hospital performance on their ability to reduce preventable readmissions.

Potentially Preventable Readmissions and PPR Logic

A **Potentially Preventable Readmission** is a readmission (return visit to a hospital within a specified period of time) that is clinically-related to an **Initial Hospital Admission**. For readmissions to be “**Clinically-Related**” to an initial admission, it is necessary that the underlying reason for readmission be plausibly related to the care rendered during or immediately following a prior hospital admission.

A clinically-related readmission may have resulted from the process of care and treatment during the prior admission (e.g., readmission for a surgical wound infection) or from a lack of post admission follow up (lack of follow-up arrangements with a primary care physician) rather than from unrelated events that occurred after the prior admission (broken leg due to a car accident) within a specified readmission window.

The **Readmission Window** (sometimes also referred to as the Readmission Interval) is the maximum number of days allowed between the discharge date of a prior admission and the admit date of a subsequent admission in order for the subsequent admission to be a readmission. Readmission analyses have traditionally focused on 30, 15, and 7 day readmission windows.

The Initial Admission is an admission that is followed by a clinically-related readmission within the specified readmission window. Subsequent readmissions relate back to the care rendered during or following the Initial Admission. The Initial Admission initiates a “**Readmission Chain**.”

Readmission Chains are a sequence of PPRs that are all clinically-related to the Initial Admission. A readmission chain may contain an Initial Admission and only one PPR, which is the most common situation, or may contain multiple PPRs following the Initial Admission. In addition to the “clinically-related” PPR APR-DRGs matrix, all readmissions with a principal diagnosis of trauma are considered not potentially preventable.

Use of APR-DRGs

Under this approach, APR-DRGs can be used as the basis for establishing the clinic relationship between the Initial Admission and the Readmission. In developing the PPR logic, a matrix was created in which there were 314 rows representing the possible base APR-DRGs of the Initial Admission, and 314 columns representing the base APR-DRGs of the readmission. Each cell in the matrix then represented a unique combination of a specific type of Initial Admission and readmission. Clinical panels applied criteria for clinical relevance and preventability to the combination of base APR-DRGs and each cell. The end result was that each of the 98,596 cells contain a specification of whether the combination of the base APR-DRGs for the Initial Admission and for the readmission were clinically-related, and, therefore, potentially preventable. This matrix operationalized the definition of “clinically-related” in the PPR logic.

Exclusions and Non-Events

There are certain circumstances in which a readmission cannot be considered potentially preventable. Some types of admissions require follow-up care that is intrinsically clinically-complex and extensive, and for which preventability is difficult to assess. For these reasons, admissions for major or metastatic malignancies, multiple trauma, and burns are not considered preventable and are globally excluded as an Initial Admission or readmission.

A second type of global exclusion relates to the discharge status of the patient in the Initial Admission. A hospitalization with a discharge status of “left against medical advice” is excluded as either an Initial Admission or readmission because under these circumstances, the hospital has limited influence on the care rendered to the patient. All types of globally-excluded admissions are classified as Excluded Admissions.

The following admissions are classified as Non-events: admissions to non-acute care facilities; Admissions to an acute care hospital for patients assigned to the base APR-DRG for rehabilitation, aftercare, and convalescence; Same-day transfers to an acute care hospital for non-acute care (e.g., hospice care).

Readmission Rates

The 3M PPR Grouper Software classifies each hospital admission as a PPR, Initial Admission, Transfer Admission, Non-event, Excluded Admission, or an Only Admission. The output from the PPR Grouper software can be used to compute PPR rates by computing the ratio of the number of PPR chains divided by the sum of admissions classified as an Initial Admission or an Only Admission.

Non-events, Transfer Admissions, Only Admissions that died, and Excluded Admissions are ignored in the computation of a PPR rate. PPR rates can be computed for readmission to any hospital or can be limited to readmissions to the same hospital only.

Since a hospital PPR rate can be influenced by a hospital’s mix of patient types and patient severity of illness during the Initial Admission, any comparison of PPR rates must be adjusted for case mix and severity of illness. A risk adjustment system such as APR-DRGs is necessary for proper comparisons of readmission rates. As discussed, higher than expected readmission rates can be an indicator of quality of care problems during the initial hospital stay or of the coordination of care between inpatient and outpatient settings.

Summary of PPR Logic

A readmission that is clinically-related to the prior Initial Admission or clinically-related to the Initial Admission in a readmission chain is a Potentially Preventable Readmission. A higher than expected rate of PPRs means that the readmissions could reasonably have been prevented through any of the following:

- 1) provision of quality care in the initial hospitalization;
- 2) adequate discharge planning;
- 3) adequate post discharge follow-up; and
- 4) coordination between the inpatient and outpatient health care team.

The end result of the application of the PPR logic is the identification of the subset of Initial Admissions that were followed by PPRs. Admissions that are at risk for having a readmission but were not followed by a subsequent readmission (such as Only Admissions) are also identified by the logic. The identification of Initial Admissions, PPRs, and at-risk Only Admissions allows meaningful PPR rates to be computed. A description of the PPR logic with definition of terms and concepts is provided in **Appendix II** to this recommendation.

4.0 – Primary Considerations in Deciding on a Payment Model

Evaluating Readmissions to the Same Hospital or All Hospitals?

The first question that should be addressed is whether to focus on readmissions to the same hospital that treated the initial admission or to evaluate readmissions to all hospitals. Using only readmissions to the same hospital (“intra-hospital admissions”) would capture most of the readmissions, and not require extensive additional risk-adjustments (given that the profile of a hospital’s patient population--age, mental health and indigent mix-- would likely be relatively stable from year to year). A focus on readmissions to the same hospital would also avoid most of the problems associated with attempting to track unique patients across different institutions and also encourage hospitals to improve their absolute rate of intra-hospital readmissions year to year.

However, focus exclusively on intra-hospital readmissions does not capture patients who were so dissatisfied with the initial treatment that they decided to go to a different hospital. Using admissions to all hospitals (“inter-hospital” readmissions) is clearly a more comprehensive approach.

In analyzing intra- and inter-hospital readmission rates, staff has identified patient-level data concerns that hinder the accurate tracking of patients over time within the same hospital, and

technical difficulties greater still across all hospitals. These concerns and technical difficulties encountered are discussed in the section below entitled Challenges to and Alternatives for Tracking Patients Within and Across Hospitals.

Challenges to and Alternatives for Tracking Patients Within and Across Hospitals

As noted above, data challenges have been identified and are a barrier to accurately tracking patient readmissions within and across hospitals, ultimately causing a delay in the implementation of the MHPR initiative in 2010.

Within Hospital Data Issues

To calculate intra-hospital (within the same hospital) readmission rates staff ran the PPR grouper on data using the assigned medical record number (MRN) to match patients over time. Concurrent with the running of the grouper, staff learned that hospitals were not consistently assigning a unique MRN that is constant over time in compliance with HSCRC inpatient and outpatient data submission requirements. Multiple MRN assignments cause readmissions rates to be under-represented and render hospital specific rates inaccurate.

Across Hospital Data Issues

Since there is no unique identifier (ID) assigned for Maryland hospitalized patients, staff has developed a method for assigning unique IDs for matching patients across hospitals who are readmitted using a probabilistic matching approach. The core premise of the algorithm used is to identify unique patients and assign unique IDs to patients with the same gender, date of birth and zip code who are hospitalized within the window of time specified in the MHPR policy (e.g., 30 days).

To further validate the algorithm, the aggregate results yielded from the matching algorithm have been compared with patient matching results from Florida where a unique patient ID is used, and Maryland estimates of aggregate readmission rates fit within the expected relationships of statewide within vs. across hospital readmissions, total readmission rates, and differences by payer. Although these errors do not appear to disproportionately affect one group/class of hospitals over another, staff continues to have the following concerns:

- based on data analysis, the algorithm produces false negative (an individual patient is incorrectly assigned more than one ID) and false positive (different patients are incorrectly assigned the same unique ID) results;
- the data errors are further amplified to the extent that hospitals have assigned multiple MRNs to a unique patient, and have errors in the patients' dates of birth (DOB), and zip code;
- the patient-level case mix data submitted to HSCRC by hospitals does not, staff believe, contain a sufficient amount of patient identifying information (e.g., last four digits of SSN, first

name, last name, etc.) to construct an algorithm that diminishes false negatives and false positives sufficiently to calculate statistically accurate hospital-specific readmission rates.

Out of State Data Issues

Comparable data are not available for admissions out-of-state. As mentioned, failure to account for out-of-state readmissions would reduce the readmission rates for hospitals located close to the border with other states or for hospitals such as large academic centers that draw larger percentages of out-of-state patients for initial treatment who may be readmitted in their home states.

Staff Efforts to Address Identified Data Issues

To address multiple MRN assignments to unique individuals for FY 2010:

- Staff issued a memorandum to hospitals on 5/24/10 advising hospitals of the MRN error and directing hospitals to identify those patients with changed MRNs to HSCRC by 9/28/10, consistent with the final closing date for submission of the Qtr 4 of the case mix data.
- Hospitals were directed to identify patients for whom they purposefully changed the MRN (e.g., changing a social security number MRN to a number that does not contain patient identifying information) and for those whom they inadvertently assigned more than one MRN (e.g., the registration clerk did not identify the MRN previously assigned when the patient presents for care and assigns a new MRN, but the billing department reconciles the patient identity in the patient accounts system).
- Thus far, the results of the MRN data cleaning work are promising, however, certain hospitals still have high duplicate MRNs despite the improvement. Overall, the percentage of MRNs with the same date of birth, sex, and zip code declined by 2.12 as a result of the cleaning process; staff is working on creating an algorithm to link the patient records across the hospitals based on the new MRN data.
- Staff is continuing to work on establishing data mismatch thresholds to identify hospitals likely to have more than an acceptable number of unique patients with multiple MRNs assigned.

Regarding the across hospital readmission data concerns, staff has worked over the last several months to identifying best practices in constructing unique patient IDs and on considering what options are plausible in Maryland. Staff interviewed 15 states that use statewide unique patient ID numbers. Staff has also discussed with AHRQ Maryland's interest in participating as one of ten states in an AHRQ technical assistance effort to support states in developing unique statewide patient IDs. If an algorithm cannot be constructed in the near term to identify patients such that the PPR grouper yields accurate hospitals-specific readmission rates across hospitals, a potential approach to address this is through the use of other comprehensive data that account for admissions and readmissions across hospitals in Maryland (see section entitled "Medicare and BlueCross Adjustment Factors" on Page 14).

To address the out of state readmission issue, staff again proposes the use of other comprehensive data that account for admissions and readmissions both in and out of Maryland (see section entitled “Medicare and BlueCross Adjustment Factors” on Page 14).

Additional Adjustment Considerations

If the Commission is to use an analysis that ranks hospitals on the basis of relative rates of readmissions within a given year, it will need to apply a series of adjustments for variations in the rate of potentially preventable readmissions among hospitals. The rate of readmissions would be calculated using the PPR software developed by 3M, with additional adjustments that are described in this section.

It would be appropriate to adjust for differences in age, mental health status, and Medicaid status, which have been found to be substantially correlated with the case mix adjusted readmission rate. Finally readmission rates should also be adjusted to reflect readmissions from Maryland hospitals to facilities outside of the State. This latter adjustment is necessary to account fairly for the natural outmigration of patients from Maryland hospitals located near the Maryland border. Failure to adjust for this outmigration would unfairly advantage Maryland hospitals in the Metropolitan DC area and other border areas of the State.

Calculation of Chain Weights

Previous PPR calculations were based on the number of readmissions, with all readmissions weighted equally. Clearly the costs associated with readmissions will vary by the type of initial admission. The calculation described in this section modifies the calculation of the relative PPR rates of the hospitals to take into account the chain weights as well as mix of initial admissions in chains by APR-DRG and Severity of illness (SOI).

The APR-DRG and SOI output by the PPR grouper are the standard ones, and not the groupings as modified by the HSCRC to split the mental health admissions based on voluntary/involuntary, and the splitting of the rehabilitation APR-DRGs. The weights developed for the HSCRC APR-DRGs were consolidated to produce weights that would be applicable to the standard APR-DRGs.

The weight for a re-admission chain was calculated by summing the APR-DRG/SOI weights for each readmission in the chain (not including the initial admission). These weights were then assigned to all readmission chains as the "actual" weight for the chain. The chain weights were then summarized by calculating the mean chain weight for all chains following an initial or only admission in a given APR-DRG/SOI. The resulting weight is the expected weight for readmissions following the initial or only admission in the particular APR-DRG/SOI. The rankings were then recalculated using these weights.

Options for Level of Adjustment to be Applied

1) Option 1 is to simply use the PPR rates themselves (counts of actual vs. expected readmissions). This is what has been presented in previous meetings.

2) Option 2 attempts to factor in the relative costliness of readmissions that follow an initial admission. As such it is most analogous to the MHAC methodology utilized by the Commission when attempting to differentiate hospital performance on the basis of Potentially Preventable Complications. In this instance, the PPR rate would be weighted by the expected weight associated with chains starting with the particular APR-DRG/SOI in the initial admission. This is the method used in the preceding discussion.

3) Option 3 would carry this logic of weighting the readmission chain by the actual weights of each readmission chain. In this option the PPR rate would be adjusted to account for the actual weight of readmissions in the subsequent chain.

4) Option 4, uses the Option 3 approach, but with some outlier threshold applied to limit the weight for which the initial hospital was accountable.

Each of the subsequent options beyond Option 1, are an attempt to refine the PPR rate analysis to make it fairer to individual hospitals and also to be a more accurate representation of actual and preventable additional resource use associated with preventable readmissions.

The HSCRC staff believes that Option 2 is the best compromise between accuracy and simplicity, and because it is the most consistent with the way in which the PPC calculations are being done. The following examples of each of these options should make them clearer. An expanded discussion of the four readmission chain weight options and the formulae for calculation of chain weights, and actual and expected values are shown in **Appendix II**.

Additional Adjustments Required

The following analysis used option 2 above for weighting purposes, data for fiscal years 2008 and 2009, the version 27.0 of the PPR grouper, and focused on readmissions within a 30-day readmission window. A longer readmission window would provide a more comprehensive approach to this analysis – as it captures cases that are potentially preventable but do not present immediately to hospitals in the form of a readmission.

PPR rates, adjusted by the weights of the readmission chains, were calculated by APR-DRG/SOI (risk adjusted) using the entire data set for both years. These statewide readmission rates were then used as the expected values in the analysis.

Adjustment for Age Category and Mental Health Status

The actual to expected, chain weight adjusted, PPR rates were calculated by age category and mental health status, and the ratio of the two was used as an adjustment factor for age category and mental health status. The age categories used were 0-17, 18-64, and 65 and older. The adjustment factors were as follows in Table 1:

Table 1 – Adjustment Factors for Age, Mental Health/Substance Abuse Secondary Diagnosis, and Medicaid Presence

Age category	Mental health diagnosis	Calculated factor
0 – 17	No	0.73
0 – 17*	Yes	0.73
18 – 64	No	0.95
18 – 64	Yes	1.05
65 and older	No	1.05
65 and older	Yes	1.07

* There are a small number of cases in age category 0 with positive mental health status, so the difference between the values is not significant. A combined factor of 0.73 should be used for all age category 0 cases independent of mental health status.

Adjustment for Medicaid as Primary of Secondary Payer

A chain was determined to be a Medicaid count if the principal or secondary payer was Medicaid or Medicaid HMO for any discharge for that patient in the data set. Using this definition of Medicaid, the Medicaid patients were found to have a substantially higher PPR rate than non-Medicaid patients. The adjustment factor for Medicaid was 1.188, and for non-Medicaid was 0.937 – a 25% difference. Given these results, adjustments should be made for age category, mental health status, and the patient's Medicaid status.

For patients with Medicaid as primary or secondary payer anywhere in the chain of readmissions, there was a significantly higher actual rate compared to the expected rate of readmissions than was explained solely by the APR DRG SOI category.

Medicare and Blue Cross Adjustment factors

In order to adjust for out-of-state readmissions, which would be expected to be higher for hospitals close to borders with other states, Medicare data was obtained for federal fiscal years 2007 and 2008.

The rate of PPRs was calculated by hospital, along with the expected rate using the statewide expected rates developed previously using all payers, and the age and mental health adjustment factors previously listed. The ratio of the actual to the expected was calculated by hospital, first using discharges to hospitals in any state, and then using just discharges from Maryland hospitals. The ratio of these two was the adjustment factor to be applied to adjust for out-of-state Medicare readmissions.

Staff also secured similar multi-state data from CareFirst Blue Cross of Maryland. This readmission factor calculated for Medicare data will be combined with the corresponding factor developed by Blue Cross to calculate an estimated adjustment factor for out-of-state readmissions.

For a majority of hospitals, the out of state readmission rates across the Medicare and CareFirst data were very consistent. In the case of a few hospitals, there are inconsistencies between the Medicare and CareFirst migration adjustment factors calculated. It may be necessary, therefore, to calculate an alternative out-of-state adjustment factor for these hospitals. Staff continues to work with the Department of Health and Mental Hygiene to develop a clean data set sufficient to calculate similar cross-state readmission rates from the Medicaid data. Thus far, it has not been possible to develop a similar adjustment using Medicaid data.

Staff can use the above-outlined methodology to calculate inter-hospital readmission rates within the state if an alternative to using HSCRC data is necessary in the short term, and will continue to work on these and other outstanding technical issues, but we believe that the data for out-of-state readmission rates will be sufficient to establish meaningful adjustment factors to allow for a fair and reasonable comparison across hospitals.

Proposed Payment Methodology

Staff believes that the first phase of a PPR-based payment policy in Maryland can be implemented with a structure similar to the payment structure used in linking payment to performance for MHACs and the Quality-Based Reimbursement (QBR) initiatives. This means that PPR payment would be structured by scaling a magnitude of at-risk system revenue, either positive or negative, across all hospitals at the time of the application of the annual update factor (in the case of MHACs, this

amount has been modeled using 0.5% of system revenue). As with MHACs and QBR, this first phase would be implemented in a revenue-neutral way with the precise magnitude of at-risk revenue determined in the context of anticipated future updates and the need to offset “counter-incentives” faced by the hospital, and other considerations.

Hybrid Model Recognizing Both Improvement and Attainment

HSCRC has met with MHA to discuss their proposal to initially measure intra-hospital (within) readmissions, and to base rewards and penalties on hospital improvement year-to-year. While staff is receptive to MHA’s proposal, staff would urge the industry and the Commission to consider the readmission issue in a broader context that encompasses collaboration across the care continuum and supports achievement of desirable community/population health goals to lower readmissions.

Appendix III contains comment letters from the industry on the draft MHPR recommendation.

Staff also remains concerned that a model that focuses only on improvement will not recognize hospital performing relatively well on readmissions whose improvement levels may not be as high as those hospitals starting with worse readmission rates. Therefore, consistent with the Commission’s approach for the Quality Based Reimbursement initiative, staff believes the Commission should consider a reward/penalty system for readmissions that takes into consideration both hospital improvement year to year by measuring intra-hospital readmissions, and hospital attainment or “relative performance” by measuring inter-hospital performance. The pros and cons of each approach are illustrated in the table below.

Table 2. Intra- and Inter-Hospital Readmission Measurement Pros and Cons

	Pros	Cons
MHA Proposal: Intra-Hospital Readmission Measurement	<ul style="list-style-type: none"> • Less data challenges • Recognizes improvement • Lesser need for adjustments 	<ul style="list-style-type: none"> • Less fair: all readmissions not considered • Greater potential for gaming (e.g. readmit to another same system hospital)
Inter-Hospital Readmission Measurement	<ul style="list-style-type: none"> • Focus on attainment • Fairer: captures all readmissions • Recognizes attainment 	<ul style="list-style-type: none"> • Relatively more data challenges, particularly due to lack of unique patient ID • More complex/ need for adjustments

Appendix IV shows the unadjusted readmission rates for intra-hospital, inter-hospitals and total readmission rates including those that occurred out of state using Medpar 2008 data. Overall, 30% of readmissions within 15 days and 26% of readmissions within 30 days have at least one readmission in a hospital other than the original hospital where the initial admission occurred. In some hospitals this rate is as low as 2% while in others it is more than 50%. Compared to inter-hospital readmission rates, out of state migration is smaller and has less variation. Overall, only 4% of readmissions have at least one readmission in an out of state hospital, with a range of 0 to 25% among hospitals. These

data illustrate the need to include inter-hospital readmission rates as well as out of state adjustments in measuring hospital relative performance.

Timing Considerations Related to Base and Performance Measurement Periods

MHA and HSCRC staff agree that it is of great import that we implement the MHPR initiative as soon as possible, beginning in the latter part of the current fiscal year. Consistent with plan to address the Case Mix lag, April 1, 2011 is recommended as the implementation start date. This necessitates that the initial measurement period begin this Rate Year, starting March 1, 2011 and using 13 months of performance, and that the base measurement period be March 1, 2010 to April 1, 2011. HSCRC staff will continue to work with the industry to identify and address the issues and implications of the recommended initial base and measurement periods.

Infrastructure Development Considerations

The HSCRC staff believe it will be extremely appropriate and helpful to the MHPR initiative for the HSCRC to assist in the development of a MHPR Improvement Infrastructure to assist hospitals in their attempt to improve upon the processes of transitioning patients out of the hospital after an admission and otherwise decreasing the rates of readmission within the targeted Readmission Window (currently recommended to be 30 days post initial discharge).

The staff intends to recommend an approach that would at first be funded by means of a small assessment on hospital rates (0.01% is anticipated – generating approximately \$1 -1.2 million per year for at least the first two years). These funds are proposed to be used to obtain the technical assistance the state would need to establish an infrastructure using the Institute for Healthcare Improvement's State Action on Avoidable Rehospitalizations (STAAR) approach.

STAAR Overview

In May 2009, the Institute for Healthcare Improvement (IHI) launched State Action on Avoidable Rehospitalizations (STAAR). Initially funded through a grant from The Commonwealth Fund, STAAR is a multi-state, multi-stakeholder approach to dramatically improve the delivery of effective care at a regional scale.

The initiative aims to reduce rehospitalizations by working across organizational boundaries in a state or region. The work requires not only front-line process improvement, but also identification and mitigation of barriers to system-wide improvement, especially policy and payment reforms that will reduce fragmentation and encourage coordination across the continuum of care. The initiative has three high leverage opportunities for action:

- improving transitions for all patients,
- proactively addressing the needs of high risk patients, and
- engaging patients and their caregivers in assuming a proactive role in their plans.

STAAR was initially implemented in three states— Massachusetts, Michigan, and Washington— by engaging payers, state and national stakeholders, patients and families, and caregivers at multiple care sites and clinical interfaces. The work in the first three states is anticipated as a four year project.

As this work has progressed for one year, IHI has offered to make programming and information learned from the initiative available to Maryland. The initiative would provide both technical assistance at the policy level and support provider efforts at the front line. Additional information about a proposed STAAR Initiative for Maryland may be found in **Appendix V**.

During this two-year period of State support the HSCRC would contract with IHI to provide technical assistance to establish and run the initiative, a collaborative style model. After the first two years HSCRC would assess the ongoing need to fund ongoing technical assistance or other features of the STAAR initiative, and would seek matching and/or replacement funding from Federal or outside foundation sources as needed for the ongoing work..

Other Related Activity and Next Steps

Since the early spring of this year, HSCRC staff has convened a series of educational, technical and clinical vetting sessions for representatives of the Maryland hospital and payer industries.

HSCRC convened a clinical vetting session on September 24, 2010 with hospital clinical and coding personnel, HSCRC staff, and the developers of the 3M Health Information System tools utilized in the proposed MHPR methodology. The responses to comments requested and received in advance of the meeting were reviewed as well as other clinical questions raised. As a result of the session, a clinical subgroup of mental health and substance use clinical representatives, including the Maryland Psychiatric Society, will be convened by HSCRC on October 29th to focus on specific clinical issues raised by the group. In addition, a second clinical vetting session is scheduled for November 1st.

Starting this fall, staff is scheduling a series of meetings with MHA, DHMH and the Maryland Patient Safety Center, the first of which is October 14, 2010, to discuss the organization, development, and funding of the MHPR Infrastructure Initiative as described above that would be designed to establish a Quality Improvement Program to assist Maryland hospitals in analyzing their own PPR performance and reducing their readmissions.

Staff will also re-convene the MHPR Technical Finance Work Group beginning on October 28th in order to address the outstanding technical and payment model issues identified.

Staff anticipates presenting a final recommendation for implementation of the MHPR payment methodology at the December Commission meeting.

Staff Draft Recommendations

Based on the staff work chronicled above and the input received thus far from the Maryland Hospital Preventable Readmission Work Group, for Rate Year FY 2011, the HSCRC staff makes the following draft recommendations:

1. Implement a rate-based approach for measuring PPRs where hospitals are evaluated both on their relative ranking in a given on inter-hospital readmission rates and on their year-to-year performance on intra-hospital readmissions rates;
2. Implement a hybrid system of rewards and penalties that will give equal weight to absolute attainment and year-to-year improvement in readmission rates;
3. For measuring performance on annual attainment, base the calculation of relative performance on inter-hospital readmission rates on actual vs. expected PPR rates using a 15-day Readmissions Window;
4. Adjust individual hospital inter-hospital PPR performance by adjustment factors relating to: a) age splits; b) presence of mental health/substance abuse secondary diagnoses; c) disproportionate share effects; and d) out-of-state migration;
5. Base the relative hospital performance for purposes of scaling at-risk revenue on the actual number of weighted readmissions over the expected number of weighted readmissions (weighted by the chain weight), divided by the total case mix weight associated with the included initial or only admission at the hospital;
6. Also use PPR rates for evaluating within-hospital (intra-hospital) readmissions rate of performance that measures hospital readmission rate improvement in the performance period compared with the base period;
7. Implement scaling of hospital payment adjustments so that a hospital's performance on the PPR methodology, either positive or negative, is reflected at the time of its update factor - the magnitude of funds scaled (at-risk revenue) should be established in the context of future rate discussions;
8. Regarding base and performance measurement periods, consistent with the case mix lag recommendation approved by the Commission in the June 9, 2010 meeting, for future fiscal year adjustments, staff recommends incorporating a three month lag into the data periods used for readmission base and performance measurement. This would go into effect for rate year 2012. The base measurement period would be the thirteen month period of March 1, 2010 through March 31, 2011. The performance measurement period would be the thirteen month period from March 1, 2011 through March 31, 2012. Performance-based adjustments would be applied rate year 2013. The base and performance periods will be 13 months in duration, in order to capture readmissions from the end of each period during the course of the 15-day readmission window. Further, future measurement will recognize and incorporate needed adjustments related to the most current

methodologies such as denials and one day stays. Any technical implementation issues will be vetted with the MHPR Technical Finance Work Group and MHA's Financial Technical Issues Task Force as needed;

9. Consistent with the process for the establishment of the HSCRC's MHAC initiatives, provide a mechanism on an ongoing basis to receive input and feedback from the industry and other stakeholders to refine and improve the PPR logic;

10. Make a tracking tool reasonably accessible to hospitals so that they may track their performance throughout the measurement year;

11. Beginning in the Fall of 2010 and forward, work with the Institute for Healthcare Improvement, MHA, DHMH, the Maryland Patient Safety Center and representatives of the Maryland hospital and payer industries to develop and secure funding for a state-wide initiative Maryland Hospital Preventable Readmission Infrastructure and Quality Improvement Project utilizing the STAAR initiative model, which will provide technical assistance to implement the best methods to reduce preventable readmissions, provide assistance to hospitals to improve processes of transitioning patients out of the hospital after an acute care admission, and otherwise decrease the rate of hospital readmissions within the specified readmission time intervals.

Appendix I – NEJM Jencks Article on Readmissions

SPECIAL ARTICLE

Rehospitalizations among Patients in the Medicare Fee-for-Service Program

Stephen F. Jencks, M.D., M.P.H., Mark V. Williams, M.D.,
and Eric A. Coleman, M.D., M.P.H.

ABSTRACT

BACKGROUND

Reducing rates of rehospitalization has attracted attention from policymakers as a way to improve quality of care and reduce costs. However, we have limited information on the frequency and patterns of rehospitalization in the United States to aid in planning the necessary changes.

METHODS

We analyzed Medicare claims data from 2003–2004 to describe the patterns of rehospitalization and the relation of rehospitalization to demographic characteristics of the patients and to characteristics of the hospitals.

RESULTS

Almost one fifth (19.6%) of the 11,855,702 Medicare beneficiaries who had been discharged from a hospital were rehospitalized within 30 days, and 34.0% were rehospitalized within 90 days; 67.1% of patients who had been discharged with medical conditions and 51.5% of those who had been discharged after surgical procedures were rehospitalized or died within the first year after discharge. In the case of 50.2% of the patients who were rehospitalized within 30 days after a medical discharge to the community, there was no bill for a visit to a physician's office between the time of discharge and rehospitalization. Among patients who were rehospitalized within 30 days after a surgical discharge, 70.5% were rehospitalized for a medical condition. We estimate that about 10% of rehospitalizations were likely to have been planned. The average stay of rehospitalized patients was 0.6 day longer than that of patients in the same diagnosis-related group whose most recent hospitalization had been at least 6 months previously. We estimate that the cost to Medicare of unplanned rehospitalizations in 2004 was \$17.4 billion.

CONCLUSIONS

Rehospitalizations among Medicare beneficiaries are prevalent and costly.

From an independent consulting practice, Baltimore (S.F.J.); the Division of Hospital Medicine, Northwestern University Feinberg School of Medicine, Chicago (M.V.W.); and the Care Transitions Program, Division of Health Care Policy and Research, University of Colorado at Denver, Denver (E.A.C.).

N Engl J Med 2009;360:1418-28.
Copyright © 2009 Massachusetts Medical Society.

MEDICARE CURRENTLY PAYS FOR ALL rehospitalizations, except those in which patients are rehospitalized within 24 hours after discharge for the same condition for which they had initially been hospitalized. Recent policy proposals would alter this approach and create payment incentives to reduce the rates of rehospitalization. The Medicare Payment Advisory Commission (MedPAC) recommended to Congress in its report in June 2008 that hospitals receive from the Centers for Medicare and Medicaid Services (CMS) a confidential report of their risk-adjusted rehospitalization rates and that after 2 years, rates should be published. MedPAC also recommended complementary changes in payment rates, so that hospitals with high risk-adjusted rates of rehospitalization receive lower average per case payments. The commission reported that Medicare expenditures for potentially preventable rehospitalizations may be as high as \$12 billion a year.¹ In July 2008, the National Quality Forum adopted two measures of hospital performance based on the rate of rehospitalization,² and the CMS indicated an interest in making the rehospitalization rate a measure for value-based hospital payment.³ Reducing rehospitalization is an important element of President Barack Obama's February 2009 proposal for financing health care reform.⁴ Such proposals would radically change the accountability of hospitals for patients' outcomes after discharge.

These proposals addressing all-cause rehospitalization highlight the importance of understanding the factors that influence the disparate causes of rehospitalization. Although there is extensive literature on rehospitalization attributed to particular conditions, especially heart failure,⁵ there is very limited research addressing the broader issues involving the multitude of diseases and processes that contribute to rehospitalization. Until the 2007 MedPAC report (cited in the 2008 MedPAC report¹), there was, to our knowledge, no follow-up of the measurement of the overall Medicare rehospitalization rate that Anderson and Steinberg made in their seminal study in 1984.⁶ Building on the 2007 MedPAC report, we undertook this study to examine three key questions: What is the frequency of unplanned and planned rehospitalizations within 30 days after discharge? How long does the elevated risk of rehospitalization persist? What is the frequency of follow-up

outpatient visits with a physician after a patient's discharge from a hospital?

METHODS

DATA SOURCES

We used data from the Medicare Provider Analysis and Review (MEDPAR) file for the 15-month period from October 1, 2003, through December 31, 2004; the MEDPAR file does not contain any discharges from 855 critical access hospitals or discharges of patients who were enrolled in managed-care plans. Inpatient claims for individual patients were linked with the use of the Health Insurance Claim Number–Beneficiary Identification Code. To study follow-up visits, we used the 5% national sample of linked physician and hospital claims for 2003 that is maintained in the CMS Chronic Condition Data Warehouse.⁷ We used data from different intervals depending on the amount of previous or follow-up data that we needed for the analysis. The study design and procedures were approved by the Colorado Multiple Institutional Review Board.

ASSESSMENT OF REHOSPITALIZATION AND DIAGNOSES

We defined the rate of rehospitalization in the following way: the number of patients who were discharged from an acute care hospital and readmitted to any acute care hospital within 30 days divided by the total number of people who were discharged alive from acute care hospitals. We counted no more than one rehospitalization for each discharge. We excluded from the numerator and denominator patients who were transferred on the day of discharge to other acute care hospitals, including patients who were admitted to hospital specialty units, inpatient rehabilitation facilities, and long-term care hospitals (we included all other same-day rehospitalizations in our analyses). We also excluded patients who were rehospitalized for rehabilitation (diagnosis-related group [DRG] 462) within 30 days after discharge. We calculated rates over a 12-month period for the cohort that was discharged between October 1 and December 31, 2003, after determining that seasonal variation was less than 0.2 percentage point. In this calculation, data for a patient were censored when he or she was rehospitalized or died before hospitalization.

To examine the patterns of diagnoses at discharge and rehospitalization, we identified the five medical and five surgical DRGs that accounted for the largest number of rehospitalizations within 30 days after discharge and tabulated the 10 most frequent reasons for rehospitalization for each DRG. To estimate the fraction of rehospitalizations that might have been planned, we examined the 100 DRGs that are most frequently assigned to rehospitalized patients and ranked them according to whether planning was clinically plausible (e.g., rehospitalization for pneumonia is very unlikely to have been planned, whereas rehospitalization for placement of a stent could well be) and whether the rate of rehospitalization for the DRG showed the exponential rate of decrease that is characteristic of most DRGs when planned rehospitalization is unlikely (for details, see the Supplementary Appendix, available with the full text of this article at NEJM.org).

We calculated a hospital's expected rehospitalization rate as the rehospitalization rate expected if each of its Medicare discharges had the same rehospitalization risk as the national average for Medicare discharges in the same DRG (indirect adjustment). We used the ratio of observed to expected hospitalizations to stratify hospitals into quartiles and calculated differences in rehospitalization rates among hospitals with 1000 or more Medicare discharges.

We used the Medicare provider number to assess whether the patient was readmitted to the same hospital from which he or she had been discharged. We also tabulated length of stay and Medicare payment weights for DRGs (which are based on the average use of hospital resources for treatment of Medicare patients) for rehospitalized patients and for those who had not been hospitalized in the previous 6 months.

RELIABILITY OF DATA

Published definitions of DRGs include a classification of the diagnosis as medical or surgical. The CMS systematically audits the coding of DRGs. Dates of admission and discharge are tied to hospital billing systems, and errors may trigger audits or payment reviews. Whether a beneficiary is receiving dialysis treatment or is disabled is determined in the Medicare eligibility process. Discharge disposition is generally not used for payment and is often unreliable. We used black race, which is reported to be reliably coded, as a co-

variate but did not use Hispanic ethnic group, which is reported to be seriously undercoded.^{8,9}

STATISTICAL ANALYSIS

We used the Cox proportional-hazards model to assess patient-level predictors of rehospitalization. The number of days before rehospitalization represented the survival time, data were censored at the time of death or the end of the observation period, and covariates were the patient characteristics that were available in the MEDPAR file or that could be calculated from the information in it: the hospital's ratio of observed to expected hospitalizations, the national rehospitalization rate for the patient's DRG, race (black or nonblack), use or nonuse of dialysis, presence or absence of disability, sex, Supplemental Security Income (SSI) status, length of stay as compared with the national average for the DRG, number of hospitalizations in the preceding 6 months, and age group. We included the hospital's ratio of observed to expected hospitalizations as a covariate so that differences among hospitals would not obscure the effects of other predictors. Hospital-level characteristics, such as the number of beds, urban or rural location, and teaching or nonteaching status — characteristics that Anderson and Steinberg used in their analyses⁶ — are not available in the MEDPAR file, but their effect should be captured in the hospital's ratio of observed to expected hospitalizations. For this analysis we used discharges from April 1 through September 30, 2004, to allow 6 months for identifying previous hospitalizations. We performed all analyses with SAS software.¹⁰

RESULTS

FREQUENCY OF REHOSPITALIZATION

A total of 13,062,937 patients enrolled in the Medicare fee-for-service program were discharged from 4926 hospitals between October 1, 2003, and September 30, 2004; 516,959 of these patients were recorded as having died, and 690,276 went to other acute care settings, leaving 11,855,702 (90.8%) at risk for rehospitalization. Table 1 shows the cumulative percentage of rehospitalizations and outpatient deaths before rehospitalization by 30, 60, 90, 180, and 365 days after discharge for the cohort of Medicare patients discharged between October 1 and December 31, 2003; 19.6% of the patients were rehospitalized within 30 days,

Table 1. Rehospitalizations and Deaths after Discharge from the Hospital among Patients in Medicare Fee-for-Service Programs.

Interval after Discharge	Patients at Risk at Beginning of Period	Cumulative Rehospitalizations by End of Period <i>number (percent)</i>	Cumulative Deaths without Rehospitalization by End of Period
All discharges			
0–30 days	2,961,460 (100.0)	579,903 (19.6)	103,741 (3.5)
31–60 days	2,277,816 (76.9)	834,369 (28.2)	134,697 (4.5)
61–90 days	1,992,394 (67.3)	1,006,762 (34.0)	151,901 (5.1)
91–180 days	1,802,797 (60.9)	1,325,645 (44.8)	177,234 (6.0)
181–365 days	1,458,581 (49.3)	1,661,396 (56.1)	200,852 (6.8)
>365 days	1,099,212 (37.1)		
Discharges after hospitalization for medical condition			
0–30 days	2,154,926 (100.0)	453,993 (21.1)	87,736 (4.1)
31–60 days	1,613,197 (74.9)	653,998 (30.3)	113,188 (5.3)
61–90 days	1,387,740 (64.4)	788,535 (36.6)	127,274 (5.9)
91–180 days	1,239,117 (57.5)	1,032,141 (47.9)	147,851 (6.9)
181–365 days	974,934 (45.2)	1,280,579 (59.4)	166,561 (7.7)
>365 days	707,786 (32.8)		
Discharges after hospitalization for surgical procedure			
0–30 days	806,534 (100.0)	125,910 (15.6)	16,005 (2.0)
31–60 days	664,619 (82.4)	180,371 (22.4)	21,509 (2.7)
61–90 days	604,654 (75.0)	218,227 (27.1)	24,627 (3.1)
91–180 days	563,680 (69.9)	293,504 (36.4)	29,383 (3.6)
181–365 days	483,647 (60.0)	380,817 (47.2)	34,291 (4.3)
>365 days	391,426 (48.5)		

34.0% within 90 days, and 56.1% within 365 days. About two thirds (62.9%) of Medicare fee-for-service beneficiaries who were discharged (67.1% after hospitalization for a medical condition and 51.5% after hospitalization for a surgical procedure) were rehospitalized or died within a year. To avoid double counting, we do not report deaths that occurred during or after rehospitalization. When we omitted cases of end-stage renal disease and included same-day readmissions, as Anderson and Steinberg did,⁶ the 60-day rate of rehospitalization was 31.1%.

REASONS FOR REHOSPITALIZATION

Table 2 shows the five medical and five surgical reasons for the index (i.e., initial) hospitalization that were associated with the largest number of

rehospitalizations and the top 10 reasons for rehospitalization for each index reason. Most rehospitalizations (84.4% among patients who were discharged after initial hospitalization for medical conditions and 72.6% among patients who were discharged after surgical procedures) were for medical diagnoses. The 100 most frequent rehospitalization DRGs accounted for 73.2% of total rehospitalizations. Among the rehospitalizations ascribed to these 100 DRGs, 10% belonged to 19 DRGs, such as chemotherapy and stent insertion, for which we estimated that planned rehospitalizations were probably an important part of total rehospitalizations (see the Supplementary Appendix). We did not attempt to estimate the percentage of these rehospitalizations that were actually planned.

Table 2. Highest Rates of Rehospitalization and Most Frequent Reasons for Rehospitalization, According to Condition at

Condition at Index Discharge	30-Day Rehospitalization Rate	Proportion of All Rehospitalizations	percent	
			Most Frequent	2nd Most Frequent
Medical				
All	21.0	77.6	Heart failure (8.6)	Pneumonia (7.3)
Heart failure	26.9	7.6	Heart failure (37.0)	Pneumonia (5.1)
Pneumonia	20.1	6.3	Pneumonia (29.1)	Heart failure (7.4)
COPD	22.6	4.0	COPD (36.2)	Pneumonia (11.4)
Psychoses	24.6	3.5	Psychoses (67.3)	Drug toxicity (1.9)
GI problems	19.2	3.1	GI problems (21.1)	Nutrition-related or metabolic issues (4.9)
Surgical				
All	15.6	22.4	Heart failure (6.0)	Pneumonia (4.5)
Cardiac stent placement	14.5	1.6	Cardiac stent (19.7)	Circulatory diagnoses (8.5)
Major hip or knee surgery	9.9	1.5	Aftercare (10.3)	Major hip or knee problems (6.0)
Other vascular surgery	23.9	1.4	Other vascular surgery (14.8)	Amputation (5.8)
Major bowel surgery	16.6	1.0	GI problems (15.9)	Postoperative infection (6.4)
Other hip or femur surgery	17.9	0.8	Pneumonia (9.7)	Heart failure (4.8)

* Index conditions listed within medical and surgical groups are in order of decreasing total number of rehospitalizations within 30 days after discharge. The diagnosis-related group (DRG) numbers for the conditions listed are as follows: acute myocardial infarction: 121, 122, 123, 516, 526; arrhythmias: 138, 139; amputation: 113; cardiac stent: 517, 527; chest pain: 143; circulatory disorders: 124; COPD: 088; depression: 429; drug toxicity: 449; drug or alcohol misuse: 521; fracture of hip or pelvis: 236; gastrointestinal bleeding: 592; gastrointestinal problems: 182, 183, 184; heart failure: 127; major bowel surgery: 148, 149; major hip or knee problems: 209; nutrition-related or metabolic issues: 296, 297, 298; operation for infection: 415; organic mental conditions: 429; other hip or femur surgery: 210; other circulatory diagnoses: 144; other vascular surgery: 478, 479; pneumonia: 79, 80, 81, 89, 90, 91; postoperative infection: 418; psychoses: 430; pulmonary edema: 087; rehabilitation: 462; renal failure: 316; respiratory or ventilation issues: 475; septicemia: 416, 417; and urinary tract infection: 320, 321, 322. COPD denotes chronic obstructive pulmonary disease, and GI gastrointestinal.

Index Discharge.*			
Reason for Rehospitalization			
3rd Most Frequent	4th Most Frequent	5th to 10th Most Frequent	Less Frequent
<i>percent of all rehospitalizations within 30 days after index discharge</i>			
Psychoses (4.3)	COPD (3.9)	GI problems, nutrition-related or metabolic issues, septicemia, GI bleeding, renal failure, urinary tract infection (17.0)	All other (58.9)
Renal failure (3.9)	Nutrition-related or metabolic issues (3.1)	Acute myocardial infarction, COPD, arrhythmias, circulatory disorders, GI bleeding, GI problems (14.0)	All other (36.9)
COPD (6.1)	Septicemia (3.6)	Nutrition-related or metabolic issues, GI problems, respiratory or ventilation problems, pulmonary edema, GI bleeding, urinary tract infection (14.9)	All other (38.9)
Heart failure (5.7)	Pulmonary edema (3.9)	Respiratory or ventilation problems, GI problems, nutrition-related or metabolic issues, arrhythmias, GI bleeding, acute myocardial infarction (12.5)	All other (30.3)
Drug or alcohol misuse (1.6)	Pneumonia (1.6)	Chest pain, nutrition-related or metabolic issues, depression, GI problems, COPD, organic mental conditions (7.0)	All other (20.6)
Pneumonia (4.3)	Heart failure (4.2)	Major bowel surgery, urinary tract infection, septicemia, GI bleeding, COPD, chest pain (13.4)	All other (52.1)
GI problems (3.3)	Septicemia (2.9)	Nutrition-related or metabolic issues, postoperative infection, placement of cardiac stent, GI bleeding, operation for infection (14.6)	All other (68.7)
Chest pain (6.1)	Heart failure (5.7)	Atherosclerosis, acute myocardial infarction, GI bleeding, GI problems, arrhythmias, other vascular surgery (19.4)	All other (40.6)
Pneumonia (4.2)	Postoperative infection (3.1)	GI problems, GI bleeding, heart failure, operation for infection, rehabilitation, nutrition-related or metabolic issues (15.8)	All other (60.6)
Heart failure (5.0)	Other circulatory problems (4.4)	Postoperative infection, other circulatory procedures, operation for infection, peripheral vascular disorders, pneumonia, septicemia (19.0)	All other (51.0)
Nutrition-related or metabolic issues (5.6)	GI Obstruction (4.3)	Pneumonia, major bowel surgery, renal failure, septicemia, operation for infection, GI bleeding (15.4)	All other (52.4)
Septicemia (4.7)	GI bleeding (4.0)	Urinary tract infection, fracture of hip or pelvis, other hip or femur surgery, aftercare, nutrition-related or metabolic issues, major hip or knee problems (20.7)	All other (56.1)

GEOGRAPHIC PATTERN

Figure 1 shows the geographic pattern of rates of rehospitalization within 30 days after discharge in the United States and two of its territories. The rehospitalization rate was 45% higher in the five states with the highest rates than in the five states with the lowest rates.

HOSPITALS

Except as noted, the following results are for hospitals with 1000 or more annual Medicare discharges. The correlation of the number of patients discharged with rehospitalization rates was low ($r = -0.11$, $P < 0.001$). Hospitals with a ratio of observed to expected hospitalizations in the high-

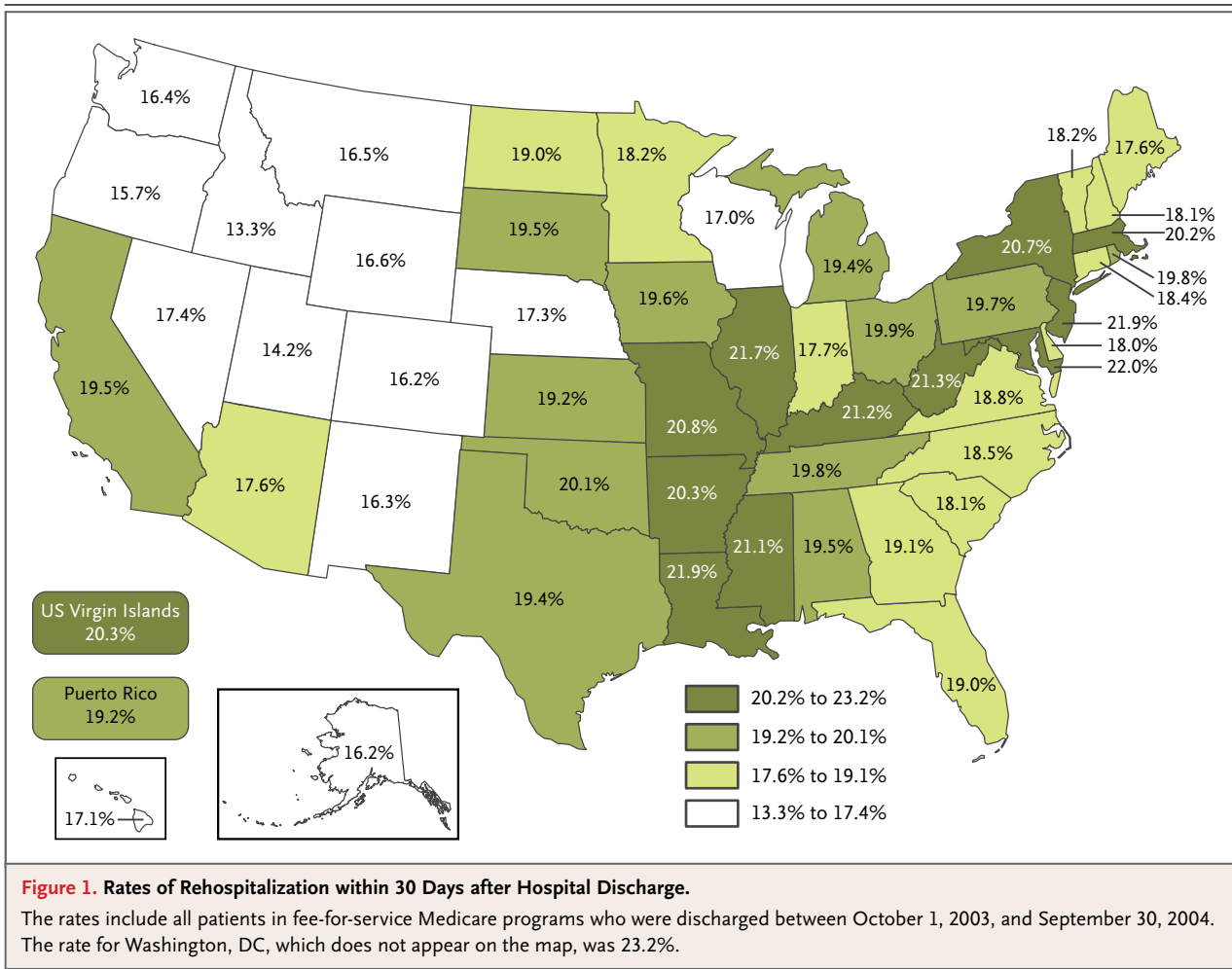


Figure 1. Rates of Rehospitalization within 30 Days after Hospital Discharge.

The rates include all patients in fee-for-service Medicare programs who were discharged between October 1, 2003, and September 30, 2004. The rate for Washington, DC, which does not appear on the map, was 23.2%.

est quartile had an expected 30-day rehospitalization rate of 20.6%, as compared with their observed rate of 26.1%. The corresponding rates for hospitals in the lowest quartile were 18.7% and 14.3%, respectively. One quarter (25.1%) of the admissions in hospitals in the highest quartile came from rehospitalizations within 30 days after discharge (as compared with 17.0% of admissions in all hospitals and 13.1% of admissions in hospitals in the lowest quartile).

The rehospitalization rate that was expected on the basis of DRGs strongly predicted the observed rate ($R^2=0.276$, $P<0.001$). Unadjusted hospital rates correlated strongly with DRG-adjusted rates ($r=0.975$, $P<0.001$); rehospitalization rates 30 and 90 days after discharge also correlated strongly ($r=0.953$, $P<0.001$). In the case of hospitals with 1000 or more Medicare discharges, 24.4% (interquartile range, 17.4 to 29.5) of the

patients who were rehospitalized within 30 days were admitted to another hospital; in the case of hospitals with fewer than 1000 discharges, 44.2% (interquartile range, 23.6 to 60.0) of the patients were admitted to another hospital.

PATIENTS

The average hospital stay for rehospitalized patients was 0.6 day (13.2%) longer than the stay for patients in the same DRG who had not been hospitalized within the previous 6 months (2,962,208 patients) ($P<0.001$). The average Medicare payment weight is 1.41 for index hospitalizations and 1.35 for rehospitalizations. Table 3 shows the relative risk of rehospitalization within 30 days after discharge that was associated with each of the variables we analyzed. The reason for the index hospitalization (i.e., the DRG), the number of previous hospitalizations, and the length of stay had more

influence on the risk of rehospitalization than demographic factors such as age, sex, black race, SSI status, and presence or absence of disability.

OUTPATIENT VISITS

Figure 2 shows the percentage of patients discharged to the community after hospitalization for medical conditions and subsequently rehospitalized for whom there was no bill for an outpatient physician visit between the time of discharge and rehospitalization; both the percentage on each day after discharge and the cumulative percentage are shown. There was no associated bill for an outpatient visit for 50.1% of the patients who were rehospitalized within 30 days after discharge and for 52.0% of those who were rehospitalized for heart failure within 30 days after discharge.

DISCUSSION

The 19.6% rate of rehospitalization within 30 days after discharge that we report for Medicare beneficiaries in 2003–2004 is consistent with the rate in MedPAC’s 2008 report of 2005 data (17.6% at 30 days),¹ and the difference probably reflects methodologic differences rather than a temporal trend. We found that the rehospitalization rate at 60 days was 31.1% when we analyzed the data in the same way as Anderson and Steinberg, who reported a rate of 22.5% at 60 days for the 1976–1978 period.⁶ This larger difference is more likely to indicate an actual increase in rehospitalization rates over time, perhaps owing to a shorter duration of index hospitalization or to the increase in ambulatory surgery over the past 30 years. Friedman and Basu found that among persons 18 to 64 years of age in five states, the rate of rehospitalization for any reason within 6 months after discharge was 81% of the rate among those older than 64 years of age,¹¹ which is consistent with our finding that the rehospitalization rate was only weakly related to age.

Our analysis also shows that the risk of rehospitalization after discharge persists over time (Table 1). Further studies will be needed to understand the relative contributions to this risk of failures in discharge planning, insufficient outpatient and community care, and severe progressive illness.

This study was limited by our reliance on Medicare billing data, which provide an incom-

Table 3. Predictors of Rehospitalization within 30 Days after Discharge.*

Variable	Hazard Ratio (95% Confidence Interval)
Hospital’s ratio of observed to expected hospitalizations†	1.097 (1.096–1.098)
National rehospitalization rate for DRG‡	1.268 (1.267–1.270)
No. of rehospitalizations since October 1, 2003	
0	1.00
1	1.378 (1.374–1.383)
2	1.752 (1.746–1.759)
≥3	2.504 (2.495–2.513)
Length of stay	
>2 times that expected for DRG	1.266 (1.261–1.272)
0.5–2 times that expected for DRG	1.00
<0.5 times that expected for DRG	0.875 (0.872–0.877)
Race‡	
Black	1.057 (1.053–1.061)
Other	1.00
Disability	1.130 (1.119–1.141)
End-stage renal disease	1.417 (1.409–1.425)
Receipt of Supplemental Security Income	1.117 (1.113–1.122)
Male sex	1.056 (1.053–1.059)
Age	
<55 yr	1.00
55–64 yr	0.983 (0.978–0.988)
65–69 yr	0.999 (0.989–1.009)
70–74 yr	1.023 (1.012–1.035)
75–79 yr	1.071 (1.059–1.084)
80–84 yr	1.101 (1.089–1.113)
85–89 yr	1.123 (1.111–1.136)
>89 yr	1.118 (1.105–1.131)

* Data are for patients in Medicare fee-for-service programs who were discharged from the hospital between April 1, 2004, and September 30, 2004, and were followed until October 31, 2004. Data were analyzed with the use of the Cox proportional-hazards model. P<0.001 for all variables except an age of 65 to 69 years. DRG denotes diagnosis-related group.

† These estimates are standardized.

‡ Race was determined from MEDPAR files.

plete picture and contain some unreliable elements, and on DRGs, which are not fully adjusted for severity of illness. Unmeasured differences in severity of illness might bias comparisons of rehospitalization rates across states, hospitals, and demographic groups. However, DRG adjustment is a moderately strong predictor of the rehospitalization rate (R²=0.276), so the very high

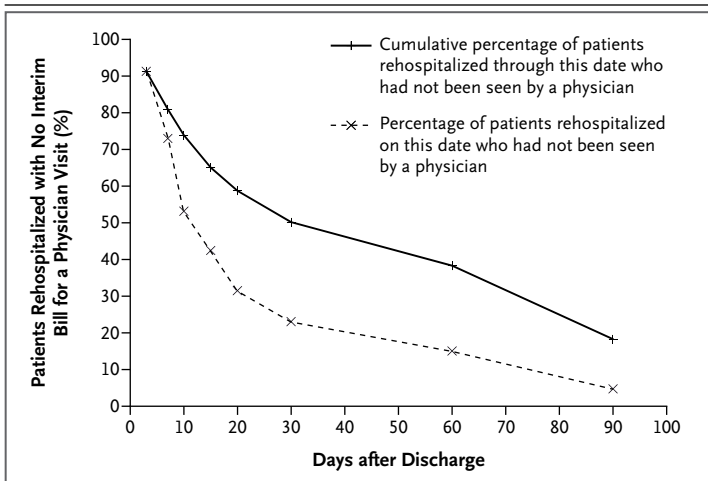


Figure 2. Patients for Whom There Was No Bill for an Outpatient Physician Visit between Discharge and Rehospitalization.

Data are for patients in fee-for-service Medicare programs who were discharged to the community between January 1, 2003, and December 31, 2003, after an index hospitalization for a medical condition. Data are derived from claims maintained in the Chronic Condition Data Warehouse of the Centers for Medicare and Medicaid Services.

correlation between unadjusted and DRG-adjusted hospital-level rates suggests that additional adjustment for risk may not add greatly to the analysis of rehospitalization rates. In addition, our assessment of outpatient follow-up was limited by the use of billing data that do not capture most visits to nonphysician providers.

Fisher et al.¹² have argued that the availability of hospital beds induces demand without improving health and that the availability of a bed may also facilitate hospitalization if a patient's condition deteriorates, but we were unable to link measures of the number of hospital beds in a community to the data analyzed here. Nevertheless, their argument bears directly on the question of whether higher rehospitalization rates are evidence of better care or just more care. Similarly, better access to primary care and better continuity of care may reduce the number of rehospitalizations, but we have no data on where in the United States these features are provided, nor do we know where a "medical home"¹³ — an enhanced primary care coordinator for all of a patient's care — has been adopted.

Five lines of evidence suggest that rates of rehospitalization might be reduced. First, controlled studies¹⁴⁻¹⁶ have shown that certain interventions at the time of discharge sharply reduce the rates

of rehospitalization among patients with heart failure and other Medicare beneficiaries, and preliminary reports suggest that these and other interventions are more effective when used more widely. In contrast, coordination-of-care interventions that are limited to community settings appear to be ineffective in reducing rehospitalization.¹⁷ Research also shows that supportive palliative care can reduce rehospitalization and increase patient satisfaction.¹⁸ In addition, the Quality Improvement Organizations appear to have reversed a national trend of increased hospitalizations from home settings by working with individual agencies that provide home health care.¹⁹

Second, the absence of a bill for an outpatient physician visit in the case of more than half of the patients with a medical condition who were readmitted within 30 days after discharge to the community is of great concern and suggests a considerable opportunity for improvement. Our concern is heightened by the same finding among patients with heart failure, who are known to have a response to intensified care.²⁰ Hospitals and physicians may need to collaborate to improve the promptness and reliability of follow-up care.

Third, although claims data are less informative about follow-up care after surgical procedures (because of the global surgical fee), many patients who are discharged after a surgical procedure may benefit from earlier medical follow-up, since a substantial majority of postsurgical rehospitalizations are for medical conditions.

Fourth, our estimate that 90% of rehospitalizations within 30 days after discharge are unplanned suggests that rehospitalization is probably not primarily driven either by clinical practices (e.g., staged surgery) that cannot be efficiently rendered in one hospitalization or by profit-seeking division of services into multiple hospitalizations.

Fifth, the variation among states (Fig. 1) and hospitals suggests that improvement on a national scale may be possible, but the data do not show which practices cause the differences or whether the differences are exportable.

Medicare payments for unplanned rehospitalizations in 2004 accounted for about \$17.4 billion of the \$102.6 billion in hospital payments from Medicare,²¹ making them a large target for cost reduction. (This cost estimate is derived by multiplying the 19.6% rehospitalization rate by 90%,

which represents the percentage of unplanned rehospitalizations, and multiplying that product by 96%, since DRG-based payments for rehospitalizations are 4% lower than those for index hospitalizations.) Convincing estimates of potential savings must await evaluation of large-scale improvement efforts.

Although the care that prevents rehospitalization occurs largely outside hospitals, it starts in hospitals. In a quarter of the hospitals, about 25% of the admissions are rehospitalizations that occur within 30 days after discharge. Cynics may suggest that preventing rehospitalization is not in the financial interest of hospitals, but our analysis suggests a more complex picture. Rehospitalizations may not be profitable for many hospitals. Although the average length of stay for rehospitalized patients was 0.6 day more than that for patients in the same DRG whose most recent hospitalization had been at least 6 months previously, DRG-based payments would be largely the same. For a hospital with excess capacity, there may be as much financial benefit from rehospitalizations as from first-time admissions, but for a hospital that manages its capacity more carefully, there may not.

Almost all hospitals will need help in gauging their performance with respect to rehospitalizations, because they have no access to data on the 20 to 40% of their patients who are rehospitalized elsewhere. Only holders of all-hospital discharge data, such as governments and other third-party payers, have the ability to track patients across providers and systems. Medicare could help by providing data on all Medicare rehospitalizations (suitably de-identified) to help hospitals and communities better understand their performance.

Our analysis generally confirms Anderson and Steinberg's findings regarding the value of demographic factors in predicting the risk of rehospitalization,⁶ but it shows that previous rehospitalization, a longer index hospitalization as compared with the norm for the DRG, the need for dialysis, and the DRG to which the patient is assigned at the end of the stay are more powerful predictors. However, when the typical patient has almost two chances in three of being rehospitalized or of dying within a year after discharge, it is probably wiser to consider all Medicare pa-

tients as having a high risk of rehospitalization. For example, ensuring that a follow-up appointment with a physician is scheduled for every patient before he or she leaves the hospital is probably more efficient than trying to identify high-risk patients and arranging follow-up care just for them.

Rehospitalization is a frequent, costly, and sometimes life-threatening event that is associated with gaps in follow-up care. We are beginning to understand that the rate of rehospitalization can be reduced with the implementation of more reliable systems, but it would be premature to predict how much reduction can be achieved. Although the rehospitalization rate is often presented as a measure of the performance of hospitals, it may also be a useful indicator of the performance of our health care system.²² From a system perspective, a safe transition from a hospital to the community or a nursing home requires care that centers on the patient and transcends organizational boundaries. Our purpose in this report has been to strengthen the empirical foundation for designing and providing such care.

Supported in part by the Institute for Healthcare Improvement (a senior fellowship to Dr. Jencks) and the John A. Hartford Foundation (2006-0229 and 2005-0194 to Drs. Williams and Coleman, respectively).

Presented in part at the meeting, Reducing Hospital Readmissions, sponsored by the Commonwealth Fund and AcademyHealth, in Washington, DC, January 25, 2008.

Dr. Jencks reports receiving consulting or speaking fees from the National Quality Forum, the Colorado Foundation for Medical Care, IPRO, Qualidigm, the Commonwealth Fund, RTI International, and the Japanese Society for Quality and Safety in Health Care and having been employed by the Centers for Medicare and Medicaid Services (CMS) until 2007; Dr. Williams, receiving consulting fees from the Aetna Foundation through the University of Colorado, and being editor-in-chief of the *Journal of Hospital Medicine*; and Dr. Coleman, receiving grant support from the Aetna Foundation and the Atlantic Philanthropies and contract support from the California HealthCare Foundation and the Community Health Foundation of Central and Western New York. Drs. Jencks, Williams, and Coleman have served as faculty for the Institute for Healthcare Improvement. No other potential conflict of interest relevant to this article was reported.

We thank David Gibson and Spike Duzor of the CMS for help in obtaining the Chronic Conditions Data Warehouse files; Gary Schultheis of CMS for providing exploratory data files; Wato Nsa, Alan Ma, and Dale Bratzler of the Oklahoma Foundation for Medical Care for providing an early version of the DRG frequency table; Sarah Kier of Northwestern Memorial Hospital for assistance with the map; Jessica Kazmier of the Northwestern Medical Faculty Foundation for assistance with the references; and Glenn Goodrich of the University of Colorado at Denver for preparing the 2003–2004 MEDPAR files.

REFERENCES

1. A path to bundled payment around a rehospitalization. In: Report to the Congress: reforming the delivery system. Washington, DC: Medicare Payment Advisory Commission, June 2005:83-103.
2. Candidate hospital care additional priorities: 2007 performance measure. Washington, DC: National Quality Forum, 2007.
3. Application of incentives to reduce avoidable readmissions to hospitals. *Fed Regist* 2008;73(84):23673-5.
4. Connolly C. Obama proposes \$634 billion fund for health care. *Washington Post*. February 26, 2009:A1.
5. Ross JS, Mulvey GK, Stauffer B, et al. Statistical models and patient predictors of readmission for heart failure: a systematic review. *Arch Intern Med* 2008;168:1371-86.
6. Anderson GF, Steinberg EP. Hospital readmissions in the Medicare population. *N Engl J Med* 1984;311:1349-53.
7. Chronic Condition Data Warehouse (CCW) home page. West Des Moines: Iowa Foundation for Medical Care, 2008. (Accessed March 9, 2009, at <http://ccwdata.org>.)
8. Blustein J. The reliability of racial classifications in hospital discharge abstract data. *Am J Public Health* 1994;84:1018-21.
9. Eicheldinger C, Bonito A. More accurate racial and ethnic codes for Medicare administrative data. *Health Care Financ Rev* 2008;29:27-42.
10. SAS for Windows, version 8.2. Cary, NC: SAS Institute.
11. Friedman B, Basu J. The rate and cost of hospital readmissions for preventable conditions. *Med Care Res Rev* 2004;61:225-40.
12. Fisher ES, Wennberg JE, Stukel TA, et al. Associations among hospital capacity, utilization, and mortality of US Medicare beneficiaries, controlling for sociodemographic factors. *Health Serv Res* 2000;34:1351-62.
13. Barr M, Ginsburg J. The advanced medical home: a patient-centered, physician-guided model of health care. Philadelphia: American College of Physicians, 2006.
14. Coleman EA, Parry C, Chalmers S, Min S-J. The care transitions intervention: results of a randomized controlled trial. *Arch Intern Med* 2006;166:1822-8.
15. Naylor MD, Broton DA, Campbell RL, Maislin G, McCauley KM, Schwartz JS. Transitional care of older adults hospitalized with heart failure: a randomized, controlled trial. *J Am Geriatr Soc* 2004;52:675-84.
16. Jack BW, Chetty VK, Anthony D, et al. A reengineered hospital discharge program to decrease rehospitalization: a randomized trial. *Ann Intern Med* 2009;150:178-87.
17. Peikes D, Chen A, Schore J, Brown R. Effects of care coordination on hospitalization, quality of care, and health care expenditures among Medicare beneficiaries: 15 randomized trials. *JAMA* 2009;301:603-18.
18. Brumley R, Enguidanos S, Jamison P, et al. Increased satisfaction with care and lower costs: results of a randomized trial of in-home palliative care. *J Am Geriatr Soc* 2007;55:993-1000.
19. Rollow W, Lied TR, McGann P, et al. Assessment of the Medicare quality improvement organization program. *Ann Intern Med* 2006;145:342-53.
20. Göhler A, Januzzi JL, Worrell SS, et al. A systematic meta-analysis of the efficacy and heterogeneity of disease management programs in congestive heart failure. *J Card Fail* 2006;12:554-67.
21. Medicare & Medicaid statistical supplement. Baltimore: Centers for Medicare & Medicaid Services, 2007. (Accessed March 9, 2009, at <http://www.cms.hhs.gov/MedicareMedicaidStatSup/downloads/2007Table5.1b.pdf>.)
22. Adeyemo D, Radley S. Unplanned general surgical re-admissions — how many, which patients and why? *Ann R Coll Surg Engl* 2007;89:363-7.

Copyright © 2009 Massachusetts Medical Society.

APPLY FOR JOBS ELECTRONICALLY AT THE NEJM CAREERCENTER

Physicians registered at the NEJM CareerCenter can apply for jobs electronically using their own cover letters and CVs. You can keep track of your job-application history with a personal account that is created when you register with the CareerCenter and apply for jobs seen online at our Web site. Visit NEJMjobs.org for more information.

Appendix II – Chain Weight Options and formulae for calculation of chain weights, and actual and expected values

Formulae for calculation of chain weights, and actual and expected values

Let W_i be the case mix weight for a case in APR-DRG/SOI i .

If chain j has n readmissions with weights w_{jk} , $k=1, \dots, n$, then:

$$c_j = \text{chain weight for chain } j = \sum_k w_{jk}$$

where the index k runs from 1 to n .

The expected chain weight for a chain starting with a discharge with an initial APR-DRG/SOI of i is:

$$e_i = \sum_j c_j / n_i$$

where the summation runs over all the readmission chains starting with an initial APR-DRG/SOI of i and n_i is the number of readmission chains starting with an initial APR-DRG/SOI of i .

Assign an expected chain weight to each readmission chain, and an expected chain weight of zero to each only admission, call these g_i .

Calculate the statewide expected chain weight for each only or initial admission in APR-DRG/SOI i . This is:

$$f_i = e_i \times \frac{(\# \text{ initial admissions with APR-DRG/SOI } i)}{(\# \text{ of initial or only admissions with } i)}$$

For all APR-DRG/SOI i , assign f_i to each initial or only admission i .

The readmission index for a hospital is then:

$\sum g_n / \sum f_n$, where n runs over all initial or only admissions at the hospital.

It should be noted that this calculation does not take account of the adjustment factors for age category, mental health status or Medicaid status. These factors can be applied to the individual expected numbers f_i before the final summation.

Option 1: PPR rate

In this option all readmission chains are counted, and they all have equal weight. The APR-DRG/SOIs will have different proportions of readmissions associated with them, and the expected readmission rate for a hospital is adjusted using these different proportions.

In each of the options we will consider the same 2 cases with initial admissions in:

Case 1: APR-DRG/SOI 811.1 - allergic reaction / minor

Case 2: APR-DRG/SOI 161.4 - cardiac defibrillator and heart assist implant/ extreme.

Under Option 1 readmission chains following either of these initial admissions are counted as equal.

Option 2: Expected chain weight

The chain weight is the mean case mix weight associated with readmissions following a given APR-DRG/SOI. The chain weights are used to calculate both the actual and expected PPR rates for each hospital. Thus, the hospital is being held accountable for the proportion of readmission chains within each APR-DRG/SOI, and these are weighted by the expected chain weight for the APR-DRG/SOI, but not for the actual case mix weights of the readmissions.

The expected chain weights vary from .3 to 7.6. with a median value of 1.26.

APR-DRG/SOI 811.1 (minor allergic reaction) has a chain weight of 0.53, while 161.4 (cardiac defibrillator and heart assist implant) has a chain weight of 1.93. Under Option 1 a readmission chain following 811.1 would have the same impact as a readmission chain following an initial admission in 161.4. Under Option 2 the readmission chain following 161.4 would be weighted with the chain weight of 1.93.

In neither case would any account be taken of the actual case mix weights of the readmissions that occurred.

Case 1: Expected and actual weight is 0.53

Case 2: Expected and actual weight is 1.93

Option 3: Actual and expected chain weights

The chain weight is the mean case mix weight associated with readmissions following a given APR-DRG/SOI. The chain weights are used to calculate the expected PPR rates for each hospital. The actual case mix weights for the readmissions would be used to calculate the actual PPR rate for the hospital. Thus, the hospital is being held accountable for both the proportion of readmission chains within each APR-DRG/SOI, and the case mix weights for the actual readmissions.

A chain with an initial APR-DRG/SOI of 161.4 would have an expected chain weight of 1.93, but its actual chain weight would be the sum of the case mix weights for the readmissions that actually occurred following that particular initial admission.

Since some chains can be quite long, and the case mix weights associated with some of the readmissions can be high, it would be desirable to place a limit, or outlier threshold, on the chain weights used in the actual PPR rate calculation, which leads to option 4. The individual chain weights range from 0 to 35.

Case 1: Expected weight is 0.53, actual weight anywhere from 0.26 to 0.76.

Case 2: Expected weight is 1.93, actual weight anywhere from 0.45 to 8.5.

Option 4: Option 3 with an outlier

The non-zero individual chain weights range from 0.16 to 35. Only 1% have a chain weight greater than 10. To reduce the risk an outlier threshold should be applied if option 3 is selected.

Appendix III: Comment Letters on the MHPR Draft Recommendation

Appendix IV – Inter- and Intra- hospital Rates of Preventable Readmissions (Medpar Data 2008)

**UNADJUSTED INTRA AND INTER HOSPITAL AND OUT OF STATE READMISSION RATES,
CY2008 MEDICARE DATA**

PROVIDER NAME	15 DAY READMISSION INTERVAL			30 DAY READMISSION INTERVAL			ADJUSTMENT FACTORS			
	INTRA HOSPITAL	INTRA & INTER HOSPITAL	TOTAL W/ OUT OF STATE	INTRA HOSPITAL	INTRA AND INTER HOSPITAL	TOTAL W/ OUT OF STATE	INTRA/INTER HOSPITAL		OUT OF STATE	
							15 DAY	30 DAY	15 DAY	30 DAY
Washington County Hospital	7.20%	7.48%	7.76%	11.11%	11.54%	11.96%	1.028	1.024	1.055	1.04
Univ. of Maryland Medical System	6.36%	12.16%	12.48%	9.29%	17.32%	17.72%	1.864	1.798	1.044	1.04
Prince Georges Hospital	7.70%	11.39%	12.19%	11.41%	17.03%	18.63%	1.429	1.417	1.134	1.15
Holy Cross Hospital of Silver	5.71%	8.20%	8.62%	9.27%	13.08%	13.50%	1.397	1.354	1.088	1.06
Frederick Memorial Hospital	7.90%	8.63%	8.84%	12.42%	13.44%	13.71%	1.082	1.067	1.038	1.03
Harford Memorial Hospital	8.75%	11.29%	11.47%	13.25%	16.09%	16.28%	1.248	1.150	1.028	1.02
St. Josephs Hospital	6.20%	9.22%	9.39%	9.03%	13.67%	13.83%	1.456	1.471	1.024	1.01
Mercy Medical Center, Inc.	6.03%	9.77%	9.86%	8.98%	13.89%	14.06%	1.561	1.466	1.015	1.01
Johns Hopkins Hospital	6.40%	9.98%	10.56%	9.52%	14.60%	15.45%	1.520	1.481	1.099	1.09
St. Agnes Hospital	5.96%	8.49%	8.57%	9.13%	12.96%	13.06%	1.385	1.359	1.016	1.01
Sinai Hospital	5.49%	8.99%	9.06%	8.15%	13.45%	13.52%	1.588	1.577	1.017	1.01
Bon Secours Hospital	6.93%	13.26%	13.19%	10.71%	19.73%	19.78%	1.736	1.600	0.995	1.00
Franklin Square Hospital	7.26%	9.37%	9.45%	11.69%	14.24%	14.36%	1.253	1.169	1.013	1.01
Washington Adventist Hospital	6.05%	9.50%	10.43%	9.30%	14.06%	15.35%	1.519	1.438	1.156	1.14
Garrett County Memorial Hospital	5.73%	5.97%	6.91%	9.11%	9.28%	10.29%	1.035	1.012	1.186	1.12
Montgomery General Hospital	7.89%	10.13%	10.38%	11.21%	14.53%	14.86%	1.253	1.252	1.043	1.03
Peninsula Regional Medical Center	6.76%	7.33%	7.78%	10.46%	11.28%	11.96%	1.078	1.068	1.093	1.08
Suburban Hospital Association,Inc	6.57%	8.07%	8.69%	9.28%	11.65%	12.57%	1.214	1.231	1.112	1.10
Anne Arundel General Hospital	6.63%	7.57%	7.74%	9.93%	11.46%	11.73%	1.123	1.126	1.033	1.03
Union Memorial Hospital	5.23%	9.46%	9.54%	8.18%	14.40%	14.50%	1.746	1.674	1.012	1.01
The Memorial Hospital	7.38%	8.79%	9.11%	11.02%	13.31%	13.56%	1.172	1.179	1.052	1.03
Sacred Heart Hospital	7.58%	8.71%	8.85%	11.42%	12.98%	13.28%	1.139	1.116	1.028	1.03
St. Marys Hospital	9.59%	10.56%	11.25%	14.85%	16.04%	16.63%	1.092	1.065	1.090	1.05
Johns Hopkins Bayview Med.	8.64%	12.52%	12.65%	13.08%	18.02%	18.15%	1.386	1.295	1.022	1.01
Chester River Hospital Center	7.80%	8.18%	8.28%	11.76%	11.82%	12.00%	1.034	0.988	1.025	1.02
Union Hospital of Cecil County	9.60%	10.18%	11.05%	14.33%	15.17%	15.95%	1.055	1.049	1.122	1.08
Carroll County General Hospital	7.72%	8.54%	8.73%	12.05%	13.05%	13.43%	1.079	1.046	1.030	1.03
Harbor Hospital Center	6.53%	9.54%	9.62%	10.33%	14.34%	14.37%	1.406	1.311	1.012	1.00
Civista Medical Center	8.70%	10.01%	10.34%	13.35%	15.55%	15.87%	1.129	1.135	1.053	1.03
Memorial Hospital at Easton	7.94%	8.27%	8.31%	12.23%	12.69%	12.79%	1.031	1.022	1.012	1.01
Maryland General Hospital	8.39%	13.85%	13.93%	13.56%	21.30%	21.43%	1.516	1.393	1.012	1.01
Calvert Memorial Hospital	5.81%	7.24%	7.53%	9.72%	12.14%	12.28%	1.221	1.217	1.060	1.02
Northwest Hospital Center, Inc.	7.23%	10.07%	10.23%	11.52%	15.95%	16.16%	1.337	1.296	1.023	1.01
Baltimore Washington Medical	7.56%	9.88%	10.09%	12.15%	15.41%	15.66%	1.272	1.216	1.025	1.02
Greater Baltimore Medical Center	5.12%	7.15%	7.35%	7.69%	10.88%	11.11%	1.358	1.351	1.035	1.02
McCready Foundation, Inc.	5.75%	9.09%	9.06%	8.51%	12.50%	12.46%	1.550	1.429	1.000	1.00
Howard County General Hospital	6.27%	8.19%	8.39%	10.24%	12.84%	13.09%	1.275	1.207	1.036	1.02
Upper Chesapeake Medical Center	6.87%	8.50%	8.67%	10.95%	12.99%	13.24%	1.204	1.138	1.029	1.02
Doctors Community Hospital	6.96%	9.93%	10.40%	10.52%	15.02%	15.59%	1.391	1.378	1.080	1.06
Southern Maryland Hospital	7.77%	9.59%	10.62%	11.82%	14.43%	15.76%	1.215	1.188	1.161	1.13
Laurel Regional Hospital	7.06%	9.99%	10.54%	11.18%	15.17%	15.91%	1.358	1.261	1.084	1.07
Good Samaritan Hospital	8.19%	10.05%	10.11%	12.77%	15.79%	15.88%	1.175	1.164	1.010	1.00
Shady Grove Adventist Hospital	6.38%	7.28%	7.60%	9.92%	11.38%	11.79%	1.117	1.112	1.065	1.05
James Lawrence Kernan Hospital	1.23%	5.13%	5.08%	1.30%	6.31%	7.14%	4.000	4.667	1.000	1.14
Fort Washington Medical Center	4.61%	8.46%	9.99%	7.17%	11.54%	13.73%	1.795	1.547	1.253	1.25
Atlantic General Hospital	6.79%	7.98%	8.04%	10.58%	12.41%	12.87%	1.162	1.149	1.026	1.05
MD TOTAL	6.92%	9.23%	9.52%	10.61%	13.91%	76.24%	1.300	1.263	1.049	1.04

Appendix V-- Maryland Proposed STAAR Initiative

Proposed Approach for a Maryland State Action on Avoidable Rehospitalizations (STAAR) Initiative October 2010

Background

In May 2009, the Institute for Healthcare Improvement (IHI) launched State Action on Avoidable Rehospitalizations (STAAR). Funded through a grant from The Commonwealth Fund, STAAR is a multi-state, multi-stakeholder approach to dramatically improve the delivery of effective care at a regional scale.

The initiative aims to reduce rehospitalizations by working across organizational boundaries in a state or region. The work requires not only front-line process improvement, but also identification and mitigation of barriers to system-wide improvement, especially policy and payment reforms that will reduce fragmentation and encourage coordination across the continuum of care. The initiative has three high leverage opportunities for action:

- improving transitions for all patients,
- proactively addressing the needs of high risk patients, and
- engaging patients and their caregivers in assuming a proactive role in their plans.

STAAR was initially implemented in three states— Massachusetts, Michigan, and Washington— by engaging payers, state and national stakeholders, patients and families, and caregivers at multiple care sites and clinical interfaces. The work in the first three states is anticipated as a four year project. As this work has progressed for one year, IHI has offered to make programming and information learned from the initiative available to Maryland. The initiative would provide both technical assistance at the policy level and support provider efforts at the front line.

ROLE AND OPTIONS FOR MARYLAND STAAR LEADERSHIP PARTNERS

The role of the key leadership group for STAAR is to identify strategies to address systemic barriers to improving transition of care and to establish an ongoing feedback loop with providers on the progress of addressing the barriers. Specifically, STAAR leaders are to address barriers in the following areas:

- State-wide data/ measurement,
- Payment/policy reforms,
- Financial implications on providers, and
- Working / communicating across the care continuum.

To build upon the success of the initial group of states implementing STARR, a public-private partnership of four key stakeholders is proposed as the leadership group. The proposed entities include:

- The Health Services Cost Review Commission
- The Maryland Hospital Association
- Maryland Patient Safety Center

- DHMH Office of the Secretary or designee

ROLE & POTENTIAL ENTITIES TO BE REPRESENTED ON THE STEERING COMMITTEE

The role of the Steering Committee for STAAR is to work with the key leadership group of STAAR to fully identify the systemic barriers and flesh out the potential strategies for addressing the barriers as well as engaging in the action steps to put the agreed upon strategies in place. Entities to consider for representation on the Steering Committee include:

- Maryland Health Care Commission
- Delmarva QIO
- Health Services Cost Review Commission
- Hospital association
- State medical society
- Maryland equivalent of osteopathic association?
- Department of health
- Blue Cross Blue Shield plan
- State association of health plans
- Aging services
- Maryland Patient Safety Center
- Key hospital industry representatives
- Institute for Healthcare Improvement Medicaid program operations and quality assurance
- Hospice and palliative care association
- State association of nurse executives
- Large nursing home provider-Genesis or Erickson?
- Consumer organizations
- Home health association
- Health Information exchange- CRISP
- Senior health organizations

STAAR CORE SET UP FEATURES FOR PROVIDERS

For Maryland to implement a STAAR initiative, provider participants must agree to engaging in three areas of activity, including:

- Conducting initial and ongoing measurement of 30-day all-cause readmission rates;
- Establishing cross-continuum teams comprising physician office, skilled nursing facility; hospital, home care and patient/family members;⁸ and,
- Performing a readiness diagnostic by conducting at least five interviews and root cause analysis where readmission has occurred within the 30 day window in the measurement “base” period.

STAAR CORE IMPROVMENT PROCESSES FOR PROVIDERS

Key improvement processes that STARR participants must agree to implement include:

- Conducting enhanced readmission assessment that includes social and logistic information/factors for patients and families that impact risk for readmissions.
- Employing enhanced learning and coaching “teach-back” techniques with patients and families that includes facilitating their understanding and responding back regarding:
 - The reason they are admitted to the hospital.
 - How to do self care after discharge.
 - What to do if their symptoms worsen after they leave the hospital.
- Employing systematic methods to ensure timely communication with the next setting of care such that information is transferred the day of discharge.

⁸ To date, 67 cross continuum teams have been established across MA, MI and WA, 38 of which include patient and family representatives/participants.

- Employing systematic methods to ensure timely follow up with patients and families at moderate risk for readmission.

Next Steps

To move forward in determining whether STAAR is an appropriate fit for Maryland, the following next steps and timelines are proposed:

- Meet with proposed key leadership entities to discuss the proposal and next steps.
- Review and modify as needed the proposed list of leadership and steering committee participants.
- Should we determine it appropriate to go forward, convene a meeting with the proposed key leadership organizations and IHI staff.

**Appendix A:
IHI STAAR Resources Currently Available**

The blue text below are URL links currently posted on STAAR to the IHI website.

[How-to Guide: Creating an Ideal Transition Home](#)

This guide was created to support participating organizations in their work over the course of the STAAR initiative and beyond to improve transitions in care.

- [How-to Guide Summary and Strategies for Getting Started](#)

[STAAR Project Summary](#)

A one-page summary of the STAAR initiative.

[STAAR: A State-Based Strategy to Reduce Avoidable Rehospitalizations](#)

This document reflects the work of IHI to date to develop a state-wide strategy for reducing avoidable rehospitalizations.

As part of the *Effective Interventions to Reduce Rehospitalizations* project, which preceded the STAAR initiative, IHI produced materials to highlight promising approaches to reduce avoidable rehospitalizations.

- **[A Survey of the Published Evidence](#)**

This document is a survey of the published literature regarding the effective interventions to reduce avoidable rehospitalizations.

- **[A Compendium of Promising Interventions](#)**

This companion document to the Published Evidence provides information regarding current best programs and practices to reduce rehospitalizations.

[STAAR: A Tool for State Policy Makers](#)

The checklist provided in this tool focuses on aspects of the health care system that policy makers can influence and for which data is available to assess their state's performance regarding hospital readmission rates.

[Decreasing Avoidable 30-Day Rehospitalizations](#)

This Minicourse presentation at the December 2009 IHI National Forum describes key drivers of rehospitalization rates, how national data compares to state and regional findings, high-leverage changes to reduce hospitalizations, and characteristics of the STAAR multistakeholder quality initiative that crosses organizational boundaries.

STAAR Issue Briefs on Reducing Barriers to Care Across the Continuum

Measuring Rehospitalizations at the State Level

The Financial Impact of Readmissions on Hospitals

Engaging Payers

Working Together in a Cross-Continuum Team

Template for Review and Negotiation of an Admission-Readmission Revenue (ARR) Hospital Payment Constraint Program

DRAFT STAFF RECOMMENDATION

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

December 8, 2010

This document represents a draft recommendation to be presented to the Commission on December 8, 2010 for discussion purposes only. Comments should be sent to Robert Murray, Executive Director, HSCRC, 4160 Patterson Avenue, Baltimore MD 21215 by January 5, 2011.

Introduction

The purpose of this document is to describe the structure and components of a combined Admission-Readmission Revenue (“ARR”) bundled payment/constraint structure and propose a policy framework for the evaluation and approval of ARR pilots with Maryland hospitals. The staff believes the ARR bundled payment pilot initiative represents an important and timely step in rationalizing Maryland’s health care financing system. ARRs may also be the first of several bundled payment structures contemplated as part of the Health Services Cost Review Commission’s (the “HSCRC” or “Commission”) Bundled Payment Initiative.

The HSCRC staff has been meeting with representatives from Maryland’s health care industry, in preparing this policy framework and recommendations. As we have articulated in these meetings, the HSCRC staff is not recommending either a “hospital-centric” or a “physician-centric” approach to payment system and delivery system reform. Rather we are recommending an approach that, if successful, will be patient-centric and population-centric in nature.

We believe the All-Payer nature of our system coupled with our commitment to better align financial incentives across the health care system will encourage hospitals and physicians to work cooperatively to help the State achieve this overarching goal. There is currently an economic imperative to pursue these remedies, given the eroding affordability of health care in this country. There is also a clinical imperative given that our fragment payment structure all too often results in ineffective and uncoordinated care. Given Maryland’s distinct advantages, we believe the State is on the threshold of substantively addressing these deficiencies and making major strides toward the goal of ensuring and promoting the health of patient communities and populations, broadly defined.

Background

Since the inception of hospital rate regulation in Maryland, the HSCRC has experimented with innovative methods of hospital reimbursement. Pursuant to the provisions of Health-General Article, Section 19-216 and COMAR 10.37.10.06, the Commission may approve experimental payment methodologies that are consistent with the HSCRC’s legislative mandate to promote effective and efficient health service delivery and primary policy objectives of cost containment, expanded access to care, equity in payment, financial stability, improved quality, and public accountability.

Our fragmented system for reimbursing health services in this country has, for the most part, provided large disincentives for hospitals and other providers to construct efficient and effective coordinated care models. To address this inherent deficiency in our system, the HSCRC has implemented bundled reimbursement and broad-based quality of care Pay-for-Performance (“P4P”) methods designed to promote lower cost and higher quality care. These reimbursement methods include the implementation of the following landmark payment mechanisms: the Guaranteed Inpatient Revenue (“GIR”) system - the nation’s first Diagnostic Related Group (“DRG”) based per case payment structure; the Total Patient Revenue (“TPR”) structure - a global budget or capitated payment structure covering a given hospital’s inpatient and outpatient regulated facility charges; the Charge per Visit (“CPV”) structure – a bundled payment system covering the vast majority of hospital outpatient services.¹ The Commission’s three P4P

¹ The GIR, CPV, and TPR systems are examples of bundled payment structures that place hospitals at risk for service use. The GIR system which evolved into the Charge per Case system in 2001) imposed a case mix adjusted per case constraint on services used per inpatient stay. The CPV imposes a case mix adjusted constraint on services used per outpatient encounter.

quality of care initiatives: the Quality-Based Reimbursement (“QBR”); Maryland Hospital Acquired Condition (“MHAC”); and the planned Maryland Hospital Preventable Readmission (“MHPR”) depart from national approaches by virtue of their broad-based and normative methodologies and are superior in their capacity to provide positive change.

During the era of Managed Care domination, in the mid 1990s, the Commission also used its Alternative Rate Methodology (“ARM”) authority to allow hospitals to enter into at-risk arrangements with specific commercial payers. These ARM arrangements were generally fixed payment structures that bundled both hospital and non-hospital health services around an acute episode (global case rates for specific DRGs) or were applicable to services provided for a population of patients (capitation or partial capitation). ARM arrangements, thus, differed from other core Commission reimbursement methods in that they included non-hospital services and resulted from a specific arrangement between a given hospital and commercial payer.²

GIR and TPR arrangements were similar to ARM contracts in that they resulted in hospitals assuming additional financial risk; however these payment structures applied to hospital services only, covered all payers, and were executed on a voluntary basis by hospitals directly with the Commission. The proposed ARR reimbursement structure similarly applies to hospital services only; it would be applied under the Commission’s all-payer rate setting authority; and it would necessitate the execution of a voluntary agreement between a pilot hospital and the HSCRC.

Historical Approval Process for Experimental Payment in Maryland

Because GIR and TPR rate structures built on the HSCRC’s all-payer unit rate setting system and were natural evolutions in the process of bundling hospital payments, the Commission adopted a review and approval policy that included the approval of an overall Policy Template outlining the overall structures of the arrangements, including the evaluation criteria, reporting requirements, rate adjustments, and compliance and monitoring requirements. Once this Policy Template was approved, the Commission then delegated the authority to the HSCRC staff to apply the approval criteria contained in the Template and negotiate GIR and TPR arrangements with individual hospitals. This approach achieved a balance between ensuring sufficient oversight of the approval process by the Commission while maintaining the ability to be sufficiently responsive and flexible in implementation of these arrangements.

Under this approach, the staff would apply the Commission-approved terms and requirements on a consistent basis – but could have some limited flexibility to vary the arrangements based on the unique circumstances of each facility. An agreement detailing the terms and requirements was then executed between the Commission and the given hospital, and the staff was then required to summarize each negotiated arrangement publicly before the Commission.

The TPR, the broadest of the three structures, establishes a global cap on all hospital inpatient and outpatient services for a particular hospital.

² It should be noted that while the bundled payment structures approved under the Commission’s ARM authority were similar in principle to some of the payment arrangements contemplated in the HSCRC’s current Bundled Payment Initiative, managed care-driven payment reforms of the mid-1990s were based more on managing cost and discounting payment than they were on managing care and developing integrated delivery systems. The resulting backlash by patients and providers was major factor in the reversion of the health system to fee-for-service payment mechanisms, consumer-focused reforms, and significant provider consolidation in recent years. (Accountable Care Organizations: Will They Deliver? Marsha Gold. Policy Brief January 2010. MathematicaPolicy Research Inc.).

This document proposes a similar approval approach for ARR arrangements for the upcoming Fiscal Year (FY 2012).

Admission-Readmission Revenue (ARR) Hospital Payment Constraints

Factors Prompting the Development of ARRs

There are a number of economic and environmental factors motivating this effort – including the recent passage of National Health Insurance reform and concerns about the affordability of care and financial sustainability of our current health care system. Dramatic slowing in hospital volume growth and the Commission’s need to mirror tight updates nationally have also brought many to the realization that we must look for other ways to ensure the financial sustainability of Maryland’s hospital/health system.

Commensurate with these events is a recognized need to transition our health care delivery system toward a more coordinated care model, focusing on promoting health of populations and, at the same time, improving efficiency and quality of the care delivered.

Given the existence of the All-Payer rate setting system, a more organized hospital system, and other key regulatory and market dynamics, the State of Maryland has a unique opportunity to restructure the health care delivery system to achieve these overarching goals.

Under the current Charge per Case reimbursement structure, payers pay for all admissions based on the patient’s diagnosis, regardless of whether we are dealing with an initial stay or a readmission for the same or a related condition. As such, our system does not reward hospital-based initiatives that can successfully avert many readmissions.

According to a report to Congress by the Medpac (the Commission that advises Congress on Medicare payment and policy issues) in June 2008, many readmissions can be avoided by improving certain aspects of care:

“For example, by furnishing better, safer care during the hospital stay, providers can avoid complications that necessitate readmissions. Attending to patients’ medication needs at discharge also makes a difference. Medication errors after discharge are not uncommon and contribute to readmissions. Improving communication with patients before and after discharge also reduces the need for readmission. Patients are often not adequately informed about self-care. Similarly, improving communication with other providers is important. Too often discharge summaries are not complete and are not available at the time of the first post discharge physician visit.”

Spending on readmissions in Maryland is considerable and accounts for much of the variation in spending for hospitalization episodes (see Table 1). Within 30 days of discharge, 16.6% of admissions are readmitted to the same facility (“intra-hospital” readmission), accounting for over \$1.2 billion in overall Maryland hospital spending in 2010 (out of a total of approximately \$9 billion spending on inpatient hospitalizations in FY 2010). Not all these readmissions are avoidable, but some are.³

³ Note: “intra-hospital” readmissions are a subset of total readmissions (readmissions back to the same hospital and readmissions to other facilities – also called “inter-hospital” readmissions). Intra-hospital readmissions account for approximately 70% of total readmissions in the State.

Table 1 also illustrates the remarkable stability in intra-hospital readmission rates across hospitals overtime.⁴

Table 1

Raw Intra Hospital All-Cause 30 Day Readmissions (no adjustment for out of state readmissions)

Hospital	provno	Fiscal Years Ending						Annual Average Change 2005-2010	Hospital Type
		2005	2006	2007	2008	2009	2010		
Laurel	210055	12.5%	11.1%	11.6%	12.0%	12.0%	11.3%	-0.3%	Border
WAH	210016	14.9%	14.8%	14.6%	13.8%	14.3%	14.4%	-0.1%	Border
Suburban	210022	16.4%	16.0%	16.3%	17.1%	16.8%	16.4%	0.0%	Border
Shady Grove	210057	11.4%	11.6%	11.1%	11.6%	11.9%	11.5%	0.0%	Border
Holy Cross	210004	9.9%	9.8%	9.9%	10.1%	10.3%	10.8%	0.2%	Border
PG	210003	10.4%	10.4%	9.8%	10.2%	11.5%	11.4%	0.2%	Border
Cumberland	210025	16.7%	16.8%	15.8%	16.2%	16.0%	9.8%	-1.4%	Rural
Garrett	210017	16.4%	14.7%	16.6%	15.7%	14.2%	14.3%	-0.4%	Rural/Border
Western MD	210027	24.9%	25.1%	25.5%	24.4%	24.4%	22.9%	-0.4%	Rural
Easton	210037	18.9%	17.6%	17.9%	17.6%	18.2%	17.0%	-0.4%	Rural
Dorchester	210010	22.4%	21.7%	22.0%	22.0%	22.3%	20.8%	-0.3%	Rural
Atl General	210061	17.6%	17.7%	17.5%	17.5%	18.3%	17.2%	-0.1%	Rural
McCready	210045	NA	NA	NA	NA	NA	NA	0.0%	Rural
Harford	210006	21.4%	21.2%	19.9%	21.3%	22.7%	21.9%	0.1%	Rural
Carroll	210033	19.2%	18.8%	19.5%	20.0%	20.3%	19.8%	0.1%	Rural
Wash Co	210001	16.8%	16.9%	17.6%	17.3%	17.2%	17.6%	0.2%	Rural
Frederick	210005	15.8%	16.0%	16.7%	17.0%	17.6%	16.7%	0.2%	Rural
PRMC	210019	18.1%	18.6%	18.0%	18.2%	18.3%	19.0%	0.2%	Rural
Chester	210030	18.7%	19.5%	20.8%	20.0%	19.2%	19.7%	0.2%	Rural
Union Cecil	210032	19.6%	20.2%	19.5%	21.0%	21.2%	20.7%	0.2%	Rural
St. Marys	210028	15.5%	17.8%	17.7%	18.3%	18.4%	16.6%	0.2%	Rural
Civista	210035	14.8%	15.1%	15.7%	16.6%	16.9%	16.7%	0.4%	Rural
Ft. Wash	210060	14.2%	14.3%	12.7%	13.9%	14.2%	13.1%	-0.2%	Suburban
Calvert	210039	16.4%	16.7%	15.2%	15.0%	15.1%	15.5%	-0.2%	Suburban
S. Md	210054	16.8%	16.1%	16.0%	16.0%	16.6%	16.0%	-0.2%	Suburban
St. Joe	210007	14.3%	14.5%	14.7%	15.6%	15.8%	14.0%	-0.1%	Suburban
Doctors	210051	19.1%	19.5%	18.6%	19.4%	19.1%	18.9%	-0.0%	Suburban
BWMC	210043	21.5%	21.3%	21.3%	21.6%	22.2%	21.4%	-0.0%	Suburban
St. Agnes	210011	17.3%	16.4%	16.1%	15.6%	16.5%	17.2%	-0.0%	Suburban
Anne Arundel	210023	12.5%	12.3%	12.0%	12.2%	12.8%	12.7%	0.0%	Suburban
GBMC	210044	11.2%	12.1%	11.3%	11.3%	11.8%	11.6%	0.1%	Suburban
Howard	210048	11.8%	12.5%	12.7%	11.7%	11.8%	12.3%	0.1%	Suburban
FSQ	210015	17.7%	17.6%	17.9%	18.1%	18.6%	18.3%	0.1%	Suburban
Northwest	210040	19.8%	20.0%	19.5%	19.9%	20.7%	20.6%	0.1%	Suburban
Montg Gen	210018	16.0%	16.5%	17.3%	16.8%	16.9%	16.8%	0.2%	Suburban
Upper Ches	210049	16.0%	16.4%	16.0%	16.0%	16.8%	17.3%	0.3%	Suburban
JHH Onc	210904	27.8%	27.4%	27.3%	27.0%	27.3%	27.3%	-0.1%	Teaching
MIEMSS	218992	NA	NA	NA	NA	NA	NA		Teaching
UMCC	218994	NA	NA	NA	NA	NA	NA		Teaching
JHH	210009	17.8%	17.8%	17.8%	18.2%	18.0%	17.9%	0.0%	Teaching
UMMS	210002	17.2%	17.3%	17.7%	16.9%	17.6%	17.9%	0.1%	Teaching
JH Bayview	210029	16.8%	16.8%	17.2%	17.2%	17.6%	18.3%	0.3%	Teaching
Kernan	210058	7.7%	9.3%	8.2%	7.6%	5.7%	6.8%	-0.2%	Urban
Bon Secours	210013	23.3%	23.9%	24.8%	23.2%	22.3%	22.7%	-0.1%	Urban
Union	210024	18.2%	18.4%	17.6%	17.2%	18.2%	18.4%	0.0%	Urban
Mercy	210008	14.3%	15.0%	14.2%	14.8%	14.9%	14.5%	0.0%	Urban
Harbor	210034	16.9%	16.7%	16.4%	17.2%	17.3%	17.3%	0.1%	Urban
Good Sam	210056	23.6%	24.0%	24.3%	24.4%	24.1%	24.0%	0.1%	Urban
Sinai	210012	15.6%	15.9%	15.2%	15.6%	16.0%	16.7%	0.2%	Urban
Md Gen	210038	18.6%	19.4%	19.8%	20.0%	20.2%	20.7%	0.4%	Urban
State		16.2%	16.3%	16.2%	16.3%	16.6%	16.6%	0.1%	

Admission-Readmission Revenue Arrangements - General Description

Like the GIR and TPR payment arrangements that preceded it, the proposed ARR structure would build on the all-payer unit rate setting system and may be considered a natural progression in the Commission’s efforts to rationalize the health care financing system in Maryland. ARR’s are also consistent with the Commission’s philosophy for the development of bundled payment (one of incrementally building out payment bundles around the acute hospitalization by gradually expanding the scope of services and the

⁴ Note: the difference in magnitudes of intra-hospital readmission rates across facilities may well reflect differences in the service area configurations and patient populations of facilities. For instance, due to their relative isolation, rural facilities will naturally experience much higher rates of readmission than would hospitals in more densely overlapping services areas.

window of time over which the services are provided).⁵ Additionally, ARRs are consistent with the major focus of the Commission’s bundled payment initiative – which is to find a way to ensure the long-term financial sustainability of the Maryland hospital and health care system, while simultaneously achieving better outcomes and more effective and efficient care delivery over the long term.⁶

All bundled payment arrangements involve a transfer of financial risk from payers to providers, and the ARR is no exception. As currently conceived, the ARR structure would hold hospitals at-risk for controlling the number of cases that are readmitted to the facility following an initial admission. However, the level of financial risk transferred to providers under an ARR falls somewhere in between the level of risk transferred under the GIR and TPR (under the GIR, hospitals were at risk for controlling utilization per case, while under the TPR, hospitals are at risk for controlling all inpatient and outpatient utilization).⁷

It is contemplated that readmissions under the ARR at-risk structure would be defined as any readmission (otherwise referred to as “all-cause readmissions”) to the same hospital facility (or groups of hospitals in a common health system) within 30 days of the most recent discharge.

Proposed Operational Structure

Like the GIR and the TPR, the ARR arrangement would impose a constraint on the amount of revenue a hospital could keep during a particular year. Hospitals would still be paid HSCRC approved unit rates – rates based on the units of service provided for any given case. These unit rates would still be updated on an annual basis per the Commission’s normal inflation update process, with any associated adjustments for price compliance, case mix change, or volume changes. Like the GIR and TPR, hospitals would then be responsible for managing utilization in order to meet their pre-established revenue constraints. But unlike the GIR (where hospitals’ allowed revenues were determined by the number of admissions times a case mix adjusted CPC standard) and the TPR (where hospital revenues are constrained by a global budget revenue cap – regardless of underlying volumes), hospitals under an ARR arrangements would still be held to case mix adjusted CPC chain weights for “only admission” cases (those not followed by a subsequent readmission to the same facility within 30 days) and for cases followed by up to three subsequent readmissions (the 30 day window still applying for each link in the chain).

The CPC admission-readmission chain weights would be established for each facility based on state-wide data and the hospital’s experience with “only admissions” and 30 day readmissions in some base year.

⁵ While the rationale for bundling payment is compelling, the HSCRC staff believes that an incremental approach is necessary to improve incentives, while, at the same time, being able to adjust for the level of financial risk assumed and avoiding large-scale unintended consequences. An incremental approach is also appropriate because it will allow the Commission the ability to match the financial incentives provided to the ability of providers to operationalize the necessary coordinated care structures. Small financial incentives have less influence than large ones, but achieving effective change will require balancing financial risk and provider capabilities.

⁶ See the staff’s discussion document entitled, “Commission-Directed Initiative to Establish a System of Bundled Payment Structures to Promote Coordinated Care Delivery and Access to Affordable and High-Quality Care,” presented to the Commission on October 13, 2010.

⁷ Staff would further note that while the ARR structure will involve bundling more revenue than the current GIR/CPC per case constraint system, the amount of revenue under the arrangement and at risk financially, is relatively small compared to that assumed by hospitals under a TPR constraint structure. ARRs could cover 7-8% of hospital revenue for a given ARR facility vs. 100% of revenue being subject to a cap under the TPR structure.

Under this structure, a hospital's target would be restated as a Charge per Episode ("CPE") target or constraint. CPEs would include both only-admissions and applicable admission-readmission chains. Under this arrangement, the hospital is held 100% at-risk for reducing 30 day, all-cause, intra-hospital readmissions, and patients/payers are held harmless for any increase in readmissions. The hospital's Charge per Episode would remain unchanged regardless of the number of readmissions it experienced. If that facility is successful in reducing the number of applicable 30 day readmissions, it would eliminate the costs associated with these cases, but be allowed to keep the revenue associated with its approved CPE.

As with the GIR, hospitals may find this ARR structure attractive because it provides them with a strong financial incentive to put in place the care coordination mechanisms necessary to reduce the potential for a patient to be readmitted and keep 100% of the savings associated with that outcome. Allowing for the retention of 100% of the savings enables hospitals and related providers to generate sufficient funding to invest in the needed care coordination infrastructures. It also begins to remove the current disincentives providers face to treat in a holistic and comprehensive fashion. Patients will stand to benefit because they will likely receive better overall care and avoid additional unwanted and costly acute hospitalizations. The positive impacts of this approach is significantly enhanced by the All-Payer nature of the Maryland system in that these more rational financial incentives can be applied to all patients, public and private.

The health care system would benefit from this arrangement because hospital efforts to reduce intra-hospital readmissions will also likely reduce inter-hospital readmissions. Further savings to the system may accrue as improved discharge planning and better coordinated post-acute care help reduce repeat emergency department visits and other avoidable episodes of care. The health system may also stand to gain if hospitals, now reaping the benefits of improved productivity in the form of better care coordination for readmission cases, are able to sustain tighter annual updates by the HSCRC. This is the same dynamic that allowed the HSCRC to outperform the rest of the nation following the implementation of the GIR. Under the GIR constraint, Hospitals "cannibalized" excess use of days and ancillaries per case and were allowed to retain these savings. These productivity gains achieved and retained by hospitals allowed for the implementation of tighter annual updates by the Commission (relative to what was experienced nationally). This basic structure enabled Maryland to move from a position of over 24% above the U.S. on hospital cost per adjusted admission in 1976 to over 11% below the U.S. in 1993.⁸

Finally, based on preliminary discussions with several hospitals and per past practice of the Commission when implementing experimental payment methodologies, it is likely that ARR pilot programs will seek approval for a three year term of operation.

Other Considerations

As with the GIR and TPR – the Commission must make sure that the proposed ARR arrangements are structured to account for all necessary adjustments to rates through the application of the Commission's annual rate updates and unit rate compliance during the course of the year. Any exclusions or additional adjustments must also be identified and described. The precise methodology for how the Charge per Episode constraints would be established and monitored would also need to be specified.

Also, as is articulated in the Patient Protection and Accountable Care Act, it is important that as providers are gradually given more responsibility and budgetary autonomy for reducing utilization, they also be

⁸ Over this period, Maryland hospitals received annual updates of inflation plus 1% on average vs. annual updates nationally of inflation plus 2 to 3%.

held accountable to the public for more efficient and effective operation. A concern about more bundled payment structures is that they may encourage providers to provide insufficient care. The first form of protection against this unwanted result is the use of robust risk-adjustment systems and methods to account sufficiently for variations in illness severity of patients and appropriately match payment to the required level of resource use. Beyond this, the public can be protected through the use of outlier payments and exclusions for unusual cases, while providing financial rewards and penalties to providers based on their performance on various process and outcome measures. Providers would also report publically on quality measures -- particularly for minority and disadvantaged populations.

As noted above, in addition to the economic imperative to inject more rational financial incentives into our payment system, there is a clear clinical imperative as well. In recent years the Commission has initiated a number of quality of care measures and has plans for the addition of other metrics and analyses that will help the HSCRC better understand the interaction between various process and outcomes measures over time. These quality metrics are far broader than those in place nationally and give Maryland a further advantage in assuring that our health system will meet our goal of enhancing the overall value of the care delivered by providers in the State. Although the Commission has not found a direct relationship between the level of financial risk assumed by hospitals under various bundled payment structures and their resulting performance on current quality measures, it is important that the Commission monitor the quality performance of hospitals entering into ARR arrangements. In order to achieve maximum improvements in the value of the care delivered over the long-term, financial incentives should be focused equally on improving quality and containing cost.⁹

The Commission should also monitor other utilization trends and system performance metrics over time -- such as the rate of emergency room visits, observation cases, and admission of ambulatory sensitive cases. If the overall goal of bundled payment initiatives is to reduce overall system utilization and expense, then it is important that reductions in unnecessary readmissions are not accompanied by increases in ED visits, observation cases, and rates of admission for ambulatory sensitive cases. Additionally readmission rates may be influenced by changes in the mix of a hospital's patient population over time. Adjustments to the methodology may be required in the event of a major change to a facility's service mix or mix of indigent patients.

Finally, it is important that any agreement between a hospital and the HSCRC related to the implementation of an ARR arrangement also specify potential remedies for unanticipated circumstances outside the control of the hospital. Examples of such factors include an influenza epidemic or a major natural or terrorist disaster in the area, which results in a larger than usual number of hospitalizations and potential readmissions.

Evaluation and Approval Considerations

In devising and recommending a policy framework for the eventual approval of ARR arrangements with hospitals, it is important that these arrangements be consistent with the long-standing policy objectives of the HSCRC and the overarching goal of payment reform as articulated by the Accountable Care Act: that of promoting delivery system change resulting in improved value of our health care (reduced total spending and improved overall quality) and focusing more effectively on improving the health of populations broadly defined. The following discussion attempts to assess the potential for the ARR payment approach to be consistent with these policy objectives and overarching goal.

⁹ Accountable Care Organizations: Will They Deliver? Marsha Gold. Policy Brief January 2010. Mathematica Policy Research Inc.

In addition to these overarching goals and objectives, the staff is optimistic that these pilot bundled payment arrangements will demonstrate the ability of hospitals and health systems to clinically integrate their care services, manage increased financial risk, and generate much needed productivity and quality improvements. This experience will be important for the Commission as it seeks to expand the number of hospitals operating under bundled payment arrangements and expand the scope and window of services contained in payment bundles in the future.

Potential for Achieving HSCRC Goals and Broader Health System Change

Staff believes that the ARR arrangements are consistent with the following long-standing objectives of the Commission:

1) Financial Stability and Access Considerations

As noted, a primary rationale for expanding the Commission's arsenal of bundled payment structures relates to the need to provide hospitals and other providers with additional incentives and opportunities to generate productivity improvements and cost savings. These cost savings (if retained by providers) can be a major source of funding and help ensure the financial sustainability of the Maryland health care industry.

Reductions in utilization realized by hospitals (such as reduced intra-hospital readmissions) operating under at-risk bundled payment arrangements should also result in a more affordable health care system and, at the same time, free up the capacity needed to treat additional patient volumes associated with future health insurance expansions authorized by the ACA and the health needs of an aging population in the State.

However, this new source of funding will only be available for hospitals and health systems that are most successful in producing higher levels of efficiency and effectiveness in operation. Ultimately, required reductions in the overall level of health care expenditures will not support our provider infrastructure as it is currently configured. And, commensurate with the ability of hospitals to generate additional productivity in their operations, the HSCRC must seek to bend the cost curve so that the paying public also benefits from these activities through more affordable health care.

Navigating through this period will prove challenging as long as the health care financing system is transitioning from a largely fee-for-service paradigm to a system that is highly integrated clinically and financially. Yet, the staff believes that the HSCRC is uniquely positioned to move the Maryland hospital industry toward this more productive fixed cost and clinically integrated model. If successful, it will allow for the financial stability of the provider industry and at the same time, facilitate the access expansions mandated by the recently passed national health reform.

2) Maintaining Payment Equity

Payment equity was an issue in the context of ARMs – because they were payer specific and they potentially played into the managed care strategy of discounting to generate needed savings. Discounting without care management inevitably resulted in a transfer of an excessive amount of financial risk to providers and, in some cases, so-called cost-shifting.

GIR, TPR, and ARR – while they do result in the transfer of additional financial risk to providers, staff believes that the magnitude of risk transferred has and will be commensurate with the ability of providers to manage that risk. In addition, because these programs involve hospital services, they fall under the HSCRC’s all-payer rate setting authority. The Commission, therefore, has strong compliance mechanisms to ensure continued payment equity across payers.

3) Cost Containment

Gradual and incremental expansion of bundled payment systems means we are moving to largely fixed cost or global budget type system. Focus of this system will now be on controlling total expenditures or, if viewed on a population basis, on controlling the growth of health care expenditures per capita. The Commission’s experience with such payment mechanisms has been very favorable. Hospitals operating under the Commission’s TPR constraint system have consistently had lower use rates and lower case mix adjusted charge per case. There is some anecdotal evidence that these facilities also have experienced lower rates of readmissions as well. Outside of Maryland, global budget systems have experienced some success in the Finger Lakes region of Upstate New York.

Although these systems result in the assumption of financial risk, they also give providers significant budgetary autonomy and the ability to allocate clinical resources more efficiently and effectively, thereby achieving levels of clinical integration and care coordination that are superior to facilities that operate under more fragmented payment structures.¹⁰

ARR arrangements represent an incremental step in this direction. Hospitals that have more effective working relationships with their medical staffs will be in the best position to be successful (i.e., generate savings by improving care and reducing unnecessary utilization) under bundled or fixed cost payment models. The HSCRC must then assure the public that it, too, will share in the productivity gains achieved. This can be accomplished through keeping the rate of growth of total expenditures low (and continuing to bend the cost curve downward as it has in recent years) and by eventually sharing directly in the savings generated by fixed cost and vertically integrated provider systems.

4) Ensuring overall Public Accountability and Prospects for Improved Quality of Care

Accountability, in HSCRC parlance, has traditionally meant that hospitals should be accountable to the public through rate reviews and public access to data, including the extent and nature of all trustee relationships. Additionally, the HSCRC has provided public reports on hospital financial condition, relative efficiency, and relative quality of care performance on an annual basis. Providing hospitals with increasing levels of fiscal autonomy (under payment structures like the ARR) carries with it the need to also ensure that they are accountable to the public for their overall performance. In particular, this means being able to demonstrate the increased value of the care they provide (i.e., lower cost and higher quality). ARR arrangements provide an opportunity for hospitals to achieve higher levels of value, and it is the hospitals’ and the HSCRC’s responsibility to report on this performance. Thus, the adoption of more bundled payment arrangements will require a higher degree of monitoring and reporting – both to

¹⁰ The concept of Accountable Care Organizations (“ACO”), as articulated by the Accountable Care Act, is another example of a vertically integrated provider driven entity, organized to accept full risk for the provision of care to broad populations. The federal government is in the process of establishing rules regarding eligibility and potential for shared savings distribution to ACOs by the Medicare program.

demonstrate that these structures result in a higher value of care and to ensure that there are not unintended results that undermine the overall goal of improved efficiency and effectiveness.

As the system moves more toward bundled and fixed payment structures, an additional monitoring responsibility will be to make sure that the amount of financial risk transferred to a hospital under these arrangements is reasonable and manageable.

In general, the staff believes that ARR arrangements can be structured to be completely compatible with the HSCRC's primary policy objectives. Moreover, the staff believes that more bundled payment structures have the potential to improve the rate setting system's performance on all of these dimensions, while in addition to making considerable progress toward meeting the overarching goal of improving the health of populations broadly defined.

Concerns and Other Considerations

While the ARR structure presents the Commission and the hospital industry with some favorable opportunities for improving the efficiency and effectiveness of the overall health care system, there remain some concerns and uncertainties that should be acknowledged and considered:

1) Potential for Conflicting Incentives in a System in Transition

As noted above, the ARR bundled payment arrangements represent a natural next step in the attempts of the HSCRC to promote payment structures that improve hospital efficiency and effectiveness. While the staff views incorporating ARR at-risk structures into hospital reimbursement as a very positive development, it would note that facilities that opt for ARR arrangements will still face a conflicting set of reimbursement incentives.¹¹ On the one hand, these hospitals will appropriately invest in infrastructure and implement care coordination mechanisms that are geared toward reducing volumes (readmissions). On the other hand, these facilities will still be financially incentivized to continue to pursue "top-line" strategies (volume and revenue generation) for other parts of their care delivery systems.

For instance, one advantage of the ARR structure for facilities that are already operating at near- or full-occupancy levels is that a substantive reduction in readmissions will free-up capacity that can be back-filled by additional admissions. If the particular facility generally provides care that is higher quality and lower cost (higher value), then this circumstance could reflect a positive development for the health system. Payers, physicians, and patients who are incentivized to seek out hospitals providing the highest value of care will naturally gravitate to this facility.¹²

However, if this new operating capacity is used to admit more marginal patients (for instance patients with ambulatory sensitive conditions - conditions that are better treated on an outpatient basis or by a primary care physician), this dynamic may end up costing the system more through higher overall expenditures. Likewise, reductions in readmissions that are accompanied by "rebounds" to emergency rooms or observation units (in lieu of being formally readmitted) could also result in the public effectively

¹¹ This is in contrast to hospitals under a 100% fixed cost TPR structure where hospitals face a consistent incentive to reduce unnecessary utilization and provide the most efficient and effective care possible for their communities.

¹² Overtime, more progressive payment structures – such as those contemplated by the Primary Care Advanced Medical Home model currently championed by CareFirst Blue Cross of Maryland will contain strong financial incentives for community physicians to redirect patients to lower cost and higher quality acute care facilities.

paying twice for the care being rendered. This would result because under the ARR structure, hospitals initially would retain 100% of the savings associated with readmission reductions under the contemplated Charge per Episode payment constraint. Yet, if patients who previously would have been readmitted, merely bounce back to hospitals as emergency cases or observations, then the public will be made to pay both the CPE and additional charges associated with increased ED or observation visits. **Appendix I** provides an example of how an ARR can end up costing the system more without modifications to the applicable Fixed Cost adjustments.

Hospitals with “closed-shop” employment models (where physicians are paid flat salaries) are less likely to create this less desirable result. However, the current hospital-physician contracting model (which is structured to pay performance bonuses for additional billings) adopted by many facilities could undermine the potential of the ARR to ultimately produce the anticipated overall system savings. In its review of hospital ARR requests, staff will devote considerable attention to understanding the nature and structure of physician contracting for a given facility and make appropriate adjustments to the ARR agreement where necessary.

Additionally, hospitals that do not opt for the ARR model will continue to be primarily focused on “top-line” revenue generation strategies (attempting to ensure their financial viability from continued volume growth and higher annual payment updates). This may present difficulties for the Commission if it attempts to transfer some portion of the savings associated with successful ARR implementation back to the public in the form of lower overall payment updates. Hospitals generating productivity gains through the ARR may be more willing to accept lower payment updates, while those operating on more of a variable cost basis will resist attempts by the Commission to substantively bend down the hospital cost curve.

These are just a few of the challenges the Commission and the industry will face as we move through a transition from variable to fixed cost reimbursement models. The staff has advocated that the HSCRC pursue an incremental strategy in the implementation of its bundled payment initiative (to allow time for providers to invest in necessary infrastructure and manage the risk most effectively). However, the staff would also recommend that the Commission assist this transition by moving the overall system to more of a fixed cost system. This can be accomplished through the approval of additional TPR arrangements with qualifying hospitals, along with changes to the fixed cost adjustment factor to hospital rates. Staff will be proposing changes to the Commission’s fixed cost adjustment factor for both ARR and non-ARR, non-TPR hospitals to both counteract the negative effects of these conflicting incentives facing ARR hospitals and to help move the entire Maryland hospital system toward more of a fixed cost system – which ultimately is far more supportive of the articulated goal of achieving a population-centric health care financing system.

2) Impacts on other Sectors of the Health Care System

Although the ARRs deal exclusively with hospital services (non-hospital services are not bundled into the payment structures), concerns have been raised regarding the potential impact of the ARR and other bundled payment approaches on other providers in the health care system. In particular, ARR structures will require a much higher degree of cooperation and coordination between hospitals and their medical staff, and between hospitals and physicians in the community. Facilities with more of a “closed-shop” physician employment model, with tight linkages with community physicians, will likely be most successful in developing the coordinated care models necessary to reduce unnecessary readmissions and

generate savings.¹³ Even facilities operating under full employment model with physicians will need to reach out to community physicians to ensure effective communication and care coordination in the community. The ARR structure, then, is also favorable in that it provides strong incentives for these additional linkages to occur. Existing regulations and rules that limit the ability of providers to cooperate around care delivery should be re-examined and modified to allow for potential sharing of savings generated through more efficient and effective care delivery.

Special efforts may be needed in areas with a shortage of primary care providers (“PCPs”). These may be areas with great opportunity for general system savings, since a lack of effective primary care can result in high rates of re-hospitalizations and emergency room visits.

Special efforts also will be needed to ensure that underserved patients – minorities, special needs patients, etc. – can benefit from the increased value provided by hospitals operating under more fixed payment structures. Here, too, there may be opportunities for large cost savings through the development of more coordinated care infrastructures. The HSCRC should consider eventually providing extra incentives for hospitals to focus on reducing health care disparities within the general framework of TPR or ARR arrangements.

Finally, it is clear that concerns about liability affect physician and hospital decisions about the way care is delivered.¹⁴ These concerns could take on greater significance if providers are now perceived as restricting the use of services under more fixed payment structures. Tort reform and/or other structural changes to how medical liability is handled under a health care system characterized by tighter clinical and financial integration will likely be required.¹⁵

3) Fairness in Implementation and Rewards for both Improvement and Attainment

One of the many current criticisms of the ACO and Shared Savings Program (“SSP”) model being proposed by the Centers for Medicare and Medicaid Services (“CMS”) is that Medicare’s establishment of the expected total expenditures for patient care by an ACO will be based on historical experience. Many believe that a critical weakness of the SSP model is that providers that have the most to gain from shared savings are the ones who seemingly have wasted the most resources, while those who are already doing a good job by being low cost and high quality would have to make greater investments to improve and would be less likely to be rewarded.

The Commission may face a similar fairness issue when deciding to negotiate ARR arrangements with hospitals. It may be unfair to allow two hospitals to implement an ARR structure based purely on their historical experience. Hospitals that have devoted more resources to providing better discharge planning and more coordinated care (and as a result have lower readmission rates) will be at a disadvantage in generating additional savings under an ARR than facilities that have not engaged as actively in those

¹³ Based on preliminary discussions with hospitals interested in the ARR structure and a comparison of Maryland’s high Medicare readmissions to “better practice” states’ performance on readmissions, staff estimates that with appropriate financial incentives in place through the ARR, 30-50% improvement in readmission rates are achievable over the next 3 to 5 years (see, Rehospitalizations among Patients in the Medicare Fee-for-Service Program. S Jencks, et.al. The New England Journal of Medicine, 360:1418-28, April 2, 2009)

¹⁴ See FA Sloan, JH Shadle. Is there Empirical Evidence for “Defensive Medicine”? A Reassessment. J. Health Econ. 2009 Mar; 28(2): 481-91.

¹⁵ **Appendix II** contains a letter from a representative of organized physician groups calling for among other things medical liability reform efforts.

activities. On the other hand, because the ARR arrangements will be voluntary, hospitals with high historical readmission rates may not decide to opt for an ARR structure if the Commission makes any downward adjustment to their CPE should their readmission rates be high relative to other similar hospitals.

This fairness issue is also at the center of the current debate between the HSCRC staff and the Maryland Hospital Association (“MHA”) regarding the potential state-wide scaling methodology related to rates of Potentially Preventable Readmissions. The staff has argued that a focus purely on the issue of year-to-year improvement inherently ignores the different relative starting points and unfairly penalizes hospitals that have pro-actively devoted more resources to reducing unnecessary readmissions.

4) Request by Facilities for “Upfront Funding”

During the course of previous discussions with hospitals regarding their interest in participating in an ARR arrangement, the issue of potential “Upfront Funding” was raised. Hospitals have argued that to perform successfully under an ARR, considerable additional investment in discharge planning and care management and coordination will be required. Additionally, during the initial year of operation of an ARR, there will naturally be a mismatch between costs sustained and additional revenue flow related to reducing readmissions and averting the costs associated with the unnecessary readmission. This posture mirrors the MHA’s request for an additional \$54 million in rates to support a broader readmission effort state-wide.

The staff recognizes the need to provide the appropriate balance of incentives and risk in order to make sure hospitals are properly incentivized to enter into and succeed under an ARR arrangement. However, in a competitive market, firms that succeed at generating mechanisms and innovations resulting in cost reductions (which also in a competitive market later result in price reductions to consumers) generally go fully at risk for these investments. They do so generally knowing that if they are successful, they will recoup these extra upfront costs through the savings they generate under the short-term market price and additional market share they realize by out-competing all other producers.¹⁶

In an era of excessively high cost of hospital care (and arguably relatively poor value for current dollars expended), it is difficult to contemplate raising rates to the paying public to further incentivize hospitals to take these appropriate next steps. Higher value care is and will be increasingly demanded by patients and first party payers. Hospitals that pro-actively take steps to develop infrastructures to meet this demand (and fiscal imperative from an overall State and federal budget standpoint) will be in a position to recoup these upfront costs through savings.

The staff suggests the possibility of fronting hospitals entering into ARR arrangements up to a maximum of 0.5% of their inpatient revenue for a period of two years with the expectation that these one-time funds will be “paid back” to the public (beginning in year three and possibly also subsequent years through commensurate one-time reductions to rates).¹⁷ Handling advance funding in this fashion (as a loan) will allow for better matching of costs and revenues associated with the ARR program, ensure that hospitals retain an appropriate incentive to achieve success in their program, and not place the public at any

¹⁶ The staff further notes that occasionally in competitive markets, producers are able to solicit upfront funding for innovative improvements to the production process from venture capitalists. This funding, however, is in the form of a loan with the promise of repayment of principal with a rate of return.

¹⁷ Staff may wish to retain some flexibility on both the magnitude of temporary up-front funding it applies up to the recommended ceiling depending on the unique characteristics and factors of hospitals requesting an ARR structure and back-end ability of that facility to in essence “pay these temporary amounts back” to the system.

additional risk over the short term. In addition, the staff would recommend that any advance funding (or payback of advance funding) be handled as “system slippage” (adjusted for in the update factor to all hospitals) in the subsequent year

5) Need for Continuous Monitoring and Periodic Evaluation

Given the need to evaluate the overall success of the ARR programs and the need to monitor for any unintended consequences related to unanticipated changes in hospital utilization or quality, it is important that the HSCRC and ARR hospitals devise a system of continuous surveillance of both utilization and quality metrics and establish a process for interim and final evaluation of the ARR program. Such a surveillance and evaluation structure is also important to ensure accountability and that these arrangements provide increased value for the public at large.

The staff will propose that as part of an ARR agreement a hospital and the HSCRC track performance on a number of utilization and quality metrics on a quarterly basis. These metrics should include, but not be limited to the following: 1) rates of intra-hospital readmissions; 2) for ARR hospitals that are part of larger health systems, the tracking and reporting of patients who are admitted and readmitted to other system facilities in addition to a system for monitoring all readmissions (both intra- and inter-hospital); 3) emergency room visits and observation cases (with particular focus on any changes in the rates of so-called preventable emergency visits and observation cases); 4) admission rates and the rates of admission of ambulatory sensitive cases; and 5) quarter-by-quarter monitoring of rates of hospital acquired complications.

In addition, the HSCRC should work to enhance its quality metrics by investigating the relationship between measures of quality (such as the relationship between process measures and outcome measures and the relationships between complications, readmissions, and mortality) and incorporating other process and patient experience of care measures into the mix of factors considered by the Commission when evaluating care quality.

Although the initial ARR arrangements will focus on “intra-hospital” readmissions only, it is important that the Commission and the hospital industry not lose sight of the disposition of patients who are not readmitted to the facility that treated them for the originating admission. In an era of population-based health care, truly integrated clinical care models will be oriented toward treating and improving the overall health of communities, not just the health of patients within the four walls of their institutions.

6) Potential for Future Modifications of ARR Arrangements

While the Commission has generally entertained experimental payment programs and structures that are in effect for a three year period (to provide some degree of stability and predictability of the structure of such arrangements for hospitals and payers), the staff believes it important to allow an opportunity for both the ARR hospital and the HSCRC to propose modifications to the agreement as results are obtained and as other circumstances and opportunities present themselves. For instance, ARR hospitals may wish to expand the services included in the ARR methodology (this expansion could include additional hospital or non-hospital services or modifications to the window of time over which the services in the bundled are provided). It is also anticipated that CMS and the newly organized Centers for Medicare and Medicaid Innovation (“CMMI”) may be receptive to providing states with additional flexibility regarding the incorporation of non-hospital services in experimental payment structures of this nature. The ability to better align the incentives of hospitals and non-hospital providers creates expanded opportunities to generate savings and improve the overall quality of care.

The HSCRC staff believes that the current, proposed and future bundled payment structures hold great potential to generate significant changes to Maryland's hospital delivery system and result in considerable improvements in hospital efficiency and quality of care (enhance value of care). However, expanding these efforts by incorporating mechanisms that better align the financial incentives of all hospital and non-hospital providers (to be more in-line with the interests of patients and the public at large) will surely double or triple these potential benefits.

Recommendations

1. The HSCRC staff recommends the Commission approved the basic policy framework as articulated in this paper as the core template for negotiating Admission-Readmission Revenue (ARR) arrangements with eligible hospitals.
2. Staff further recommends that the proposed agreement (contained in Appendix III) provide the basic template for the agreement between the Commission and any hospital entering into an ARR arrangement.
3. Additionally, the Commission should direct staff to report back to the Commission on any ARR arrangements negotiated with individual hospitals in public at a subsequent meeting of the HSCRC.

Appendix I – Fixed Cost Adjustment Example

A potential problem surrounding the ARR is the opportunity for a hospital to backfill reductions in volumes due to reduced re-admission rates with new admissions or by generating additional outpatient volume by observing a patient rather than admitting him.

Under this scenario a hospital could receive 100% of the savings due to the reduction in re-admission and 100% of the additional revenue for the new volume.

In order to negate this, staff will propose a different fixed cost factor and/or adjust the hospital's base year revenue by any savings generated for reducing re-admissions before calculating the volume adjustment which should be applied to the hospital.

Example

Total Hospital Base Revenue	\$100,000,000	
Savings due to reduced Readmissions	\$2,000,000	
New Volume Generated Revenue	\$98,000,000	
Hospital keeps 100% of ARR CPE	<u>\$2,000,000</u>	
Retained Total Revenue under ARR	\$100,000,000	
Revenue from additional Volume gains	<u>\$3,000,000</u>	3.06%
Total Hospital Revenue	\$103,000,000	
Volume change at 15% Fixed Cost Factor	-0.46%	

Appendix II – Comment Letter

BARBARA MARX BROCATO & ASSOCIATES

November 8, 2010

Mr. Robert Murray
Executive Director
Health Services Cost Review Commission
4160 Patterson Avenue
Baltimore, MD 21215

Re: Discussion/Input Sessions Regarding Bundled Payment Structures

Dear Bob,

We appreciate the opportunity to provide comments on the Health Services Cost Review Commission's (HSCRC) discussion series regarding the development of bundled payment structures. As you have stated, stakeholder participation is essential and we want to provide meaningful input throughout the process and have that input reflected throughout. The hospital physician community is very concerned with what the HSCRC develops as it will directly impact how care is delivered. The risk of unintended consequences is unsettling given Maryland's current health care delivery environment.

At the October 13th meeting of the HSCRC when your plans were first presented we arranged a panel from the hospital physician constituencies: emergency physicians representing the Maryland Chapter, American College of Emergency Physicians (MD ACEP) and anesthesiologists representing the Maryland Society of Anesthesiologists (MSA) and First Colonies Anesthesia Associates (FCAA), and Advanced Radiology. The focus of our testimony was to illustrate key concerns and questions that arise when new health care delivery models are being contemplated. Specifically our comments addressed:

- Concern about moving too quickly with new paradigm changing payment systems;
- The need for meaningful tort reform to offset newly acquired risk;
- The need to ease laws prohibiting physicians from sharing information and payment data for the purposes of negotiations with insurers and the creation of large groups;
- The need for fair reimbursement to enable the recruitment and retention of physicians; and
- The importance of a physician centric system.

We recognize that these issues are not entirely under the jurisdiction or control of the HSCRC but they illustrate the environment in which hospital physicians exist: namely a low reimbursement state, with a statewide shortage of physician, an unfavorable tort environment and an impending influx of patients due to expanded insurance coverage.

We feel these issues need to be reflected in the previous and future materials developed by the HSCRC in this endeavor. The future success of any new health care delivery paradigm depends on these issues being addressed in a meaningful way. While we are not assuming that the HSCRC is able to address all of these issues, it is important that the HSCRC recognize the full scope of the healthcare landscape and the pressures facing those who will ultimately be providing the care.

At the November 4th discussion session we expressed our concerns about the need for additional resources and a solid infrastructure for patient care (patient follow up services, appropriate staffing: clinical and administrative, etc.) that will enable a bundled payment system to be successful. We hope that this can be reflected as well in the materials for the future discussion sessions.

We appreciate your candor and assurance that implementation will be incremental (albeit quick) and voluntary, but as this new ground is broken we must be thoughtful about the need for continuity of care in our delivery system. Many of the current relationships between physician groups and hospitals go back many years, and the physicians have become an important part of the community for the patients that come to the hospital for care.

We need to be cautious about interfering with a physician's ability to work autonomously and as private groups, and ultimately protect against adversarial relationships developing between physician groups, hospitals and the physician community at large.

To continue providing the quality patient care that Marylanders have come to rely on physicians must be a decision maker in the bundled payment system. Quality patient care is dependent on the best possible physician staff available, not just the group that helps meet the bottom line.

Attached as an addendum are some specific bullets about the current health care landscape in Maryland and where we think they could be incorporated in the "Overview" document prepared for the HSCRC commission meeting on October 13th and that was again made available for the November 4th discussion session.

We are glad to provide additional information on these issues and others and look forward to our continued participation in this process.

Sincerely,

Barbara Marx Brocato

Appendix III – Draft Template/Agreement

AGREEMENT BETWEEN THE HEALTH SERVICES COST REVIEW COMMISSION AND _____ HOSPITAL REGARDING THE ADOPTION OF THE HSCRC’s ADMISSION- READMISSION REVENUE (ARR) SYSTEM

This Agreement made this _____ day of _____, 2010, between _____ HOSPITAL (the “Hospital”) and the HEALTH SERVICES COST REVIEW COMMISSION (the “Commission,” or “HSCRC”) is subject to the following provisions:

I. General Description

The Commission’s Admission-Readmission Revenue (“ARR”) arrangement is a voluntary revenue constraint program developed by the Maryland Health Services Cost Review Commission which provides hospitals with a financial incentive to more effectively coordinate care and reduce unnecessary readmissions to their facility. ARR arrangements apply to regulated hospital inpatient services and charges only. The methodology results in the establishment of a Charge per Episode (“CPE”) constraint, which builds upon the hospital’s HSCRC approved inpatient unit rates. The CPE imposes a case mix adjusted standard Charge per Episode target for a facility, which applies to inpatient admissions and readmissions and subsequent readmissions up to a maximum of three readmissions. An inpatient case is considered a readmission to the hospital if the patient is admitted to the same facility within 30 days of the most recent previous discharge of that patient.

ARR arrangements are available to any hospital currently under the Commission’s Charge per Case (“CPC”) constraint system, and this agreement will supersede a CPC agreement.

II. Methodology

A. Cases Covered by the Agreement and Contract Period

The ARR arrangement shall be applicable to inpatient admissions and readmissions as defined in section V of this document. The program will be in effect for three years, beginning March 1, 2011 and ending February 28, 2014, unless extended by written mutual agreement between the Hospital and the HSCRC. The cases to be included in this agreement are cases included in the Commission’s CPC methodology. Categorical exclusions from the CPC methodology will be removed prior to grouping the data to determine readmissions, along with cases excluded as 0 and 1 day length of stay. Outlier cases will have their charges to the trim-point.

For purposes of the ARR methodology, the hospital’s revenue base will be established for the upcoming fiscal year as the permanent revenue available to the hospital at the end of the previous fiscal year, after accounting for one-time adjustments and compliance with the Commission’s regulatory price and charging targets. Each year’s revenue will be set to current experience, with 100 percent of savings or

losses permanently rolled into the hospital's revenue base during the course of this agreement. The Hospital's unit rates and approved revenue will be increased by the annual update factors approved by the Commission during the next three fiscal years.

Under the CPC system, permanent included revenue is divided among total included discharges to generate the charge per case target. Under this ARR agreement, the permanent included revenue will be redefined as Charge per Episode ("CPE") of care, where an episode includes any "only admission" (admissions without any accompanying readmission within 30 days) and an initial admission along with up to three readmissions, each occurring within 30 days of the last discharge. The CPE target is then restated as a charge per episode target, and if hospitals can successfully reduce readmissions, the payment per episode remains unchanged. The hospital can generate productivity gains and associated savings if it keeps its existing revenue (as authorized under its approved CPE) and eliminates the costs associated with intra-hospital readmissions.

B. Risk Adjustment

Expected (or predicted) levels of readmissions will be based on the All Patient Refined Diagnosis Related Group Severity of Illness categories (APR-DRG/SOI). To calculate expected levels of readmissions, statewide weights will be applied to hospital specific experience. Under this methodology, weights will be established for an episode of care, which would include an initial admission along with subsequent related readmissions, up to a maximum of three readmissions. Because even at the state level a number of APR-DRG/SOI cells may not have sufficient information to construct reliable weights, rules may need to be established governing the establishment of monotonically increasing weights across severity of illness categories or a combination of such categories.

Because the staff's research has demonstrated that expected readmission rates are not adequately captured by APR-DRG/SOI for certain types of cases, other factors will be monitored. Specifically, substantial changes in the proportion of elderly cases, Medicaid cases, and cases with mental health as a secondary diagnosis merit adjustment because they are factors associated with higher readmission rates.

C. Compliance Monitoring Under the ARR

For purposes of regulatory compliance under the HSCRC's CPC and unit rate restrictions, a five percent (5%) corridor around the target will be established for CPC compliance and interim price compliance for 100 percent inpatient rate centers will be waived. This limit can be extended to 10% at the discretion of the Commission staff upon presentation of evidence by the Hospital that it would otherwise not achieve the approved total revenue for the year. Similarly, there will also be a 5% corridor on undercharging. This corridor may also be expanded to 10% if the Hospital can substantiate that its revenue constraint will be exceeded without this flexibility.

D. Volume and Price Adjustment

A combined volume and price adjustment will be performed for the Hospital each rate year. If the gross revenue charged by the Hospital exceeds the approved revenue, the difference between the gross revenue charged and the approved revenue will be subtracted from the revenue that would otherwise have been approved for the Hospital for the subsequent year. Conversely, if the gross revenue charged is less than the approved revenue, the difference will be added to the revenue for the subsequent year, except that undercharges below the corridor specified in subparagraph C above will not be so included.

E. Annual Update Adjustments

The following adjustments shall be made to arrive at the Hospital's approved Charge per Episode for the subsequent year:

- 1) Adjustment for the annual update factor approved by the Commission for this facility;
- 2) Reversal of any previous retroactive adjustments;
- 3) Changes to the Hospital's markup due to changes in mix of payers or changes in approved differential amounts and approved bad debt provision;
- 4) Volume and price adjustments as specified in subparagraph D above.

III. Other Terms

A. Special Provision for Transition

To facilitate the development of improved discharge planning and a care coordination infrastructure, the Commission will allow the hospital up to an additional 0.5% percent of inpatient revenue in rates in addition to the annual update factor as seed money. These funds will be provided as a temporary adjustment to rates for the first two years of the agreement and shall be paid back to the public through future and commensurate one-time rate reductions.

B. Monitoring and Reporting Requirements

The ARR hospital must supply the HSCRC with data on a number of utilization and quality metrics on a quarterly basis. These metrics should include, but not be limited to the following: 1) rates of intra-hospital readmissions; 2) for ARR hospitals that are part of larger health systems, the tracking and reporting of patients who are admitted and readmitted to other system facilities in addition to a mechanism for monitoring all readmissions (both intra- and inter-hospital); 3) emergency room visits and observation cases (with particular focus on any changes in the rates of so-called preventable emergency visits and observation cases, and on ED visits soon after an inpatient discharge); 4) admission rates and the rates of admission of ambulatory sensitive cases; 5) quarter-by-quarter monitoring of rates of hospital acquired complications; and 6) additional metrics or data as deemed appropriate by HSCRC staff.

C. Exclusions and other Modifications

Categorical exclusions from the CPC methodology will be removed prior to grouping the data to determine readmissions, along with cases excluded as 0 and 1 day length of stay. Outlier cases will have their charges reduced to the trim-point, both for the calculation of chain weights and for compliance calculations for the rate year.

Because this agreement represents an aggressive attempt to reduce readmissions, the terms of this agreement will supersede any State-wide policy to reduce readmissions such as the planned Maryland Hospital Preventable Readmissions ("MHPR") initiative.

Modifications to the ROC Calculation: Because this agreement substantially alters the measurements upon which hospitals are compared for relative efficiency within the State, the Commission shall develop an adjustment to the Hospital's Charge per Case to account for the impact on the charge per case of any reduction in readmissions after adjusting for the applicable variable cost factor.

Modifications to the Case mix calculation: Staff will devise a methodology to minimize negative impacts associated with the hospitals' ARR initiative from the hospital's case mix calculation so the hospital is not treated unfairly for purposes of the application of the case mix governor.

D. Other requirements

Under this agreement, the Hospital must continue to charge HSCRC approved unit rates for facility services rendered.

System hospitals treated as one entity for tracking Intra-hospital readmissions (required mapping process between hospitals)

IV. Potential Modifications, Evaluation and Cancellation Provisions

A. Requests for Modifications to this Agreement

A request to initiate a reevaluation of the revenue cap in this instance shall be submitted in writing to Commission staff accompanied by supporting documentation. A decision to modify the revenue cap rests within the sound discretion of Commission staff. The HSCRC staff similarly reserves the right to discuss possible modifications to this agreement.

B. Possible Modifications to Allow for Better Alignment of Incentives

Under healthcare reform, a number of approaches have been mentioned to contain healthcare costs. For example, bundling services under a single payment have been identified prominently as one method for aligning incentives for the efficient delivery of healthcare services. The methodology outlined within this document is a first step in bundling by providing a single payment for an episode of care, regardless of additional readmissions that occur after the initial admission into a hospital. Because healthcare reform efforts are progressing rapidly, the parties to this agreement may mutually agree to modify its terms to expand the services included within the methodology. Potential changes include, but are not limited to, the inclusion of hospital outpatient and emergency department services; post-acute care services; additional days within the readmission window; and gain-sharing with physicians.

C. Program Evaluation

After the first year of operation the staff will undertake an evaluation of the success of the ARR program and report back to the Commission. Success will be evaluated in the context of how well the pilot contributed to the goal of improving the overall value of care provided at the hospital (lower cost and better clinical effectiveness/quality). Particular focus will be applied to an analysis of utilization trends post-ARR implementation (the utilization metrics discussed in section III, subsection B). Staff will report the results of this evaluation to the Commission and the hospital and discuss any appropriate mid-course modifications to the hospital at that time.

V. Definition of Terms

Readmission: Readmissions covered by this agreement will be based on intra-hospital readmissions (readmissions to the same facility).

At-Risk Entity: For this purpose, the _____ and the _____ hospitals will be treated as a single unit as business plans call for an increasing interrelationship between the two facilities. The _____ staff will develop a mapping process to identify readmissions between _____ and _____, subject to HSCRC staff review.

Other terms (to be defined)

Intra-hospital readmissions:

Inter-hospital readmissions:

Readmission Window:

Only Admission:

Base Period:

Charge per Episode:

Ambulatory Sensitive Conditions:

Risk Adjustment:

Compliance:

Annual Update:

Price/Volume:

Maryland Hospital Acquired Conditions:

Categorical Exclusions:

Zero and one-day length of stay cases:

In Witness Whereof, the Parties have executed this Agreement and have this date caused their respective signatures to be affixed hereto:

Attest: _____ by _____

(Date)

Chief Executive Officer
_____ Hospital

Attest: _____ by _____

(Date)

Robert Murray
Executive Director
Health Services Cost Review Commission

STATE OF MARYLAND
DEPARTMENT OF HEALTH AND MENTAL HYGIENE

Frederick W. Puddester
Chairman

Kevin J. Sexton
Vice Chairman

Joseph R. Antos, Ph.D.

George H. Bone, M.D.

C. James Lowthers

Herbert S. Wong, Ph.D.



Robert Murray
Executive Director

Stephen Ports
Principal Deputy Director
Policy & Operations

Gerard J. Schmith
Deputy Director
Hospital Rate Setting

HEALTH SERVICES COST REVIEW COMMISSION

4160 PATTERSON AVENUE, BALTIMORE, MARYLAND 21215

Phone: 410-764-2605 · Fax: 410-358-6217

Toll Free: 1-888-287-3229

www.hsrcr.state.md.us

TO: Commissioners

FROM: Legal Department

DATE: December 1, 2010

RE: Hearing and Meeting Schedule

Public Session:

January 12, 2011 Time to be determined, 4160 Patterson Avenue, HSCRC Conference Room

February 2, 2011 Time to be determined, 4160 Patterson Avenue, HSCRC Conference Room

The Agenda for the Executive and Public Sessions will be available for your review on the Commission's Web Site on the Monday before the Commission meeting. To review the Agenda, visit the Commission's web site at: www.hsrcr.state.md.us.