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453rd MEETING OF THE HEALTH SERVICES COST REVIEW COMMISSION

**PUBLIC SESSION OF THE
HEALTH SERVICES COST REVIEW COMMISSION**

February 4, 2009

9:00 a.m.

1. **Review of the Executive and Public Minutes of January 14, 2009**
2. **Executive Director's Report**
3. **Docket Status - Cases Closed**
1985A - University of Maryland Medical Center
2011R - Baltimore Washington Medical Center
2012A - Johns Hopkins Health System
4. **Docket Status - Cases Open**
2009A - University of Maryland Medical Center
2013R - Memorial Hospital at Easton
2014A - Johns Hopkins Health System
2015R - Greater Baltimore Medical Center
5. **Draft Recommendations for Revisions to the Reasonableness of Charges (ROC) Methodology**
6. **Draft Recommendations on Maryland Hospital-Acquired Conditions**
7. **Legal Report**
8. **Hearing and Meeting Schedule**

**452nd MEETING OF THE
HEALTH SERVICES COST REVIEW COMMISSION**

JANUARY 14, 2009

Chairman Young called the meeting to order at 9:32 a.m. Commissioners Joseph R. Antos, Ph.D., Raymond J. Brusca, J.D., James Lowthers, and Kevin J. Sexton were also present.

**ITEM I
REVIEW OF THE MINUTES OF THE EXECUTIVE AND PUBLIC SESSIONS
OF DECEMBER 10, 2008**

The Commission voted unanimously to approve the minutes of the December 10, 2008 Executive Session and Public Meeting.

**ITEM II
EXECUTIVE DIRECTOR'S REPORT**

Robert Murray, Executive Director, updated the Commission on the progress of several major projects. Mr. Murray stated that at the request of the Governor, staff will review hospital credit and collection activities as reported in the Baltimore Sun article. Staff's review will focus on: 1) variations in the policies; 2) whether there is a lack of restrictions in Maryland on the policies compared with other States; 3) whether hospitals apply their credit and collection and financial assistance policies and procedures consistently; 4) how they write-off bad debts, and what they do with recoveries of bad debts; and 4) break-downs in communication and information for patients who fall through the cracks, are overwhelmed by the court system, and did not know the rights and remedies available to them.

Mr. Murray stated that staff will address these four areas by: 1) evaluating the trends in uncompensated care, both charity care and bad debts; 2) reviewing individual hospital credit and collection and financial assistance policies to determine the range of variation; 3) evaluating the consistency by which hospitals are applying their current policies; 4) determining how hospitals are handling bad debt recoveries; 5) seeing if there are things that can be done by hospitals or by the HSCRC to ensure that patients are more adequately informed of their legal rights and remedies; and 6) evaluating the HSCRC's own Uncompensated Care Policy to determine whether there should be a differentiation in funding between charity care and bad debts.

Mr. Murray noted that staff will likely be conferring with members of the legislature to determine what can be handled through regulation and policy changes, and what changes may be effectuated through legislation. There will be a short-term component and a longer-term

component to staff's review. The short-term component will consist of getting an understanding of the problem and reporting back to the Governor in February. In the longer-term, three to six months, staff will try to complete some of the more detailed data collection and analysis. Staff will keep the Commission apprised of its progress on these issues.

Mr. Murray updated the Commission on the activities of the Maryland Hospital Acquired Conditions (MHAC) Initiative Workgroup. The MHAC initiative links quality outcomes to payment. Mr. Murray stated that the focus for the last several months has been on the data elements. Staff presented the results of a simulation using discharge abstract payment data from last year and the new present upon admission indicator in the context of the objectives and principles of the proposed policy. These results were presented to the workgroup and to individual hospitals for review. Next, the workgroup will meet with hospitals representatives to review the simulations in order to refine the methodology. Staff anticipates bringing a draft recommendation to the Commission in the near future.

Mr. Murray stated that the Evaluation Workgroup of the broader quality initiative continues to refine its process measures methodology. In addition, Steve Ports, Principal Deputy Director-Policy and Operations, reported that the workgroup is also looking at outliers in the fifty-two MHACs beyond the twelve addressed in the MHAC initiative, as well as at potentially preventable admissions for potential payment adjustment in future outcome measure quality methodologies. In addition, for FY 2011 the workgroup is examining an "appropriateness model," which would require hospitals to demonstrate satisfactory performance on several process measures simultaneously in order to achieve rewards.

Commissioner Sexton requested that staff continue to evaluate the use of payment bundling, involving other non-hospital providers via alternative rate arrangements, in future quality initiatives.

Mr. Murray announced that staff will meet with hospital and payer representatives on January 26th to discuss preliminary proposals on the new three-year payment arrangement. Mr. Murray noted that "Market Basket" inflation is currently running at 1.59%.

Mr. Murray acknowledged the outstanding efforts of staff members Brian Morton, Myles Uszerowicz, and Bill Huff in getting out final rate orders, which include the Charge-per Case targets, the new Charge-per Visit targets, as well as the re-calculation of all hospitals' rates implementing full uncompensated care pooling.

ITEM III
DOCKET STATUS CASES CLOSED

1999A – University of Maryland Medical Center 2008A – Johns Hopkins Health System
2010A- MedStar Health

ITEM IV
DOCKET STATUS CASES OPEN

University of Maryland Medical Center – 1985A

On June 4, 2008, the University of Maryland Medical Center filed an application for approval for its continued participation in a global rate arrangement for liver and blood and bone marrow transplants with Cigna Health Corp.

Staff found that the experience in FY 2008 under this arrangement was unfavorable. The Hospital pointed out that one bone marrow transplant case was responsible for unfavorable performance. The patient in this case developed a rare complication, and the case generated charges 5 times greater than the average for these cases. However, the experience for the first quarter of FY 2009 was favorable, although it included only one case.

Based on its finding, staff recommended that Commission approve the Hospital's request to continue this arrangement through June 30, 2009, but that participation beyond that date be based upon continued favorable experience in FY 2009. In addition, staff recommended that the approval be contingent on the execution of the standard Memorandum of Understanding.

The Commission voted unanimously to approve staff's recommendation.

Johns Hopkins Health System – 2012A

On December 24, 2008, the Johns Hopkins Health System filed an application on behalf of Johns Hopkins Hospital, Johns Hopkins Bayview Medical Center, and Howard County General Hospital, requesting approval to participate in a global rate arrangement for cardiovascular services with Olympus Managed Health Care, Inc. for a period of three years effective January 1, 2009.

After review of the data utilized to calculate the case rates, staff is satisfied that the global price is sufficient to achieve favorable performance under this arrangement.

Therefore, staff recommended that the Commission approve the Hospitals' request for a one year period, effective January 1, 2009, and that the approval be contingent upon the execution of the standard Memorandum of Understanding.

The Commission voted unanimously to approve staff's recommendation.

Baltimore Washington Medical Center – 2011R

On December 24, 2008, Baltimore Washington Medical Center filed an application requesting that the approved rates of its Intensive Care Unit (MIS) and its Coronary Care Unit (CCU) be combined effective December 1, 2008. The Hospital stated that the units provide similar services and have similar staffing needs. In addition, the two units will be physically combined in the Hospital's new patient tower. The request is revenue neutral and will not result in any additional revenue for the Hospital.

After reviewing the application, staff recommended that the request be approved, and that the Hospital's approved CCU and ICU rates be combined into one rate effective December 1, 2008.

The Commission voted unanimously to approve staff's recommendation.

ITEM V
DRAFT RECOMMENDATIONS ON CHANGES TO THE ICC/ROC
METHODOLOGY

John O'Brien, Deputy Director-Research and Methodology, reviewed in detail staff's draft recommendation on changes to the Inter-hospital Cost Comparison (ICC) and Reasonableness of Charges (ROC) methodologies (attachment A). Principal changes included: 1) blending the Charge-per-Case and Charge-per-Visit targets into a single Comprehensive Charge Target; 2) combining inpatient and outpatient case-mix indices into a single adjustment; 3) including regression based adjustments for Indirect Medical Education and Disproportionate Share in the ROC methodology; 4) utilizing 100% of the direct cost per resident in the Direct Medical Education adjustment in the ROC calculation; 5) replacing the peer group capital adjustment with a state-wide capital adjustment. In addition, staff recommended: 1) that no spenddowns be imposed based on the 2009 ROC, but that, instead, the FY 2010 update factor be scaled; 2) that only one ROC be released in 2009; and 3) that staff work with the industry and payers to develop the integration of the ROC and ICC methodologies.

Comments on the proposed methodology changes are to be received at the Commission's offices on or before January 30, 2009.

Ing-Jye Cheng, Assistant Vice President of the Maryland Hospital Association, stated that since this is the first time the entire package of methodology changes has been presented, that the Commission grant a thirty day comment period, and that public comments be allowed at the February public meeting. Ms. Cheng also made a request that all hospitals be allowed to re-submit their intern and resident data for use in the FY 2009 ROC.

Hal Cohen, Ph.D., representing CareFirst of Maryland and Kaiser Permanente, expressed agreement with the draft recommendation, and that there should be a 30-day comment period. In

addition, Dr. Cohen stated that staff should explore the use of a state-wide ROC peer group for all hospitals, except for the two academic medical centers, Johns Hopkins Hospital and University of Maryland Medical Center, which should be compared to a national peer group. Dr. Cohen also supported no spenddowns and scaling this year, with the caveat that there be more definitive linking of performance and reimbursement next year.

ITEM VI
REVIEW OF ADDITIONAL ELEMENTS TO BE INCLUDED IN THE INPATIENT AND OUTPATIENT DISCHARGE DATA COLLECTION

At the October public meeting, amendments were promulgated to regulations, COMAR 10.37.04 and COMAR 10.37.06. These regulations detail the inpatient and outpatient data sets to be submitted to the Commission. The proposed amendments give the Commission the ability to make changes in the data elements in the data sets without amending the regulations each time such a change is made. Charlotte Thompson, Associate Director-Policy Analysis and Research, presented for comment the first proposed data element changes (attachment B). Comments are to be received at the Commission's offices on or before February 13, 2009.

ITEM VII
REQUEST BY THE MEDICAL ASSISTANCE PROGRAM TO SUSPEND THE RECONCILIATION OF CURRENT FINANCING DEPOSITS

Because of the current State budget crisis, the Medical Assistance Program (MAP) requested that the Commission approve an exception to the requirement in the current financing methodology that the working capital funds deposited with each hospital be re-calculated annually in order to earn the prompt payment discount. MAP requested that the re-calculation of the deposit be suspended for one year (FY 2009).

Staff recommended approval of MAP's request.

The Commission voted unanimously to approve staff's recommendation.

ITEM VIII
STAFF RECOMMENDATION – KENNEDY KRIEGER INSTITUTE REPORTING REQUIREMENTS

Dennis N. Phelps, Associate Director-Audit & Compliance, reported that at its July 1, 1974 public meeting, the Commission voted to exempt the Kennedy Krieger Institute from Commission rate-setting. The chief reason the Hospital was granted the exemption was because of its unique funding sources, i.e., an unusually large percentage of its revenue was provided by grants, endowments, and governmental payers who were not required to pay Commission-approved rates. When the exception was granted, the Hospital was not required to file any

financial reports.

Mr. Phelps asserted that staff believes that it is appropriate that the Commission be aware of the financial position of all hospitals under its jurisdiction, including Kennedy Krieger. In addition, staff believes that Kennedy Krieger should be required to provide evidence that its sources of revenue continue to justify its exemption from rate-setting.

Therefore, staff recommended that Kennedy Krieger Institute be required to: 1) immediately file audited financial statements for its most recent fiscal year; 2) submit the applicable schedules from its most recent Medicare Cost Report or other appropriate documentation, subject to the approval of staff, which discloses its sources of revenue for its most recent fiscal year; and 3) annually, 120 days after the end of its fiscal year, provide audited financial statements and documentation to justify its continued exemption from Commission rate-setting.

The Commission voted unanimously to approve staff's recommendation.

ITEM IX **LEGAL REPORT**

Regulations

Proposed

Rate Application and Approval Procedures - COMAR 10.37.10.26

The purpose of this action is to change the interest or late payment charges that a hospital may add to a bill to those payers and self-paying patients not subject to the prompt payment claims provision of the Insurance Article.

The Commission voted unanimously to forward the proposed regulations to the AELR Committee for review and publication in the Maryland Register.

ITEM X **HEARING AND MEETING SCHEDULE**

February 4, 2009	Time to be determined, 4160 Patterson Avenue, HSCRC Conference Room
March 4, 2009	Time to be determined, 4160 Patterson Avenue, HSCRC Conference Room

There being no further business, the meeting was adjourned at 10:45 a.m.

Attachment A

DRAFT RECOMMENDATION OF REVISIONS TO THE REASONABLENESS OF CHARGES (ROC) METHODOLOGY

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January 14, 2008

This document is a draft staff recommendation to the Commission at the January 14, 2008 public meeting

INTRODUCTION

Over the past year, staff, working with payer and industry representatives, has engaged in a process to review and revise the Commission's Reasonableness of Charges (ROC) methodology.¹ This draft recommendation proposes a series of changes to the ROC process that are the result of those discussions. The recommended changes to the ROC methodology will be used to calculate a ROC in early February 2009.

BACKGROUND

The Commission's ROC process is intended to allow hospitals to be compared on an equal footing to determine if a hospital's charges are reasonable relative to other peer hospitals in Maryland. A hospital with charges that are too high relative to its peers may be subject to "spend-down" provisions, where its rates are lowered to bring the hospital's charges in line with statewide averages. Conversely, a hospital where charges are low relative its peers may apply to the Commission for a "full rate review" and see rates increased consistent with Commission policies.

The ROC and the accompanying Interhospital Cost Comparison (ICC) are central elements of the Commission's mission to promote cost effective and efficient hospital services in Maryland. In addition to triggering "spenddowns" or permitting hospitals to request "full rate reviews," the ROC also provides feedback to hospitals on their performance relative to their peers. A stable ROC/ICC process is essential if it is to have its intended effect: aligning hospital rates with the resources needed to serve patients efficiently. It is also necessary to provide hospitals with feedback on their positions relative to their peers so that the hospital may take appropriate actions improve their positions.

The ROC analysis, or something similar², has been a consistent feature of the Commission's rate setting process. The methods used in the analysis, however, are not static. Changes in Commission policies and practices require the ROC analysis to be revised if it is to compare hospitals fairly.

The ROC process in use in 2005 began with each hospital's approved Charge Per Case (CPC) and made a series of adjustments to arrive at an adjusted CPC. The adjusted CPC was then used to compare hospitals within five defined peer groups. The adjustments were:

- *Mark-up*, the additional charges that each hospital is allowed to bill in order to account for its unique circumstances, including payer mix and the hospital's uncompensated care experience;

¹ The Commission did conduct a limited ROC using the previous (2005 and earlier) methodology in the spring of 2008. As a result three hospitals with adjusted charges well below their peers filed full rate reviews and, consequently, received an upward adjustment in rates. A number of other hospitals were identified as being considerably above the mean of their peers and could have been required to "spenddown." The Commission chose not to take spenddown action in light of the anticipated comprehensive overhaul of the ROC.

² Earlier versions of the ROC process were referred to as the "screens", as each hospital's charges were screened according to a number of parameters.

- *Labor Market Adjustment*, an adjustment to account for varying labor costs that Maryland hospitals are subject to;
- *Hospital Case Mix*, an adjustment to account for the varying resource needs of treating the hospitals' patient populations;
- *Direct Strips*, specific dollar amounts removed from the calculation of the hospital adjusted CPC to adjust for a portion of the costs of resident salaries (DME) and some of the incremental costs of trauma centers;
- *Indirect Medical Education*, an adjustment to account for the differing costs associated with having a teaching mission; and,
- *Capital*, an adjustment to reflect the capital cycle when comparing hospital costs.

Transition to APR-DRGs and Impact on ROC

While all of the adjustments are important to allow hospitals to be compared on an equal footing, they are not all of equal magnitude. The most significant adjustment (in terms of difference between the lowest and largest adjustment) is for hospital case mix. This is to be expected, as the relative patient acuity across hospitals should be the most significant factor in determining the resources needed to treat those patients. Since case mix is such an important factor in the ROC analysis, changes in the methods to measure case mix inevitably lead to changes in the ROC process. Improvements to case mix measurement affects other ROC adjustments that previously captured some case mix variation, requiring that those adjustments be re-examined.

The Commission's conversion from Diagnostic Related Groups (DRGs) to All Patient Refined-Diagnostic Related Groups (APR-DRGs) in 2005 represented a substantial improvement to the Commission's ability to measure hospital case mix accurately. APR-DRGs expand upon the older DRGs by breaking each DRG into 4 severity levels, each of which is then assigned a weight to account for the relative resource use of patients in each APR-DRG cell. As a practical matter, the Commission went from breaking patient care down into roughly 300 resource similar categories to 1200 clinically relevant and resource-similar categories.

The introduction of the APR-DRGs also provided hospitals with a strong incentive to improve the coding of discharge data submitted to the Commission.³ Since the APR-DRGs more fully account for the resource use of patients based on severity, complete medical record documentation and accurate coding are vital to assuring that a hospital's rates are commensurate with the needs of its patient population. It was common to see hospitals substantially increase depth of coding in the course of a single year. That change however, did not occur in the same pace or at the same time for all hospitals. Finally, the change to APR-DRGs also led to large increases in measured case mix that were not associated with changes in underlying resource use, leading to the imposition of limits in case mix growth (governors).⁴

³ All Maryland hospitals report discharge data on all patients to the HSCRC on a quarterly basis.

⁴ The Maryland experience was analyzed by CMS in advance of the introduction of CMS-DRGs and has led to federal provisions to limit case mix growth during the transition to CMS-DRGs.

These changes in the completeness of medical record coding in the years immediately after the introduction of APR-DRGs caused the Commission to place a moratorium on the ROC process (and its attendant spenddowns and full rate reviews). The Commission decided that conducting the ROC analysis was inappropriate, as the measurement of the relative case mix across hospitals (a central adjustment in the ROC process) was not reliable until coding improvement reached a steady state.

Analysis of more recent submissions of hospital discharge data show that the transition in coding practices initiated by the use of APR-DRGs is now complete. In 2005 the percentage of discharges that reported 15 diagnoses was 6 percent, as of the first 6 months of FY2008 discharges that reported 15 or more diagnoses exceeded 20 percent. Furthermore, the depth of coding across hospitals is consistent.

Introduction of Charge Per Visit Methodology

A second major change to the rate setting system since the last ROC process in 2005 is the implementation of the Cost Per Visit (CPV) methodology for outpatient services. As with the Charge Per Case target system that has been in use since 2002, the CPV reflects the hospital's expected charge per outpatient case on a risk adjusted basis, although in this case, the risk adjustment relies on Enhanced Ambulatory Patient Groups (EAPGs). The CPV methodology for outpatient services was approved by the Commission on June 4, 2008.

The CPV methodology uses the FY2008 outpatient data as the baseline to establish CPVs for all Maryland hospitals. Prior to the introduction of the CPV, the Commission set rates for individual units of outpatient services (lab, emergency room, etc.) but did not set an overall, risk adjusted target for the visit that those outpatient services comprised. Without such a target, a ROC process for outpatient services was not possible. Instead, once a hospital's position relative to its peers was determined by using the inpatient based ROC, an assessment of the hospital outpatient charges relative to the statewide median was done prior to imposing spenddowns or considering a hospital for a full rate review.

The introduction of the CPV has provided the Commission with two comprehensive measures: one of inpatient cases; and, one of outpatient visits. It has always been the Commission's intent that outpatient charges should be assessed for their reasonableness as inpatient charges are; with the introduction of the CPV such an assessment is possible.

REVISIONS TO THE ROC METHODOLOGY

The completion of the APR-DRG transition and the implementation of the CPV methodology demanded a thorough review and revision of the ROC process. Toward that end Commission staff, along with payer and industry representatives have engaged in a year-long process to revise and update the ROC methodology. In discussing the recommended changes to the ROC, the workgroup addressed a number of disparate and complex issues. It is useful to group the issues into several broad categories:

- *Baseline Issues* These issues relate to the baseline hospital charges upon which later adjustments are made. The baseline issues addressed were the Commission's trim

point methodology and the blending of the inpatient charge per case and outpatient charge per visit;

- *ROC Adjustments* These are the adjustments are made to a hospital's baseline charge to allow a "like-to-like" comparison of peer hospitals. These can be further broken down into:

Major Adjustments Adjustments that have a significant impact on a hospitals baseline charges. Major adjustments are: Case Mix, Indirect Medical Education, and Disproportionate Share; and,

Minor Adjustments While important to assuring a fair comparison across hospitals these adjustments are relatively small. Minor adjustments are; Direct Strips (Direct Medical Education, Trauma Hospitals, Nursing Education), Labor Market, and Capital Adjustments.

- *Comparing Hospitals* This pertains to the peer groups that hospitals are broken into once charges have been adjusted it is a hospitals performance relative to its peer group that determines how the ROC effects that hospital; and,
- *Implementation Issues* These are issues that pertain to how the ROC is applied in the setting of hospital rates. Implementation issues include: the setting of spenddown thresholds and/or scaling; whether to conduct of an annual or semi-annual ROC.

Baseline Issues

The ROC process started with each hospital's allowed CPC. A series of adjustments were then made to the CPC to arrive at an adjusted CPC, which is used as the "like-to-like" comparison. The starting point at which later adjustments are made influences the outcome of the ROC.

Trim Points. Trim points are dollar thresholds⁵ at which charges for a specific case are not included in the calculation of a hospital's CPC. The current HSCRC policy sets statistically defined individual trim points for each hospital and for each APR-DRG cell. An alternative trim point policy (which was considered in 2005 when the current trim point methodology was established) would have established a statewide set of trim points for each APR-DRG cell. Staff believes that the current trim point methodology is not the most desirable; it is overly complex - establishing over 100,000 trim point compared with roughly 2,400 for the alternative methodology- and its complexity to does not provide any additional policy benefit.

In addition to its complexity, the trim point methodology also influences the other adjustments that are used in the ROC. At the July 8, 2008 meeting of the ICC/ROC workgroup, the representatives of the teaching hospitals presented analyses that showed that the current trim policy of hospital specific trims had the effect of increasing the ROC adjustment for IME, compared with the alternative of individual APR-DRG trims. This was because the current trims tend to increase the charges included for the calculation of CPCs for teaching hospitals (in particular the Academic Medical Centers). The representatives of the G-9 (non-teaching hospitals) agreed that this would be the effect of such a change to the trim policy. The trim point methodology is therefore, intertwined

⁵ Charges above the trim points are essentially 'pass throughs' that payer reimburse as charged; they are not subject to the constraints of the CPC system.

with the IME methodology and influences the results that are obtained from such analysis.

The current methodology however, is in place, and the hardest technical and administrative tasks are complete. Furthermore, changing the trim point policy will also create timing problems. A change in the trim policy will not take effect until the FY10 rate year, meaning that CPCs with the new trims will not be available until FY11.

STAFF RECOMMENDATION: CONTINUE TO USE THE CURRENT TRIM POINTS The current trim point methodology should remain in place. Staff does not feel that the current trim policy is optimal. The administrative burdens of the current trim methodology however, have already been absorbed by the Commission and the hospitals and a change to the trim policy will add administrative costs – without sufficient offsetting benefit. Staff may wish to revisit the trim policy at a future date, after the recommended revisions to the ROC methodology are implemented. At such a time revision of the trim policy can be considered in isolation, and not as a factor that has confounding effects on other ROC adjustments.

Blending Charge Per Case and Charge Per Visit Calculations. The Commission has an established policy for its CPV. It is also the stated intent of the Commission to analyze hospitals for their efficiency on the CPV (i.e. a CPV ROC). Measuring hospital efficiency separately on an inpatient (CPC) and outpatient (CPV) basis presents several problems:

- *Combining a positive position on inpatient with a negative position on outpatient.* While such a separate comparison is possible, and in fact has been done by the Commission over time, it is less appropriate when combining case targets such as the CPC and the CPV. The Commission and the hospitals will be engaged in two parallel activities combining them at the end.
- *Peer group comparisons.* Peer groups were based on the appropriateness of grouping similar hospitals to allow reasonable comparison. One of the key elements of a peer groups is hospital size. For outpatient departments, size (i.e., volume) of outpatient departments varies widely across hospitals and does not follow current (or proposed) peer groups. Thus a stand-alone CPV ROC would need to consider alternative peer groups, further disconnecting the analyses.
- *IME adjustment.* An IME adjustment for outpatient would also be necessary; however, determining the appropriate variables to use for the measurement of IME would be quite complex. For example, the use of a resident to bed ratio to measure the intensity of the medical teaching component for outpatient services is questionable.

STAFF RECOMMENDATION: BLEND THE CPC AND CPV INTO A SINGLE COMPREHENSIVE CHARGE TARGET (CCT) Staff believe that the best way to address these problems is not to conduct the ROC in a bifurcated manner. The purpose of the ROC is to measure the overall reasonableness of hospital charges. The introduction of the CPV, along with the current Commission practice of aligning inpatient and outpatient charges each year makes a comprehensive approach possible.

Staff recommends that each hospital's CPC and CPV be blended into a single Comprehensive Charge Target (CCT). An analogous blending of case mix (discussed below) will also be done. The CCT will be the starting point for the ROC analyses. The ROC adjustments will then be applied to the CCT to arrive at a final, adjusted CCT. The method for blending CPC and CPV is presented in Attachment 1.

The blended CCT addresses the key challenges highlighted above:

- *Conflicting inpatient and outpatient ROC results.* If a hospital is differentially efficient on an inpatient versus an outpatient basis that will be reflected in the blended CCT.
- *Peer groups.* Since inpatient revenues included in the CPC dwarf outpatient revenues included in the CPV the blended CCT does not substantially change the utility of peer groups as they are currently defined for inpatient.
- *IME adjustment.* The IME adjustment will be made on the overall CCT so there will be no need to develop separate CPC and CPV adjustments.

ROC Adjustments

Using the CCT as the starting point, the ROC analysis makes a series of adjustments. The adjustments yield a final, adjusted CCT that is used to compare hospitals to their peers. For presentation purposes, these adjustments can be classified as major adjustments – those that can substantially change a hospital's CCT, or minor adjustments – those that have a modest effect on the CCT.

Major Adjustments

Case Mix. The Commission accounts for case mix differences across hospitals on the inpatient side using the APR-DRG grouper, this system has been in use since 2005. As was discussed above, the changes in medical record documentation and coding that were induced by the introduction of APR-DRGs are complete. Outpatient case mix is determined using the EAPG grouper according to the policy approved by the Commission in June 2008. Unlike the inpatient grouper, outpatient case mix as determined by the EAPG grouper is not materially changed by changes in hospital medical record coding practices.⁶ While the EAPG grouper has been in use for less time, staff believes that it accurately measures outpatient case mix across hospitals.

STAFF RECOMMENDATION: COMBINE INPATIENT AND OUTPATIENT CASE MIX INDEXES INTO A SINGLE ADJUSTMENT.

This recommendation logically follows from the blending of inpatient CPC and outpatient CPV. During the development of the outpatient Charge per Visit (CPV) system, case weights for significant procedure visits were calculated using two different methods: 1) case weights were assigned based on the principal APG (the highest weight) in the record; or 2) case weights were assigned based on 100 percent of the principal APG weight and partial weight for subsequent APGs in the record. Given the minimal increase in the explanatory power by use of multiple APGs (method 2), and the ease of monitoring when using a single APG for the case mix adjustment (method 1), HSCRC

⁶ Unlike APR-DRGs, EAPGs make much greater use of procedure codes in assigning patient visits. The presence of additional diagnostic detail has very little effect on EAPG assignments.

staff recommended that the principal APG be used for the assignment of case weights in the CPV system.

During the ICC/ROC workgroup meetings, industry representatives expressed satisfaction with the case mix methodology used in the outpatient CPV system because each hospital's rate year performance is compared to its own base year performance. However, workgroup members stated the current CPV case mix methodology may be unfair when comparing the reasonableness of outpatient charges between hospitals considering that some hospitals may provide more multiple significant procedures within a visit compared to other hospitals. Commission staff agreed that this was a valid concern and are proposing a revised outpatient case mix methodology to be used for the ROC. This methodology will provide partial weight for subsequent significant procedure APGs as follows:

The case weight will be based on 100 percent of the singleton weight for the highest weight APG, 65 percent of the singleton weight for the second highest weight APG, and 65 percent of the singleton weight for the third highest weight APG⁷. The resulting case mix index would be used in the February, 2009 ROC.

Indirect Medical Education (IME) The Commission has long recognized that a hospital's teaching mission adds some costs that need to be accounted for, if a fair comparison across hospitals is to be conducted. Some of these costs, such as the salaries of residents, can be readily quantified, and these direct costs are discussed below. In addition, the Commission recognizes that other costs associated with a teaching mission are not so easily measured. These indirect costs⁸ need to be accounted for in the ROC. In the previous ROC the Commission used a regression analysis to arrive at an estimate of the impact of IME on teaching hospitals.

As in the past, the IME adjustment for the ROC was a source of considerable discussion. Part of this is due to the use of regression analysis as a tool to measure the IME effect. It is the nature of a regression that when there are a limited number of observations (such as 47 Maryland hospitals) only a limited number of variables can be tested, and those variables may end up capturing other, unrelated, effects.

Several participants in the workgroup argued that the methodology used to estimate IME for the previous ROC would result in an adjustment that would be too large, i.e., it would attribute more cost to a hospital's teaching mission than was appropriate. One source of this problem is the fact that many teaching hospitals are in urban settings and tend to serve more disadvantaged patients. A portion of the IME estimate was therefore, likely to be a measurement of services to this disadvantaged population.

⁷ It is also staff's plan to revise the CPV methodology for the upcoming rate year to reflect this more refined approach to outpatient case mix. Assuming this change, future ROC analyses will not require that this additional case mix modification be made.

⁸ The Commission is not alone in its recognition of the added costs associated with a hospital's teaching mission. The Medicare Prospective Payment System (PPS) has included an adjustment for teaching since its inception in 1982.

Disproportionate Share (DSH) adjustment. The Commission has a history of making what it calls a disproportionate share adjustment to account for the additional resource needs associated with treating large shares poor, high need patients.⁹ The purpose of this adjustment is to account for additional costs (additional discharge planning, social work staff, etc) that hospitals treating a poorer population may incur. At different times in the past, the Commission has used a regression analysis a variable for the share of hospital charges to Medicaid patients to measure this burden. In ROC analyses prior to 2005 however, this adjustment had ceased to have any statistical validity, or worse, produced results that were illogical. For these reasons, the DSH adjustment was dropped from the calculation of the ROC.¹⁰

During the course of this year's ROC review analysis by staff, the teaching hospital group and the G-9 (non-teaching hospitals) have shown that regression analyses that adjust for teaching status and include a measure of the level of poor served by the hospital are statistically significant and logically consistent.¹¹ Staff strongly believes that a DSH adjustment should be reintroduced to the ROC with the IME adjustment. This adjustment is especially important, as staff hold that without a DSH adjustment the allowance for IME calculated by a regression will overstate the IME effect and distort the ROC comparisons.

STAFF RECOMMENDATION: INCLUDE REGRESSION BASED ADJUSTMENTS FOR IME AND DSH IN THE ROC ANALYSES

The ROC should include adjustments for IME and DSH. These adjustments should be calculated via a regression analysis that introduces teaching intensity and high need share as separate independent variables. The measures used for teaching intensity and high need share have a substantial impact on the ROC. Staff recommends that these variables be calculated as follows:

- *Teaching intensity.* Teaching intensity will be measured by the number of trainees (residents and fellows) per risk adjusted discharge. For the ROC, a resident or fellow is defined as someone who is actively enrolled in an Accreditation Council for Graduate Medical Education (ACGME) accredited training program (the number not to exceed the limit set by ACGME), and who is actively engaged in patient care at the hospital (either inpatient or in a hospital based clinic) on the first Tuesday after Labor Day. This measure of teaching intensity differs significantly from the one used in earlier ROC analyses. Those analyses used a resident per bed ratio, where residents were limited to those who had not yet finished a residency (e.g. physicians in sub-specialty programs were not counted). Staff believes that this earlier approach was

⁹ Disproportionate Share Hospitals (DSH) is a term used by the federal Medicaid program to allow for specific payment arrangements by state Medicaid programs. The Commission's rate setting process largely eliminates such payment arrangements in Maryland, and the Commission's use of the term DSH should not be confused with the federal Medicaid policy.

¹⁰ No DSH adjustment was made in the Spring 2008 ROC.

¹¹ There are several possible reasons why estimates of a DSH effect are statistically valid using current data, including: the blended CCT is a better basis for comparing hospital charges than inpatient alone; or, the variable to measure teaching intensity is different from previous ROC analyses.

incorrect as it artificially limited the number of individuals involved in medical training (especially at the Academic Medical Centers) and had the effect of overweighting the IME effect of each resident.

- *High need share.* The high need share will be calculated as the percentage of a hospital's included charges accounted for by the following groups: inpatient and outpatient charges for individuals where Medicaid is the primary payer; inpatient and outpatient charges for individuals where self pay or charity care is the primary payer; and, inpatient charges where Medicare is the primary payer and Medicaid is the secondary payer.¹²

Minor Adjustments

Adjustment for Direct Medical Expenses: The current methodology uses a calculation to determine the cost of residents and then removes 75 percent of these costs from hospital revenue when calculating the ROC. There has been discussion as to whether the amount of revenue adjusted for should be increased to 100 percent and the calculation revisited. This issue directly bears on the IME discussion. Direct medical costs that are stripped will not be accounted for in an IME methodology and, conversely, direct medical costs that are not stripped will be picked up by an IME methodology.

STAFF RECOMMENDATION: THE DIRECT COST PER RESIDENT SHOULD CALCULATED AND 100 PERCENT THOSE COSTS REMOVED FROM A HOSPITAL'S CHARGES WHEN CALCULATING THE ROC.

Labor Market Adjustment. Each year the Commission gathers data from hospitals on the cost of various personnel categories in the hospital and the zip codes in which staff live. This data is then analyzed to create a labor market index that accounts for differing personnel costs the hospital faces.

STAFF RECOMMENDATION. THERE SHOULD BE NO CHANGE TO THE CALCULATION OR USE OF THE LABOR MARKET INDEX.

Adjustment for Capital In the 2005 ROC, a capital adjustment was the final step in the ROC, performed after hospital charges had been adjusted for Indirect Medical Expenses. The adjustment takes hospital capital costs (interest, depreciation, and certain leases) as reported on the hospital's ACS schedule of the annual report as a percentage of reported total costs. The hospital ROC charges are then adjusted by taking the sum of one half the hospital's capital costs plus one half of the hospital's peer group average capital costs. The effect of this adjustment is to improve a hospital's relative position on the ROC at the beginning of its capital cycle when capital costs are high, and, conversely, a hospital with low capital costs would see its ROC position deteriorate.

¹² Including Medicaid as secondary payer this measure captures poor elderly individuals who have Medicare as the primary payer.

During the ROC review staff raised questions as to whether any capital adjustment was needed to compare hospitals under the ROC. Staff argued that hospitals should manage their capital cycle as they manage other costs. Under this reasoning, capital costs are but one, relatively small element of a hospital's costs within the control of the hospital.

Others in the workgroup held that a capital adjustment was necessary to maintain consistency between the ROC methodology, which compares hospital relative efficiency, and the ICC, which is used to determine rate adjustments for specific hospitals. Since the Commission has a process to adjust rates specifically for changes in capital costs (Partial Rate Reviews for Capital) it is possible that were it not for the capital adjustment, a hospital that was given an upward rate adjustment under the ICC process could subsequently see its rates reduced due to poor performance on the ROC.

STAFF RECOMMENDATION: CREATE AND APPLY A STATEWIDE CAPITAL ADJUSTMENT IN THE ROC

Staff recommends that the ROC continue to have a capital adjustment but that the method and order of the adjustment be modified. The capital adjustment should be an index that is created by the sum of one half the hospital's capital costs plus one half of the statewide average capital cost. In the ROC process, all adjustments are either hospital specific or based on statewide analysis. The peer group specific capital adjustment is inconsistent with the rest of the methodology. Furthermore, the capital adjustment should be made prior to doing the regression analysis to estimate the IME and DSH adjustments. The ROC methodology is a series of adjustments that, in the end, lead to an adjusted charge per case number for each hospital that is used to compare the relative efficiency of hospitals. In such an analysis, the order of operation influences the results. The mechanics of regression are such that any effect (such as capital) that is not measured or accounted for will, to some extent, be captured by what is measured, i.e., if the capital adjustment is done after the regression adjustment for IME and DSH, the capital effect is double counted.

Comparing Hospitals.

Peer Groups The current ROC analysis compares hospitals against one and other in one of five distinct 'peer groups.' These peer groups match hospitals according to several factors (size, location, etc) and are intended to assure the ROC goal of a like-to-like comparison. The peer groups have long been used by the Commission for its ROC and ICC processes. The original need for the peer groups was that the tools that the Commission had to compare hospital were not sufficient to capture the differing circumstances of all hospitals. The average charge of different peer groups could be quite different.

The use of the APR-DRG system substantially improves the Commission's ability to measure the relative differences in hospital case mix.¹³ Likewise, the DSH adjustment proposed earlier accounts for other difference in patient characteristics that can drive hospital costs. One result of these and other ROC adjustments is the difference in the average adjusted charge among peer groups is relatively small. During the workgroup

¹³ Unmeasured patient severity was consistently cited as one of the factors that required hospitals to be grouped by peer group.

discussions two points were made regarding peer groups. First, if the variation in peer group average is small does analysis by peer groups serve any purpose? A second point made the G-9 (a group of non-teaching hospitals) was that these small variations in peer group means were, in fact, unfair as they held some hospitals to a lower adjusted charge standard than other hospitals in a different peer groups. Some in the workgroup argued that peer groups remain necessary as they continue to account for some unmeasurable variation among hospitals that is not accounted for in the ROC analysis.

STAFF RECOMMENDATION: THE UPCOMING ROC ANALYSIS SHOULD CONTINUE TO BE DONE ON A PEER GROUP BASIS, BUT THAT THE ISSUE OF PEER GROUPS SHOULD BE REVIEW IN THE COMING YEAR AND THE OPTION OF NO LONGER USING PEER GROUPS BE SERIOUSLY

CONSIDERED. Staff is very skeptical about the continued utility of peer groups for the ROC process. Staff feels that with the improvements in case mix measurement and the accounting for DSH the major reasons for the creation of peer groups has been addressed. Staff will engage in discussion and analysis with the industry and payers to assess whether the ROC should be conducted on statewide basis, or whether an alternative from the current grouping is more appropriate.

ICC and Implementation Issues

These issues relate to how the ROC is applied and the actions the Commission may take based upon the results of the ROC. These issues are not methodological, but rather pertain to the application of the ROC and its results.

Scaling and Spenddowns One likely effect of the ROC moratorium that has been in effect since 2005 is that the differences among hospitals as determined by the ROC analysis are likely to have increased. This is likely due to two factors: first, the APR-DRG system may have identified case mix differences among hospitals that the earlier less precise DRG system did not; and, second, the moratorium means that for four years the Commission took no actions (aside from the limited ROC in January 2008) to adjust the rates of hospitals that were falling less in line with their peers. An early concern of the workgroup was that a revised methodology could lead to spenddown orders of a magnitude that would be extremely difficult for hospitals to comply with. As an alternative to spenddowns the workgroup discussed the use of scaling, whereby a hospital's yearly rate update is adjusted up or down depending on the outcome of the ROC.

STAFF RECOMMENDATION: THE COMMISSION SHOULD IMPOSE NO SPENDDOWNS BASED ON THE 2009 ROC, BUT IT SHOULD INSTEAD SCALE THE FY 2010 UPDATE FACTOR.

Staff recommends that there be no spenddowns based upon for the upcoming ROC. This recommendation only applies to 2009 ROC analysis. Based on the results of that ROC, staff proposes that the Rate Year 2010 update include a scaling methodology based on the hospital's position on the ROC. The use of spenddowns and scaling in later years is still to be determined.

The scaling methodology recommended by staff represents a modification of a proposal made by MHA during the review process. The scaling methodology should apply the following parameters:

- Upper and lower bounds of scaling. The scaling should begin at one half of a standard deviation above or below the peer group mean. Any hospital whose ROC position is greater than one standard deviation above or below the peer group mean should be subject to the maximum scaling reward or penalty.
- Relationship of scaling to the rate update factor. The highest reward or penalty should be 33percent of the base update factor.
- Scaling should be continuous. MHA proposed two level of either positive or negative scaling between the upper and lower bounds. Staff feels that the differentials between those “notches” is too great - 0.9% in the MHA example. Such a large differential effect among hospitals that have almost identical results has two problems: first it is inequitable; and, second, it will inevitably lead to contentious disputes between hospitals and Commission staff. Staff recommends that continuous scaling be applied between the high and low boundaries.

Annual vs. semi-annual ROC/ICC Historically, the Commission has conducted the ROC twice a year. This twice a year schedule allowed for new information to be accounted for and appropriate actions to be taken. During the review process hospitals have suggested that a single annual ROC may be an appropriate schedule.

STAFF RECOMMENDATION: THERE SHOULD ONLY BE A SINGLE ROC ANALYSIS CONDUCTED IN 2009 Since the Staff is recommending that no spenddowns be imposed based on this ROC, and that a scaling methodology be applied to the update factor, there is no need to conduct a semi-annual ROC in the upcoming year. Staff further recommends that there continue to be discussions with payer and the industry in the coming year to consider the most appropriate schedule for the ROC analysis and action based on that analysis.

Intergrating the ROC and the ICC The ROC analysis determines hospital position relative to one another. The ICC is the process that the Commission uses to determine the exact magnitude of any rate adjustment that may result from the ROC. It is therefore, important that these processes are integrated to give consistent results. Some of the revisions to the ROC methodology require adjustments to the current ICC methods to maintain consistency.

STAFF RECOMMENDATION: CONTINUE TO WORK WITH THE INDUSTRY AND PAYERS TO ADDRESS ISSUES RELATED TO THE INTEGRATION OF THE ROC AND THE ICC.

SUMMARY OF RECOMMENDATIONS

Establishing hospital baseline charges

- Continue to use the current trim points.
- Blend the CPC and CPV into a single comprehensive charge target (CCT).

ROC adjustments

Major adjustments

- Combine inpatient and outpatient case mix indexes into a single adjustment.
- Include regression based adjustments for IME and DSH in the ROC analyses.

Minor adjustments

- The direct cost per resident should be calculated and 100 percent of those costs removed from a hospital's charges when calculating the ROC.
- There should be no change to the calculation or use of the labor market index.
- Create and apply a statewide capital adjustment in the ROC.

Comparing hospitals

- The upcoming ROC analysis should continue to be done on a peer group basis, but peer groups should be reviewed in the coming year and the option of no longer using peer groups should be seriously considered.

Implementation issues

- The commission should impose no spenddowns based on the upcoming ROC, but it should instead scale the FY 2010 update factor.
- There should only be a single ROC analysis conducted in 2009.
- Work with the industry and payers to address issues related to the integration of the ROC and the ICC.

Attachment 1

There is broad agreement that in order to better compare Maryland hospitals across all spectrum of care and services regulated by the HSCRC, the Reasonableness of Charge Analysis (ROC) be expanded beyond its present scope (Charge per Case comparison) to a comprehensive comparison that includes outpatient services - Ambulatory Surgery, ER, and Clinic. To do this, a method of combining the Charge per Case (CPC) and Charge per Visit (CPV) needs to be crafted.

The aim of a combined CPC and CPV methodology is two-fold:

1. The standardization of weights under the APR DRG and APG systems;
2. The redefinition of outpatient visits in relation to inpatient cases.

Moreover, the combined methodology should be simple and intuitive without disrupting the existing underlying assumptions of the ROC. The results are the "Equivalent Inpatient Case" (EIPC), the "Comprehensive Charge Target" (CCT), and the accompanying "Overall Casemix Index" (CMI), which represent for each hospital the number of patients, the average charge, and intensity of the patients, all of which may appropriately be compared among peer group hospitals.

The attached table details staff's calculation and standardization of the combined or blended inpatient and outpatient ROC input variables. Please note that the numbers contained in the table are for discussion purposes only, as they do not represent numbers to be used in the upcoming ROC.

When reviewing this table, there are two key underlying assumptions to the calculations to keep in mind:

1. The outpatient weight of 1.0 equals the average CPV (which equals Outpatient Visit Standardizing Factor (OVSF) multiplied by average CPC, $0.07382 \times \$10,007$). By using a statewide OVSF as a conversion factor, the variation across hospitals' outpatient services is maintained. Moreover, the use of the OVSF mitigates passing through to the CCT hospitals differential efficiencies and/or inefficiencies on inpatient versus outpatient bases, since charges for like goods and services are deemed consistent across inpatient and outpatient settings.
2. The weights for each class of outpatient revenue must be consistent with each other if they are calculated separately.

The columns in the first row of the table list all the names of the variables used in the calculations starting from "HOSPID" in column 1, and ending with "Comprehensive Charge Target" in column 20. The columns in the second row of the table are numbered 1 thru 20. When necessary, the column number is equated to a formula that shows how that column is

derived. To illustrate how the calculations are done, let us use Anne Arundel Medical Center, which is the first hospital in the table, as an example.

To calculate the hospital's EIPC, CCT, and CMI, first calculate the hospital's inpatient revenue and inpatient casemix weight under the Charge per Case System. The inpatient revenue, Column 5, is calculated by multiplying the hospital's inpatient cases (Column 3) by the CPC (Column 4). The inpatient casemix weight, Column 7, is calculated by multiplying the hospital's inpatient cases (Column 3) by the inpatient CMI (Column 6). The inpatient CMI is adjusted by the "CMI Adjustment Factor" (CMIAF) in Column 8 to account for the fact that the overall statewide CMI for the hospital entities included in the ROC do not equal to one. This is because in the creation of statewide casemix, weights for all the hospital entities are used; however, in the ROC, the oncology centers at Johns Hopkins Hospital, University of Maryland Medical System, and Sinai Hospital are excluded. For the CCT and CMI to be accurately blended, CMIAF has to be calculated. Column 9 then is the hospital's adjusted inpatient casemix weight.

The second set of calculations involves the hospital's outpatient revenue and outpatient casemix weight under the Charge per Visit System. The outpatient revenue, Column 13, is calculated by multiplying the hospital's outpatient visits (Column 10) by the CPV (Column 11). In order to calculate the hospital's outpatient casemix weight, the outpatient visits will have to be restated or redefined in relation to inpatient cases. This is done in Column 12 by multiplying the hospital's outpatient visits (Column 10) by the "Outpatient Visit Standardizing Factor" (OVSF), which is, simply, the Statewide Average CPV divided by the Statewide Average CPC. The outpatient casemix weight, Column 15, is calculated by multiplying the hospital's adjusted outpatient visits (Column 12) by the outpatient CMI (Column 14).

The final set of calculations involves the hospital's total revenue and total weight, EIPC, CCT, and CMI. The total revenue, Column 16, is calculated by adding the hospital's inpatient revenue (Column 5) to the outpatient revenue (Column 13). The EIPC, Column 17, is calculated by adding the hospital's inpatient cases (Column 3) to the adjusted outpatient visit (Column 12). The total weight, Column 18, is calculated by adding the hospital's adjusted inpatient casemix weight (Column 9) to the outpatient casemix weight (Column 15). The overall CMI, Column 19, is calculated by dividing the hospital's total weight (Column 18) by the EIPC (Column 17). Finally, the CCT, Column 20, is calculated by dividing the hospital's total revenue (Column 16) by the EIPC (Column 17).

Maryland Health Services Cost Review Commission

Additional data elements to be collected with the inpatient/outpatient hospital discharge data beginning July 1, 2009:

Inpatient:

1. Attending Physician NPI – Type 4 record at position 155-164
2. Operating Physician NPI – Type 4 record at position 165-174
3. Units and charges by rate center – in the current data layout of the Type 3 record, the ‘Units of Service’ field is a 7-digit field. Use first 3 positions for the 3 character rate center designation and use the last 4 digits for the units of service associated with the rate center.

Outpatient:

1. Operating Physician NPI – Type 1 record at 272-281
2. Reserve flag for clinic surgery and plastic surgery – Type 1 record at position 271
“C” = clinic surgery
“P” = plastic/cosmetic surgery
“G” = Greenbaum Cancer Center
“S” = UMMS Shock Trauma
3. Units and charges by rate center – in the current data layout of the Type 2 record, the ‘Units of Service’ field is a 7-digit field. Use first 3 positions for the 3 character rate center designation and use the last 4 digits for the units of service associated with the rate center.
4. Revised instructions for coding item # 48, Encounter Type:

The encounter type for the visit is defined by type of rate center charge in the following order of priority:

If record includes an OR charge (OR) or an OR clinic charge (ORC), then Encounter Type = Ambulatory Surgery = 04

If record includes an ED charge (EMG), then Encounter Type = Emergency Room = 02

If record includes a clinic charge (CL) then Encounter Type = Clinic = 01

If record includes a labor and delivery charge (DEL) then Encounter Type = Labor & Delivery = 03

All others = Other Outpatient = 05

5. Revised instructions for item # 39, Number of Visits/Encounters:
If this claim is a “series account” where claim remains open for recurring visits (HSCRC definition: difference between the “from date” and the “through date” is greater than 14 days), then enter the number of visits included in the claim. For all other claims, enter 1. Do not leave blank or enter 0.

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

AS OF JANUARY 28 , 2009

- A: PENDING LEGAL ACTION :
- B: AWAITING FURTHER COMMISSION ACTION:
- C: CURRENT CASES:

NONE
NONE

Docket Number	Hospital Name	Date Docketed	Decision Required by:	Rate Order Must be Issued by:	Purpose	Analyst's Initials	File Status
2009A	University of Maryland Medical Center	11/17/08	N/A	N/A	ARM	DNP	OPEN
2013R	Memorial Hospital at Esaton	1/12/09	2/11/09	6/12/09	LIT	CO	OPEN
2014A	Johns Hopkins Health System	1/20/09	N/A	N/A	ARM	DNP	OPEN
2015R	Greater Baltimore Medical Center	1/26/09	2/25/09	6/26/09	ICU/CCU	CO	OPEN

PROCEEDINGS REQUIRING COMMISSION ACTION - NOT ON OPEN DOCKET

None

IN RE: THE PERMANENT RATE * BEFORE THE HEALTH SERVICES
APPLICATION OF * COST REVIEW COMMISSION
MEMORIAL HOSPITAL * DOCKET: 2009
AT EASTON * FOLIO: 1823
EASTON, MARYLAND * PROCEEDING: 2013R

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Staff Recommendation

February 4, 2009

Introduction

On January 9, 2009, Memorial Hospital at Easton (the "Hospital") submitted a partial rate application to the Commission requesting a rate for Lithotripsy (LIT) services. The Hospital has a rebundled rate for LIT services currently to patients by a third-party contractor under COMAR 10.37.03.09. The Hospital will acquire and take over all responsibility for providing LIT services to both inpatients and outpatients. The Hospital is requesting that the LIT statewide median rate be approved effective March 1, 2009.

Staff Evaluation

To determine if the Hospital's LIT rate should be set at the statewide median rate or at a rate based on its projected costs, the staff requested that the Hospital submit to the Commission its cost and volume projections for FY 2009. Based on the information received, staff determined that the LIT rate based on the Hospital's projected data is \$2,866.52 per procedure, while the statewide median for LIT services is \$2,722.83 per procedure.

Recommendation

After reviewing the Hospital's application, the staff has the following recommendations:

1. That COMAR 10.37.10.07 requiring that rate applications be made 60 days prior to the opening of the new service be waived;
2. That the LIT rate of \$ 2,722.83 per procedure be approved effective March 1, 2009;
3. That no change be made to the Hospital's charge per case standard for LIT services; and
4. That the LIT rate not be rate realigned until a full year's experience data have been reported to the Commission.

**Draft Staff Recommendations Regarding HSCRC Payment Policy for
Highly Preventable Hospital Acquired Conditions**

Health Services Cost Review Commission
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February 4, 2009

This document represents a draft recommendation presented to the Commission on February 4, 2009. Comments on this recommendation should be sent to the attention of Robert Murray, Executive Director, HSCRC, by Thursday, February 26th, 2009.

Maryland Hospital Acquired Conditions (MHAC) Initiative

Introduction

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

While the IOM reports have helped increase the level of awareness for the need to improve quality, most of the progress, to date, has been in the area of collection and reporting of so-called "Process Measures," processes of care that represent best practices for certain medical procedures. Pay for performance (P4P), primarily utilizing process measures, is being implemented on a piecemeal basis by health plans and providers but has yet to be implemented nationally in a broad manner.¹

Advantages/Disadvantages of Process Measures

An advantage of comparing hospitals based on evidence-based process measures is that risk adjustment is typically not required, since it is established that the relevant prescribed practices are necessary regardless of the severity of a patient's illness or the presence of other medical conditions. Therefore, results may easily be compared, and characteristics of hospitals and their profile of patients typically have little or no bearing on performance. There also has been much research around the commonly selected process measures, and there tends to be general acceptance of the related evidence-based practices by providers. Many of these best practices have been known for decades.

However, there are many disadvantages of basing a pay for performance system on process measures alone. Despite the fact that an entire industry has grown around proposing, studying, and vetting process measures, the process measures that are typically used for quality programs represent only a small portion of the cases that hospitals treat. It is clear that any scoring results from the project would not be reflective of the overall quality of care provided at a particular institution.

To capture performance of hospitals more systemically would require a much larger series of measures. Significantly expanding the number of process measures to capture the overall quality of a hospital would likely result in an unwieldy number of measures, and the program would run the risk of potentially shifting the practice of medicine to be more prescriptive than necessary. Since process measures typically require a reporting mechanism that is separate and distinct from administrative and financial functions, a move to expand the number of meaningful process measures would require a significant additional data reporting burden on hospitals.

¹ The Maryland Health Services Cost Review Commission (HSCRC or Commission) implemented its Quality Based Reimbursement (QBR) initiative effective July 1, 2008. Nationally, Congress did not require implementation of its Value Based Purchasing (VBP) program for FY 2009 but will likely re-reconsider a similar proposal for FY 2010.

Finally, there is a concern that given the long discussion and “vetting” process associated with the adoption of these measures at a national level, by the time specific measures are selected for incorporation into P4P initiatives, most all hospitals have already adopted these practices. In the HSCRC’s QBR implementation, the Commission has already discovered that many of the adopted measures are becoming “topped-off.”² In essence, this means that performance is compressed at the high end of the performance scale. Under these circumstances, the QBR may become less indicative of relative performance. In this circumstance, P4P initiatives that rely solely on process measures may really only reward providers for reporting what is already common practice.

The advances in awareness and heightened focus on the issue of improving quality have led to the development of data tools such as Hospital Compare, a reporting tool created through a collaboration of The Centers for Medicare and Medicaid Services (CMS) and the Hospital Quality Alliance, designed to track hospital quality information and others such as Health Grades. While these reporting tools have also raised awareness of the need to improve quality, they also show that almost 10 years after the original IOM report gaps in health care quality persist.

An Urgent Need for Outcomes Measures related to Quality of Care

Additionally, it is reasonable to believe that the use of individual process measures will not significantly alter the behavioral response of providers sufficiently to generate a meaningful improvement in the quality of care. A similarly weak behavioral link was evident in terms of the predominant cost containment efforts of the 1970s and early 1980s. For decades, cost containment efforts focused on changing the process of care delivery (individual case and utilization review). These efforts were highly labor intensive and, at times, heavy handed, yet were largely ineffective in controlling and reducing unnecessary hospital utilization and cost. By contrast, the linking of payment directly to cost outcomes through the implementation of a prospective per case payment system (cost outcome measures) dramatically changed provider incentives (and behavior) and led to huge reductions in unnecessary service use and associated health care costs. The same behavioral shift is now needed in the area of health care quality.

Because of these and other issues, the HSCRC and other governmental agencies are now focusing on linking payment to measures that more directly represent the overall quality of care provided per inpatient episode.

Outcomes – Background/Discussion

Frustration related to the limitations of process measures, has led to an increasing focus on outcome measures in assessing quality. Where process measures rely on whether a process of care occurred (e.g. was aspirin given on arrival for MI patients), outcome measures focus on the results of care. More specifically outcome measures related to quality are defined as changes attributable to health care, intermediate or final, such as: laboratory or vital sign values, mortality, morbidity (e.g., complications, readmissions), functional status, and efficiency (i.e., an attribute of performance that is

² A “topped-off” measure is considered to be one where the 75th percentile is within 2 standard deviations of the 90th percentile.

measured by examining the relationship between a specific product of the health care system and the resources used to create that product).

National Focus on Outcomes

As noted, national focus has steadily increased on performance outcome measures and specifically has included attention to patient safety and medical errors by the Centers for Medicare and Medicaid Services (CMS) and by the Agency for Healthcare Research and Quality (AHRQ). Patient safety improvement efforts addressing the outcomes and costs of medical errors and their proponents such as the Medicare Payment Advisory Commission, are also increasingly advocating for the linkage of payment to improved patient safety in the hospital.³

The AHRQ Quality Indicators (QIs) measure health care quality by using readily available hospital inpatient administrative data. The AHRQ Patient Safety Indicators (PSIs), a subset of the AHRQ QIs, are a tool to help health system leaders identify potential adverse events occurring during hospitalization. The PSIs are a set of indicators providing information on potential in-hospital complications and adverse events following surgeries, procedures, and childbirth. The PSIs were developed after a comprehensive literature review, analysis of ICD-9-CM codes, review by a clinician panel, implementation of risk adjustment, and empirical analyses. The PSIs were released in March 2003 (see **Appendix 1**).

Medicare's Link to Payment – Hospital Acquired Conditions

More recently the Center for Medicare and Medicaid Services (CMS) has taken the lead in linking payment to outcome improvement through their implementation of its Hospital Acquired Conditions (HAC) initiative.

Section 5001(c) of Deficit Reduction Act (DRA) of 2005 required the US HHS Secretary to identify conditions that are: (a) high cost or high volume or both, (b) result in the assignment of a case to a DRG that has a higher payment when present as a secondary diagnosis, and (c) could reasonably have been prevented through the application of evidence-based guidelines.

On July 31, 2008, in the Medicare Inpatient Prospective Payment System (IPPS) Fiscal Year 2009 Final Rule, CMS included 10 categories of conditions that were selected for their “Hospital Acquired Condition” (HAC) payment provision (see **Appendix 2**). These HACs represent complications (secondary diagnoses) experienced by patients after being admitted that could have reasonably been prevented by the hospital’s medical team.

Under the old IPPS system, the occurrence of a post-admission complication often resulted in a higher payment because the complication may have caused the patient to be assigned to a higher-paying DRG, in effect rewarding the hospital for poor quality care. Failure to reduce or eliminate payment increases associated with preventable complications effectively rewards hospitals for preventable mistakes and errors that lead to increased resource use and additional pain and suffering for patients. This flaw in the IPPS became even more apparent with the adoption of the Medicare MS (Severity adjusted) DRGs effective October 1, 2007.

³ Medicare Payment Advisory Commission: *Medicare Payment Policy*. Report to the Congress. Washington, DC.: March, 2005.

Appendix 3 illustrates how the presence of a preventable HAC (if not adjusted for in the MS-DRG payment logic) would lead to higher overall payment for a hospital. This is clearly an unintended flaw in the existing IPPS that Medicare is moving to correct. Doing so will also cause hospitals and their medical teams to devote more attention toward preventing these of these complications. It should be noted that the Medicare payment reductions (or payment decrements) associated with the identified 10 HACs is 100%. That is, Medicare removes 100% of the payment increment associated with the identified secondary diagnoses encompassed by their HACs.

Payment adjustments for HACs began October 1, 2008 for the 10 categories of HACs not present on admission as selected by CMS. No further adjustment to account for the overall risk profile of patients treated by a given institution is required.

Advantages and Disadvantages of Medicare's HAC Initiative

Clearly, the CMS HAC initiative is valuable in that it represents the first broad-based and significant effort to revise payment incentives to be consistent with the goal of reducing preventable complications. The primary purpose of the initiative is to reduce Medicare payments and provide hospitals with financial incentives to improve quality. In doing so, it begins to correct the unintended incentives in prospective DRG-based hospital payment, which effectively reward hospitals for less desirable outcomes. The initiative uses existing administratively reported data and does not place additional data reporting burdens on hospitals. It also is now the "law of the land" and, as such, represents an important first step toward linking payment to outcome measures more broadly.

On the other hand, the CMS initiative is limited by the requirement that 100% payment decrement be applied for each of the 10 HACs. Elimination of all additional payment implies that HACs should always be preventable. This greatly restricts the scope of eligible complications. Accordingly, the financial impact of CMS's initial 10 HACs is estimated to be only 0.018% nationally (approximately \$21 million in payment reductions on a base of total IPPS payments of over \$110 billion per year). The 100% payment decrement also has the additional disadvantage of removing any payment-related incentive to continue to code for the presence of HACs moving forward. Continued consistent and accurate coding of HAC secondary diagnoses is necessary in order for CMS to monitor whether this payment change is indeed having the desired effect on quality (i.e., a decrease in the incidence of preventable complications and the associated improvement in quality).

Present on Admission Indicator (POA)

Essential to implementing the requirements of the DRA is hospital reporting of the present on admission (POA) indicator for each secondary diagnosis; Inpatient Prospective Payment System (IPPS) hospitals were required to begin reporting the POA indicator on all secondary diagnoses beginning October 1, 2007. By accounting for all conditions (secondary diagnoses) present upon admitting a patient, policy-makers are able to identify conditions and complications that occur post admission (secondary diagnosis not present on admission). This enables identification of conditions and complications that lead to assignment to a higher DRG payment category, but may well have been preventable.

Also, because the implementation of HACs is so dependent on accurate coding of secondary diagnosis Present on Admission, the accuracy of POA coding will heavily determine its overall success. Based on staff's discussion with CMS staff, is not clear that CMS has been able to undertake a thorough

evaluation of the reliability and overall efficacy of POA coding nationally. Inaccurate and inconsistent coding of the POA indicator will severely hamper CMS' efforts to implement their HAC-related payment reductions in a fair and consistent fashion.

Voluntary vs. Mandatory Serious Adverse Event Policies

In June of 2008, the Executive Committee of the Maryland Hospital Association (MHA) endorsed a set of voluntary payment guidelines for hospitals to follow when a serious adverse event occurs. The guidelines establish that payment should be waived for the entire stay if one or more of the following 7 serious adverse events occur, and if the event results in serious disability lasting longer than 7 days or death:

- Surgery on wrong body part;
- Surgery on the wrong patient;
- Wrong surgical procedure;
- Unintended retention of a foreign object;
- An air embolism that occurs while being treated in a hospital;
- A medication error attributable to the hospital; and
- A hemolytic reaction due to administration of incompatible blood or blood products.

The guidelines also state that beyond these seven events, hospitals will individually evaluate on a case-by-case basis whether full or partial payment should be waived based on 4 criteria:

- Whether the error or event was preventable;
- Whether the error or event was within the control of the hospital;
- Whether the error or event was the result of a mistake made in the hospital;
- Whether the error or event resulted in patient death or serious disability

Such guidelines can be helpful for hospitals in putting a structure in place to address payment issues when a serious adverse event occurs. The guidelines can standardize the practice and help consumers understand what may occur in such an event. In fact, in the past many hospitals have waived full or partial payment for adverse events in absence of these guidelines.

While the MHA voluntary guidelines represent a commendable voluntary step, they do not appear to represent a substantial change from what has been the status-quo operating policy for hospitals for many years. Discussions with several hospitals and hospital systems indicate that they have had these same policies in place over time – primarily for “risk management” purposes.

The HSCRC staff also believes that these guidelines are very limited in scope and in enforcement. First, the serious adverse events listed by MHA represent a very small number of cases in Maryland and represent just a subset of the conditions that are considered to be highly preventable. Second, the specified payment guidelines apply only when one of the serious adverse events result in serious death or serious disability lasting more than 7 days. This means that if a disability resulting from a serious adverse event lasts less than 7 days, regardless of whether additional procedures are required to address the result of the adverse event, the guidelines may not apply. And under these circumstances, hospital charges may ensue regardless of the fact that a serious adverse event occurred. Action could also be dependent on how one defines a “serious disability.”

Voluntary guidelines and standards can be helpful overall, but given the narrow scope and difficulties in enforcing and monitoring behavior, staff believes that something more systematic and data-driven must be implemented. Because of Maryland's Medicare waiver, the State is exempt from the implementation of the CMS HACs. This exemption provides Maryland with an opportunity to build upon the basic structure and concept of the HAC initiative, but to craft a payment methodology that is more appropriate for an All-Payer population and consistent with the State's unique severity adjusted APR-DRG payment structure.

HSCRC Approach to Highly Preventable Hospital Acquired Conditions

In examining the various approaches to linking outcome measurement to payment, the HSCRC staff notes the following key observations:

Unintended Incentives in the Existing Payment System

As noted, there are many examples (accounting for a significant proportion of inpatient resource use and payment) where the occurrence of a post-admission complication results in a higher payment because the complication results in the patient being assigned to a higher-paying DRG. In cases where this post-admission complication was largely preventable through the practice of high quality medical practice, hospitals are effectively being rewarded for poor quality care. This phenomenon is even more prevalent with the use of refined and severity adjusted DRG systems like the All-Patient-Refined (APR) and Medicare Severity-adjusted (MS) DRGs. The Exhibit below illustrates how this unintended incentive exists under both the original DRG payment system and the recently adopted APR-DRG (severity adjusted) payment system.

Old DRG System vs. Refined System

Old DRG System

- DRGs developed for a Medicare (elderly population)
- Less focus on Obstetrics, Pediatrics, Psychiatry DRGs
- 250-300 categories of cases
- Only one split to differentiate cases with complications

DRG Category or "Cell"	Payment
DRG 1 w/o cc	\$7,500
DRG 2 w/cc	\$9,000
DRG 3 w/o cc	\$4,500
DRG 4 w/cc	\$6,000
DRG 5	\$14,000
DRG 6	\$15,000
...	...
...	...
...	...
DRG 500 w/cc	\$22,000

Presence of a complication (w/cc) Results in patient begin assigned To DRG4 (w/cc) instead of DRG3 (w/o cc) and \$1,500 higher payment

APR-DRG System

- Developed for an "All-Patient" population
- Clinical logic more appropriate for all types of care
- 314 DRG categories
- 4 Splits based on clinical factors for different levels of "severity" of illness (SOI)

The More Complications, the higher the SOI -->

DRG Category or "Cell"	SOI 1	SOI 2	SOI 3	SOI 4
DRG 1	\$2,500	\$5,700	\$9,700	\$12,000
DRG 2	\$3,500	\$4,700	\$10,800	\$13,400
DRG 3	\$1,500	\$3,000	\$6,000	\$7,800
DRG 4	\$3,000	\$4,500	\$6,500	\$8,000
DRG 5	\$4,500	\$8,900	\$12,300	\$17,000
DRG 6	\$6,000	\$12,000	\$17,000	\$21,000
...
...
DRG 314	\$7,600	\$14,000	\$25,000	\$32,000

With a more refined (and more sensitive) severity adjusted DRG system, the presence of a complication post discharge can have an even more dramatic impact on payment re-assignment

Absence of Appropriate Financial Incentives and Data Undermine Quality Improvement Efforts

Staff believes that hospitals and medical teams in Maryland and across the nation are currently doing the very best job they can to prevent unintended and preventable conditions from occurring given the data tools and financial incentives available to them. However, the financial incentive structure and the current data infrastructure do not support a systematic and concerted effort to first identify the most highly preventable conditions, then monitor and finally avoid these expensive and often debilitating complications. The lack of adequate incentives and absence of identification/monitoring tools, contribute to significant unnecessary cost and substandard care. Armed with more appropriate financial incentives and systematic monitoring and tracking tools, hospitals in the State will be able to significantly reduce the incidence of preventable complications.

Backdrop of Budgetary Constraints Generally and Acutely in 2009-2011 Period

The primary focus of this initiative will be to correct the unintended flaw in payment incentives and reduce the number of preventable complications. However, this initiative will also reduce hospital expenditures. As articulated by the Maryland Secretary of Health and others, in an era of constrained budgetary resources, priority should be given on initiatives that target reducing unnecessary and wasteful expenditures rather than arbitrary and across-the-board spending cuts. The MHAC initiative has been designed specifically to promote efforts to reduce unnecessary complications that otherwise would result in higher cost and lower quality.

Maryland Uniquely Positioned to Assume a Leadership Role in Quality Promotion

Given Maryland's well-developed data infrastructure, advanced experience with sophisticated medical record documentation and coding, and its unique APR-DRG payment structure, we are uniquely positioned to assume a leadership role in quality promotion in the United States. Over the past six months considerable effort has been placed on monitoring and improving POA coding of hospitals. Another focus of the MHAC effort over the past several months has been on the development of mechanisms to allow hospitals to trace back MHAC experience to individual case medical records at their hospital. Hospitals in the State have a proven track record of using the timely and accurate medical record and financial data produced by the HSCRC to monitor their activities and respond to the financial incentives presented to them. The combination of well-developed data systems, considerable experience with, and sophistication in, the use of data systems, and a clear set of incentives that apply to all hospitals and to all payers, means that Maryland has the opportunity to demonstrably improve the quality of hospital care for all Maryland citizens.

Potentially Preventable Complication Methodology Link to APR-DRGs and MHACs

An added advantage to the State's use of the APR-DRG payment structure is the availability of 3M Health Information System's Potentially Preventable Complications (PPC) methodology, a methodology specifically developed as an adjunct to the APR-DRG grouping product. The APR-DRG payment system has been enthusiastically endorsed by the Maryland hospital industry. It represents a highly sophisticated case mix (and risk-adjustment) mechanism that is highly effective in explaining a

significant proportion of the variation in required resource use and clinical variation of hospitalized patients. The PPC methodology is an extension to the APR-DRGs that represents a conservative approach to the identification of complications. The proposed MHAC methodology makes use of a core group of 12 PPCs (out of a total of 64 mutually exclusive types of inpatient complication) that are most preventable.

Background on Potentially Preventable Complications

Potentially Preventable Complications, identify potentially preventable inpatient harmful events or negative outcomes that result from the processes of care and treatment rather than from the natural progression of underlying disease. The entire set of 64 PPCs have been identified from 1,450 ICD-9-CM secondary diagnosis codes not present on admission and from selected ICD-9-CM procedure codes. PPCs incorporate most of the specific diagnosis codes that are contained in the AHRQ Patient Safety Indicators and Hospital Acquired Conditions from CMS, but, in most cases include a much wider range of diagnoses with detailed clinical exclusions and apply to a broader range of hospital patients.

As noted, reducing preventable inpatient complications is an important component of the national health goal of eliminating waste while ensuring the delivery of appropriate care. PPCs create a comprehensive definition of inpatient complications based on a uniformly applied development methodology and criteria that can be applied to a much broader range of patients and can facilitate the national goal of reducing inpatient complications. Ultimately, accurate identification of complications and their risk of occurrence are critical to fair and useful hospital outcome comparisons, as well as fair performance-based payment initiatives.

Again, the proposed MHAC logic focuses on a subset of the 12 highly preventable complications as the basis for the related modification of payment levels (payment decrements). A more expanded description of PPCs and the related PPC methodology is provided in **Appendix 4**.

HSCRC MHAC Policy Development Process

Identification of Highly Preventable PPCs (MHACs)

Even though hospital acquired complications may become more preventable over time with improved techniques and technology, they will never be totally preventable. Furthermore, judgments about “preventability” are subjective, and there can be a varying degree of the level of preventability across the PPC. This means that except for a few “true” medical errors – so-called “never events” like foreign objects left in after surgery – eliminating the entire payment increase that is due to a complication implies that the complication is always preventable, even with optimal care. Most post-admission complications (e.g., pulmonary embolism) are not so clearly linked to medical errors, and, although they may relate to errors in judgment or lapses in execution that reflect poor quality of care, they cannot be considered always preventable.

In order to incorporate a direct case level payment adjustment, there needs to be a link between the relative preventability of a complication and the extent of the payment reduction associated with the complication. The financial consequences of a complication need to be significant enough to motivate hospitals to reduce complication rates, without penalizing them for events over which they have limited control.

This can be achieved by selecting a subset of the 64 PPCs that are highly preventable and by not eliminating 100% of the payment increase due to these PPCs.

Characteristics of MHACs and Rational for Selection

HSCRC staff, working with 3M has identified a subset of 12 highly preventable PPCs for Maryland that should be preventable for the majority of patients with adherence to accepted standards of care. In order to identify and select these 12 highly preventable PPCs, an analysis of the literature available documenting the linkage of quality problems with higher occurrences of the PPCs was conducted. Next, to determine the degree to which the occurrences of the 12 PPCs vary by reason for admission and the severity of illness at the time of admission, statistical analysis on risk adjustment and its impact on rates was also conducted for each PPC. As a result of these analyses, the 12 selected highly preventable PPCs for Maryland differ from the remaining PPCs in that they represent complications that:

- Are less likely to be a consequence of the natural progression of the underlying illness or coexisting conditions that were present on admission; and,
- Statistically are not influenced by the patient's reason for admission and severity of illness at the time of admission.

The remaining 52 PPCs are more influenced by the patient's underlying disease and severity of illness at the time of admission. For a payment adjustment, these remaining PPCs require adequate risk adjustment at the time of admission in order to express an explicit recognition of their relative degree of preventability.

Exclusions from the PPC Methodology

Consistent with the larger set of PPCs, the same global exclusions of patients with certain severe or catastrophic illness who were particularly susceptible to a range of complications, including those with trauma, HIV illness, and major or metastatic malignancies, are applied to the 12 highly preventable PPCs, and these admissions are not eligible to be assigned PPCs.

Appendix 5 summarizes the literature review and findings for each of the PPCs, and provides the specific definition for each PPC, identifies any additional specific exclusions to the denominator population eligible to be assigned the PPC; identifies existing analogous CMS HACs or AHRQ PSIs; identifies the origin of the PPC; identifies the level of face validity; and if found in the literature, identifies level of sensitivity and predictive value, the preventability/hospital control, and construct validity of the PPC. Due to their length, the detailed references to the literature are not included in **Appendix 5** but are available.

The 12 selected PPCs include:

- Post-Op Wound Infection & Deep Wound Disruption w Procedure (PPC 38)
- Reopening of Surgical Site (PPC 39)
- Post-Op Hemorrhage & Hematoma w Hemorrhage Control Proc or I&D Procedure (PPC 41)
- Accidental Puncture/Laceration During Invasive Procedure (PPC 42)
- Post-Procedure Foreign Bodies (PPC 45)
- Iatrogenic Pneumothrax (PPC 49)
- Inflammation, & Other Complications of Devices, Implants or Grafts Except Vascular Infection (PPC 52)
- Infections due to Central Venous Catheters (PPC 54)
- Obstetrical Laceration & Other Trauma without Instrumentation (PPC 57)
- Obstetrical Laceration & Other Trauma with Instrumentation (PPC 58)
- Major Puerperal Infection and Other Major Obstetrical Complications (PPC 60)
- Post-Operative Respiratory Failure with Tracheostomy (PPC 63)

Similar to the CMS HACs, the majority of the 12 highly preventable PPCs are only assigned if they are coded as a secondary diagnosis not present on admission; the exceptions are the obstetric complications (PPCs 57, 58, and 60), which must be coded as occurring during or following the delivery at the hospital in order to be assigned.

MHAC Objectives and Principles

To guide the development of HSCRC policy related to linking payment to MHACs, staff established and articulated the following key objectives and principles:

- 1) The HSCRC should craft a Maryland-based solution to the problem of reducing highly preventable Hospital Acquired Conditions (in particular one that reflects the State's unique characteristics and builds on the strengths of the existing data and payment systems);
- 2) The primary focus of the MHAC initiative should be on correcting existing flaws in the APR-DRG payment system and improving the financial incentives around the promotion of high quality of care;
- 3) Any payment methodology implemented should be prospective in nature so that hospitals have some time to adapt to the new payment incentives and focus on and develop care delivery models that reduce preventable complications;
- 4) In addition to improving the financial incentives, an over-arching goal should be to reduce the rate of preventable complications in the system (and the HSCRC should monitor this performance over time);

- 5) Throughout the policy development process, there should be an emphasis on making the incentives and methodologies transparent and understandable to hospital clinical, case mix and financial personnel – with particular emphasis on providing hospitals with the data they need to track their own experience back to individual case records, calculate the payment implications and identify the conditions and events that need to be addressed in order to reduce the number of preventable complications they experience;
- 6) Financial incentives should be structured to motivate a behavioral change (which by definition will mean some reduced payment); however, the payment incentives should also be structured to reflect the hospitals overall ability to influence the rate of complications (in this context, a 100% payment decrement is not appropriate);
- 7) Consistent with this last goal, staff believes that there should be a “retention factor” that reflects the fact that conditions with the very highest preventability may not be 100% preventable. This retention factor also will provide an incentive for hospitals to continue to accurately code the incidence of MHACs, because failure to do so will result in a net revenue loss for the institution;
- 8) Finally, considerable effort should be directed at identifying and simulating all possible scenarios where MHCA-related payment changes might occur and precautions should be taken to avoid any unintended consequences and behavioral responses on the part of hospitals. This includes the development of payment methods related to both core cases reflected in each hospital’s approved Charge per Case (CPC) target and also outlier cases (excluded from hospital CPCs) for which the presence of an MHAC may have resulted in additional and unintended payments.

MHAC Payment Simulations and Methodology Development

To develop the proposed MHAC payment methodology, staff made extensive use of the FY 2008 case mix data, which contained a full year’s worth of coding of the POA indicator by each hospital in the State. The ability to account for diagnoses present on admission and present on discharge is of course a necessary prerequisite for the development of the MHAC payment logic.

Staff first identified and classified all FY 2008 cases that were eligible for application of a MHAC payment decrement given the presence of one or more of the 12 highly preventable complications identified (MHACs). What follows is a description of the analysis and steps performed and a presentation of the simulation results when applying the proposed MHAC payment decrement methodology (at a 90% rate) to both included cases (reflecting all hospitals core Charge per Case (CPC) revenue and outlier cases. The application of this proposed methodology to FY 2008 data shows that hospital payments would be reduced by an estimated \$9.4 million.

Description of MHAC Payment Scenarios and Simulations

Payment decrements based on MHACs will be of two types: 1) decrements based on changes in APR-DRG assignments for cases with an MHAC; and, 2) decrements based on adjustments to allowed outlier charges for cases with an MHAC. Exactly how the decrement is applied will vary depending on the specifics of the case. The payment adjustments will work as follows:

Decrement based on changes in APR-DRG assignment

This payment adjustment is based on the fact that the presence of an MHAC can result in a discharge being assigned to an APR-DRG with a higher case weight and, consequently, allow for higher overall charges. Classifying the case without the MHAC diagnoses and procedures will cause the case to be assigned to a lower weighted APR-DRG. When the removal of the MHAC leads to a case being assigned to a lower weight APR-DRG, the hospital's allowed charges will be adjusted by 90 percent of the difference between the original case weight and the new, lower case weight.

Decrements Applied to Outlier Charges

Under the HSCRC system, charges that exceed a case specific "trim point" are not included in the calculation of a hospital's CPC target. Charges above the trim point are paid on a fee for service basis and are not subject to the constraints of the CPC system. Outlier charges, therefore, are unaffected by any case weight based adjustment. Since the presence of an MHAC often leads to significantly higher charges, failure to address outlier charges ignores a significant portion of the additional charges generated by MHACs. To determine the appropriate decrement to be applied to outlier charges, 3M did a regression analysis based on Maryland data to determine the amount of additional charges generated by each of the 12 MHAC. (The analysis and the estimates of additional MHAC charges are discussed in **Appendix 6**) Outlier charges will be adjusted by 90 percent of the regression based estimates for each MHAC. In cases where more than one MHAC is present the adjustment will be applied additively.

Staff, working with 3M, has used FY 2008 discharge data to model various payment scenarios and their impacts. The simulations examined nearly 690,000 discharges from 43 Maryland hospitals.⁴ Less than one percent of all discharges (roughly 5,700) had one or more MHACs. The total payment decrement that would arise from by applying the payment decrements would be \$9.3 million of nearly \$7.6 billion in approved revenue, or approximately 0.12 percent of allowed charges. Cases where MHACs occurred fell into one of five distinct scenarios. These are summarized in Table 1 below.

⁴ Five hospitals for whose discharge data the "Present on Admission" (POA) flag was determined to be properly coded were excluded from the simulations.

Table 1

MHAC Payment Decrement Scenarios		
Scenario 1	*Case reassigned to lower weight APR-DRG. *No outlier charges	
	Payment Adjustment	*90% of change in Case Weight * Outliers - NA
	Estimated MHAC Cases (percent)	1,056 (18.3%)
	Statewide Payment Decrement	\$3,499,857
Scenario 2	*Case reassigned to lower weight APR-DRG. *No outlier charges in original assignment, outlier charges in new assignment.	
	Payment Adjustment	*90% of change in Case Weight *90% of regression determined MHAC adjustment
	Estimated MHAC Cases (percent)	49 (0.85%)
	Statewide Payment Decrement	\$3,534,644
Scenario 3	*Case reassigned to lower weight APR-DRG. *Outlier charges in original assignment and in new assignment	
	Payment Adjustment	*90% of change in Case Weight * 90% of regression determined MHAC adjustment
	Estimated MHAC Cases (percent)	16 (0.28%)
	Statewide Payment Decrement	\$253,362
Scenario 4	*No change in APR-DRG assignment. *Outlier charges associated with the case	
	Payment Adjustment	* 90% of regression determined MHAC adjustment
	Estimated MHAC Cases (percent)	184 (3.19%)
	Statewide Payment Decrement	\$2,074,828
Scenario 5	*No change in APR-DRG assignment. *No Outlier charges associated with the case	
	Payment Adjustment	*90% of change in Case Weight * 90% of regression determined MHAC adjustment
	Estimated MHAC Cases (percent)	4,398 (76.26%)
	Statewide Payment Decrement	\$0

In examining the various payment decrement scenarios and their relative frequency, several observations can be made. First, more than three quarters of cases with one or more MHACs falls into Scenario 5, where the removal of the MHAC does not lead to a reassignment, and the case had no

outlier charges. For these cases, there is no payment decrement. The next most frequently occurring scenario (18.3 percent of MHAC cases) is Scenario 1, where the case is reassigned but there are no outlier charges. In scenario 4, which involved only adjustments to outlier charges, and Scenario 2 where cases were both reassigned and had outlier charges, each had relatively few of the MHAC cases, but the adjustment per case tended to be significant.

Simulations were also run to estimate the effects of the different decrement payment scenarios by MHAC, by hospital, and by payer. The results of those simulations are presented in Tables 2 and 3.

Table 2
MHAC Payment Change Simulation Summary by MHAC:

List of 12 PPCs	PPC Definition	Cases	Original Approved Revenue	Original Outlier Amount	Original Total Payment	New Approved Revenue	New Outlier Amount	New Total Payment	Payment Decrement
No PPCs		682,921	\$7,301,268,008	\$162,365,176	\$7,463,633,184	\$7,301,268,008	\$162,365,176	\$7,463,633,184	\$0
63	Post-Operative Respiratory Failure with Tracheostomy	77	\$12,654,391	\$1,907,756	\$14,562,147	\$5,680,611	\$3,603,767	\$9,284,379	-\$5,277,768
60	Major Puerperal Infection and Other Maj. Obstetric Comp.	263	\$3,430,438	\$45,403	\$3,475,841	\$2,572,401	\$92,087	\$2,664,489	-\$811,353
54	Infections due to Central Venous Catheters	203	\$7,723,680	\$2,398,471	\$10,122,152	\$7,723,680	\$1,805,020	\$9,528,701	-\$593,451
52	Inflam. & Oth. Comp. of Devices, Implants or Grafts Except Vas	900	\$24,415,740	\$1,948,463	\$26,364,203	\$24,415,740	\$1,596,243	\$26,011,983	-\$352,220
54,63		4	\$740,149	\$341,509	\$1,081,658	\$348,320	\$447,599	\$795,919	-\$285,738
52,63		4	\$646,379	\$211,572	\$857,951	\$328,075	\$274,926	\$603,000	-\$254,951
57	Obstetric Lacerations & Other Trauma w/o Instrumentation	1,518	\$8,428,332	\$0	\$8,428,332	\$8,172,281	\$18,181	\$8,190,461	-\$237,871
42,63		2	\$361,858	\$0	\$361,858	\$134,685	\$0	\$134,685	-\$227,173
38	Post-Op Wound Infec & Deep Wound Disrup w/ Procedure	35	\$1,488,861	\$179,678	\$1,668,539	\$1,488,861	\$29,387	\$1,518,248	-\$150,290
39,63		2	\$322,337	\$0	\$322,337	\$136,484	\$44,990	\$181,474	-\$140,862
58	Obstetric Lacerations & Other Trauma w/ Instrumentation	595	\$3,201,254	\$0	\$3,201,254	\$3,075,228	\$0	\$3,075,228	-\$126,026
41	Post-Op Hemorrhage & Hematoma w/ Hemor. Control Proc. or I&E	182	\$6,294,550	\$899,711	\$7,194,261	\$6,294,550	\$800,534	\$7,095,085	-\$99,177
42	Accidental Puncture/Laceration During Invasive Proc.	1,493	\$38,259,435	\$1,749,512	\$40,008,947	\$38,259,435	\$1,659,536	\$39,918,971	-\$89,975
49,63		1	\$156,498	\$0	\$156,498	\$69,172	\$0	\$69,172	-\$87,326
52,54		12	\$493,776	\$292,888	\$786,664	\$493,776	\$208,739	\$702,515	-\$84,149
49	Iatrogenic Pneumothorax	253	\$6,856,184	\$755,599	\$7,611,783	\$6,856,184	\$675,718	\$7,531,901	-\$79,882
38,42		5	\$227,953	\$156,541	\$384,494	\$227,953	\$83,809	\$311,761	-\$72,733
39	Reopening Surgical Site	87	\$3,616,644	\$217,282	\$3,833,926	\$3,616,644	\$152,202	\$3,768,846	-\$65,079
41,52,63		1	\$137,984	\$0	\$137,984	\$74,259	\$0	\$74,259	-\$63,724
52,60		1	\$68,525	\$0	\$68,525	\$16,877	\$0	\$16,877	-\$51,647
39,54,63		1	\$165,838	\$0	\$165,838	\$78,067	\$40,949	\$119,016	-\$46,822
39,52		14	\$535,562	\$57,351	\$592,913	\$535,562	\$19,656	\$555,219	-\$37,695
39,42		11	\$591,163	\$33,987	\$625,150	\$591,163	\$8,454	\$599,617	-\$25,533
41,42,52		1	\$79,225	\$118,210	\$197,435	\$79,225	\$94,078	\$173,303	-\$24,132
41,52		4	\$168,165	\$30,527	\$198,692	\$168,165	\$10,355	\$178,520	-\$20,173
41,49		1	\$207,244	\$180,387	\$387,631	\$207,244	\$162,826	\$370,070	-\$17,561
41,42		18	\$841,962	\$26,380	\$868,342	\$841,962	\$11,346	\$853,308	-\$15,034
41,42,63		1	\$137,984	\$13,458	\$151,442	\$137,984	\$0	\$137,984	-\$13,458
42,49		4	\$193,628	\$86,871	\$280,499	\$193,628	\$75,345	\$268,973	-\$11,526
49,52		4	\$278,611	\$21,777	\$300,388	\$278,611	\$11,247	\$289,858	-\$10,530
39,60		5	\$73,531	\$4,308	\$77,839	\$72,318	\$0	\$72,318	-\$5,521
58,60		3	\$22,262	\$0	\$22,262	\$18,449	\$0	\$18,449	-\$3,813
38,45		1	\$12,505	\$0	\$12,505	\$12,505	\$0	\$12,505	\$0
38,52		1	\$46,922	\$0	\$46,922	\$46,922	\$0	\$46,922	\$0
38,60		5	\$61,200	\$0	\$61,200	\$61,200	\$0	\$61,200	\$0
39,45		2	\$57,004	\$0	\$57,004	\$57,004	\$0	\$57,004	\$0
41,60		1	\$18,327	\$0	\$18,327	\$18,327	\$0	\$18,327	\$0
42,52		20	\$615,655	\$0	\$615,655	\$615,655	\$0	\$615,655	\$0
42,54		2	\$93,406	\$0	\$93,406	\$93,406	\$0	\$93,406	\$0
42,57		4	\$33,493	\$0	\$33,493	\$33,493	\$0	\$33,493	\$0
45	Post-procedure Foreign Bodies	15	\$446,780	\$0	\$446,780	\$446,780	\$0	\$446,780	\$0
57,60		9	\$83,804	\$0	\$83,804	\$83,804	\$0	\$83,804	\$0
42,60		2	\$48,198	\$0	\$48,198	\$34,926	\$33,774	\$68,700	\$20,502
PPC 12 Total		5,767	\$124,337,435	\$11,677,641	\$136,015,075	\$114,691,616	\$11,960,768	\$126,652,384	-\$9,362,691
Total		688,688	\$7,425,605,443	\$174,042,817	\$7,599,648,260	\$7,415,959,624	\$174,325,944	\$7,590,285,568	-\$9,362,691

Table 3

Payment Change Simulation Summary by Hospital

A	B	C	D	E	F	G	H	I	J	K	L	M	N
Hospital ID	Name	Cases	Total Charges	Original Approved Revenue	Original Outlier Amount	Original Total Payment	New Approved Revenue	New Outlier Amount	New Total Payment	Payment Decrement	Decrement as % of Original Payment	MHAC Cases	MHAC Cases as % of Total Cases
210001	Washington County	18,483	\$158,362,125	\$154,344,247	\$1,816,082	\$156,160,329	\$154,171,036	\$1,789,243	\$155,960,279	-\$200,050	-0.13%	163	0.88%
210002	University Hospital	35,970	\$862,721,990	\$826,407,884	\$44,624,389	\$871,032,273	\$824,167,726	\$44,707,872	\$868,875,598	-\$2,156,675	-0.25%	333	0.93%
210003	Prince Georges	15,936	\$167,898,373	\$161,551,144	\$3,008,672	\$164,559,815	\$160,766,129	\$3,091,317	\$163,857,446	-\$702,369	-0.43%	125	0.78%
210004	Holy Cross	35,779	\$287,513,451	\$281,602,513	\$4,085,876	\$285,688,389	\$281,337,952	\$4,065,743	\$285,403,695	-\$284,694	-0.10%	407	1.14%
210005	Frederick	20,177	\$162,689,511	\$160,265,652	\$1,623,393	\$161,889,045	\$160,247,629	\$1,576,286	\$161,823,915	-\$65,130	-0.04%	132	0.65%
210006	Harford	7,341	\$56,213,844	\$55,073,642	\$628,808	\$55,702,450	\$55,073,642	\$610,925	\$55,684,567	-\$17,883	-0.03%	21	0.29%
210007	St. Joseph	25,531	\$278,356,211	\$273,639,600	\$2,038,635	\$275,678,235	\$273,141,707	\$2,084,781	\$275,226,488	-\$451,747	-0.16%	281	1.10%
210008	Mercy	20,213	\$193,272,957	\$189,788,028	\$1,807,215	\$191,595,243	\$189,667,107	\$1,801,074	\$191,468,181	-\$127,062	-0.07%	154	0.76%
210009	Hopkins Hospital	43,896	\$893,679,304	\$836,188,497	\$48,336,473	\$884,524,970	\$834,649,679	\$48,488,691	\$883,138,370	-\$1,386,601	-0.16%	492	1.12%
210010	Dorchester	3,534	\$26,999,473	\$26,379,561	\$496,391	\$26,875,952	\$26,379,561	\$496,391	\$26,875,952	\$0	0.00%	23	0.65%
210011	St. Agnes	21,710	\$229,196,700	\$225,913,219	\$2,814,263	\$228,727,482	\$225,708,926	\$2,748,849	\$228,457,775	-\$269,707	-0.12%	264	1.22%
210012	Sinai	28,845	\$393,865,136	\$373,709,813	\$5,592,800	\$379,302,614	\$372,769,002	\$5,720,204	\$378,489,205	-\$813,409	-0.21%	395	1.37%
210013	Bon Secours	6,611	\$69,062,126	\$68,133,035	\$702,816	\$68,835,852	\$68,133,035	\$695,244	\$68,828,279	-\$75,722	-0.01%	23	0.35%
210015	Franklin Square	30,200	\$285,311,249	\$281,503,860	\$3,129,879	\$284,633,739	\$281,262,449	\$3,253,927	\$284,516,376	-\$117,363	-0.04%	171	0.57%
210017	Garrett	3,010	\$18,579,636	\$22,638,787	\$101,577	\$22,740,365	\$22,635,972	\$101,577	\$22,737,550	-\$2,815	-0.01%	17	0.56%
210019	Peninsula Regional	23,268	\$257,066,029	\$253,214,132	\$1,502,324	\$254,716,455	\$253,091,878	\$1,468,905	\$254,560,783	-\$155,672	-0.06%	165	0.71%
210023	Anne Arundel	28,750	\$235,711,682	\$232,827,823	\$3,038,480	\$235,866,303	\$232,495,936	\$3,068,892	\$235,564,827	-\$301,476	-0.13%	377	1.31%
210024	Union Memorial	20,742	\$31,176,527	\$304,194,440	\$3,100,126	\$307,294,566	\$303,626,410	\$3,306,427	\$306,932,836	-\$361,730	-0.12%	128	0.62%
210025	Cumberland	8,844	\$68,007,429	\$68,090,476	\$863,112	\$68,953,588	\$68,065,774	\$847,438	\$68,913,212	-\$40,376	-0.06%	84	0.95%
210027	Sacred Heart	9,314	\$80,585,254	\$80,027,894	\$503,413	\$80,531,307	\$79,878,210	\$494,738	\$80,372,948	-\$158,359	-0.20%	40	0.43%
210028	St. Mary's	10,817	\$67,932,719	\$66,635,174	\$519,819	\$67,154,993	\$66,632,496	\$519,819	\$67,152,316	-\$2,677	0.00%	50	0.46%
210029	Hopkins Bayview	23,102	\$280,398,118	\$255,585,049	\$6,245,909	\$261,830,958	\$255,292,278	\$6,209,025	\$261,501,303	-\$329,655	-0.13%	179	0.77%
210030	Chester River	3,855	\$32,175,064	\$32,349,341	\$279,964	\$32,629,306	\$32,345,177	\$272,911	\$32,618,088	-\$11,217	-0.03%	15	0.39%
210032	Union of Cecil	9,309	\$62,894,394	\$62,298,090	\$931,892	\$63,229,982	\$62,283,736	\$925,805	\$63,209,541	-\$20,440	-0.03%	72	0.77%
210033	Carroll	17,275	\$139,922,153	\$137,863,720	\$1,416,132	\$139,279,851	\$137,851,557	\$1,416,132	\$139,267,689	-\$12,163	-0.01%	97	0.56%
210034	Harbor	15,486	\$147,120,540	\$145,537,539	\$898,430	\$146,435,969	\$145,424,015	\$941,768	\$146,365,783	-\$70,186	-0.05%	109	0.70%
210035	Civista	8,435	\$66,866,283	\$65,717,355	\$1,497,874	\$67,215,229	\$65,701,585	\$1,414,050	\$67,115,635	-\$99,595	-0.15%	45	0.53%
210037	Easton	10,924	\$87,104,876	\$85,364,685	\$863,839	\$86,228,524	\$85,347,674	\$826,244	\$86,173,917	-\$54,607	-0.06%	103	0.94%
210038	Maryland General	12,749	\$139,985,425	\$143,313,928	\$872,957	\$144,186,885	\$143,039,465	\$872,957	\$143,912,423	-\$274,463	-0.19%	53	0.42%
210039	Calvert	8,986	\$60,215,647	\$59,249,275	\$229,589	\$59,478,864	\$59,234,161	\$225,282	\$59,459,443	-\$19,421	-0.03%	56	0.62%
210040	Northwest	12,834	\$120,249,766	\$119,074,101	\$931,278	\$120,005,379	\$118,886,719	\$931,278	\$119,817,996	-\$187,382	-0.16%	41	0.32%
210043	Baltimore Washing	18,957	\$185,136,502	\$182,622,663	\$2,398,244	\$185,020,907	\$182,531,298	\$2,330,051	\$184,861,349	-\$159,558	-0.09%	98	0.52%
210044	GBMC	26,110	\$204,992,823	\$203,315,409	\$1,616,884	\$204,932,292	\$203,272,263	\$1,512,788	\$204,785,051	-\$147,241	-0.07%	393	1.51%
210045	McCreedy	732	\$5,412,998	\$5,247,677	\$18,569	\$5,266,246	\$5,247,677	\$18,569	\$5,266,246	\$0	0.00%	0	0.00%
210048	Howard	16,838	\$137,988,774	\$133,098,876	\$1,878,224	\$134,977,100	\$133,068,364	\$1,866,400	\$134,934,764	-\$42,336	-0.03%	223	1.32%
210049	Upper Chesapeake	17,343	\$131,032,728	\$128,188,963	\$1,586,161	\$129,775,125	\$128,179,772	\$1,563,336	\$129,743,108	-\$32,017	-0.02%	93	0.54%
210051	Doctors	11,678	\$107,903,095	\$105,450,686	\$2,073,203	\$107,523,888	\$105,291,666	\$2,155,267	\$107,446,934	-\$76,955	-0.07%	80	0.69%
210054	Southern Maryland	19,443	\$157,458,438	\$151,151,901	\$1,334,767	\$152,486,668	\$151,020,216	\$1,335,892	\$152,356,108	-\$130,560	-0.09%	110	0.57%
210055	Laurel	7,264	\$63,393,989	\$63,171,996	\$673,080	\$63,845,076	\$63,164,978	\$673,080	\$63,838,058	-\$70,018	-0.01%	28	0.39%
210056	Good Samaritan	17,140	\$201,247,143	\$195,388,050	\$1,718,497	\$197,106,548	\$195,388,050	\$1,704,308	\$197,092,358	-\$14,189	-0.01%	68	0.40%
210058	Kernan	2,816	\$46,791,845	\$44,190,938	\$44,190,938	\$44,190,938	\$44,190,938	\$44,190,938	\$44,190,938	\$0	0.00%	7	0.25%
210061	Atlantic General	3,689	\$37,224,856	\$37,005,026	\$195,382	\$37,200,408	\$37,005,026	\$195,382	\$37,200,408	\$0	0.00%	29	0.79%
210904	Hopkins Oncology	4,752	\$156,069,939	\$128,290,752	\$15,062,409	\$143,353,161	\$128,290,752	\$15,012,086	\$143,302,838	-\$50,322	-0.04%	23	0.48%
Total		688,688	\$7,676,375,869	\$7,425,605,443	\$174,042,817	\$7,599,648,260	\$7,415,959,624	\$174,325,944	\$7,590,285,568	-\$9,362,691	-0.12%	5767	0.84%

Overall Results

The tables above show that based on a full year's worth of data from FY 2008, implementation of the proposed MHAC methodology for both in-lier (CPC) and outlier payments at a rate of 90% payment decrement (reflecting a level of preventability that is less than 100%) will result in payment reductions of approximately \$9.4 million system wide. Table 4 below shows that the Medicare program will realize the largest share of those payment reductions (approximately \$4.8 million), and the Medicaid program will realize approximately \$1.4 million in payment savings.

Table 4

MHACs Payment Change Simulation Summary by Payer:

Payor ID	Payor	Total Cases	Total Charges	MHAC Cases	MHAC Cases as Percent of Total	Original Total Payment	New Total Payment	Payment Decrement	Decrement as % of Original Payment
01	Medicare	238,722	\$3,163,578,557	1,575	0.66%	\$3,109,701,766	\$3,104,863,613	-\$4,838,153	-0.16%
02	Medicaid	46,766	\$566,618,934	331	0.71%	\$549,211,593	\$548,402,971	-\$808,623	-0.15%
03	Title V	169	\$839,786	2	1.18%	\$895,368	\$895,368	\$0	0.00%
04	Blue Cross of MD	46,609	\$482,964,049	508	1.09%	\$479,873,968	\$479,573,599	-\$300,369	-0.06%
05	Commercial Insurance	66,946	\$698,012,022	689	1.03%	\$682,012,367	\$681,457,341	-\$555,026	-0.08%
06	Other Governm. Program	7,023	\$67,598,535	52	0.74%	\$66,068,447	\$65,860,282	-\$208,165	-0.32%
07	Worker's Comp	3,385	\$61,939,575	39	1.15%	\$57,086,953	\$56,995,588	-\$91,366	-0.16%
08	Self-Pay	35,986	\$273,024,924	131	0.36%	\$289,893,653	\$289,739,834	-\$153,819	-0.05%
09	Charity	2,720	\$14,145,145	13	0.48%	\$15,930,101	\$15,929,579	-\$521	0.00%
10	Other	3,465	\$30,882,731	13	0.38%	\$31,509,845	\$31,501,596	-\$8,249	-0.03%
11	Donor	125	\$0	1	0.80%	\$0	\$0	\$0	
12	Managed Care Payer	95,047	\$964,527,965	1,146	1.21%	\$959,058,184	\$958,023,955	-\$1,034,229	-0.11%
14	Medicaid Managed Care	85,523	\$692,580,848	717	0.84%	\$708,920,132	\$708,312,737	-\$607,395	-0.09%
15	Medicare Managed Care	10,841	\$147,289,522	67	0.62%	\$148,020,379	\$147,662,564	-\$357,815	-0.24%
16	Blue Cross - NCA	21,502	\$219,894,419	216	1.00%	\$217,769,601	\$217,493,087	-\$276,514	-0.13%
17	Blue Cross - other state	23,688	\$289,216,671	267	1.13%	\$278,288,100	\$278,165,651	-\$122,449	-0.04%
99	Unknown	171	\$3,262,188	0	0.00%	\$5,407,803	\$5,407,803	\$0	0.00%
Total		688,688	\$7,676,375,869	5,767	0.84%	\$7,599,648,260	\$7,590,285,568	-\$9,362,691	-0.12%

Data Quality and Hospital Feedback

The adjustment of Maryland hospital-allowed charges based on the presence of MHACs requires several related efforts to assure that the use of the MHAC logic is reliable and creates the intended incentives for hospitals, specifically:

- 1) Assurance of data quality - in particular, the coding of the 'present of admission' flag;
- 2) Clearly understood payment rules and procedures;
- 3) Dissemination of hospital and case specific information; and,
- 4) Availability of analytic tools.

Staff has worked with Maryland hospitals to address each of these issues.

1) Assurance of data quality

The underlying concept the MHACs is that preventable conditions that occurred while an individual was under a hospital's care should not lead to additional, inappropriate revenue. It is also true that any condition that a patient had prior to admission to the hospital should not lead to a payment penalty. Therefore, the reliable coding of whether a diagnosis was, or was not, present on admission is central to the use of MHACs. Beginning July 1, 2007, Maryland hospitals were required to include a Present on Admission indicator for each of the secondary diagnosis codes in the inpatient discharge data set that is submitted quarterly to the HSCRC. POA data quality criteria, based on the distribution across five POA indicators, were developed by Commission staff using FY 2008 Maryland hospital discharge data as well as analyses performed by 3M using 2005/2006 California data, a state that has been collecting the POA indicator for more than 10 years.

Following the initial submission of the 4th quarter FY08 inpatient discharge data, hospitals were provided a "POA Data Quality Report" that indicated for each hospital the distribution across the five POA indicators, as well as the acceptable ranges for the distribution of each indicator. Included in the quality report were additional analyses that detailed potential data issues at each hospital associated with pre-existing conditions that were not coded as present on admission along with secondary diagnoses included/not included, on the exempt list. (An example of the POA quality report is included in Appendix IV) Overall, the quality of the POA indicator for the quarter was better than expected, with the majority of hospitals' data within the acceptable ranges for each of the parameters comprising the POA indicator. Five hospitals had one or more parameters that fell outside the acceptable range for this data period. The POA data quality evaluation for the following quarter (Q1 FY09) showed further improvement, with two hospitals having POA parameters that fell outside of the acceptable ranges. Hospitals will continue to receive a POA data quality report following each initial inpatient discharge data submission. This will allow each hospital adequate time to review and edit the POA data prior to the final submission deadline.

2) Clear Payment Rules and Procedures

As was discussed above, MHAC payment decrements will be determined by a combination of case weight changes and outlier adjustments whose presence and magnitude will vary from case to case. In addition to providing hospitals with the results of the payment simulations reviewed above, staff has provided the step-by-step logic that allows the calculation of payment decrements at the case level. The methodology for calculating payment decrements is presented in Appendix III. In addition, to providing the methodology, staff has scheduled a "hands on" working session for hospitals to review the payment decrement methodology and work through specific examples.

3) Dissemination of Hospital and Case Specific Information

The use of MHACs for payment purposes requires that individual discharges be assigned and outlier charges determined with and without the presence of the MHACs. Staff, working in cooperation with 3M, (the developers the logic used for MHACs) has analyzed each hospital's FY 2008 discharges and provided individual case feedback to each hospital. This allows the hospital to examine individual records for coding accuracy. It also allows the hospital to examine the MHAC information in the context of other quality efforts in the hospital, so that actions may be taken to reduce the incidence of MHACs.

4) Availability of Analytic Tools

As noted previously, the PPC logic, of which MHACs are a subset, is a product of 3M Health Information Systems, which works in concert with the APR-DRG grouper that has been in use in Maryland since 2005. As with the APR-DRG product and the EAPG grouper for outpatient services, 3M has offered Maryland hospitals special pricing arrangements for the product. In addition, the Commission has worked with 3M and its contractor St. Paul Computer Center (SPCC) to assure that hospitals that do not choose to purchase the 3M product can still receive sufficient information to analyze and respond to the MHAC policy by having analysis done on a per-run basis. 3M will be providing the MHAC logic as part of its Maryland product beginning July 2009. Staff is currently working with 3M, hospitals, and SPCC on the details of the MHAC analysis report that will be available for the April to June 2009 period.

Additionally, in a concerted effort to explain the MHAC methodology and also generate questions and any suggested changes to the proposed methodology, the HSCRC has organized several Review and Discussion Sessions. This effort is described below.

Review of Individual Case Data/Industry Review Session

By a series of written correspondences in late December 2008, HSCRC notified all hospitals that HSCRC had been working on development of proposed Maryland Hospital Acquired Conditions (MHACs) in light of the HACs that had been implemented by CMS and the need to implement strategies, like Medicare, to correct for the unintended incentives currently inherent in the payment rate setting system. The communication also provided:

- A set of individual case reports for each hospital that included each individual patient identified as having one of the 12 proposed MHACs not Present on Admission; the case reports included a “ghost” patient ID, patient age, patient gender, discharge status, the admission and discharge APR DRG, SOI, primary diagnosis and secondary diagnoses and POA status for each;⁵
- A crosswalk of the “ghost” ID numbers used for the analysis and the medical record number assigned by the hospital to allow hospitals to pull and review the records of the identified proposed MHAC cases;
- A summary description of the various payment simulation adjustment scenarios drafted to date based on the proposed MHACs;
- A summary by hospital and payer of the original case charges and adjusted case charges based on the proposed MHAC assignments.

Hospitals were also urged by staff, of the documentation in addition to engage clinical and quality leadership staff in the review of the documentation, in addition to nursing, finance and case mix staff already involved.

Subsequent to the December correspondences and in response to feedback provided by hospitals, HSCRC staff has:

- Refined, updated and redistributed the individual case reports to correct a glitch in the initial analysis affecting about 10% of the case reports;
- To be fully transparent in the methodology used for assigning the proposed MHACs, provided an online URL and User ID and password maintained by 3M specifically set up for Maryland hospitals, which contains detailed documentation with definitions, exclusions and assignment logic for the 64 PPCs of which the proposed MHACs are a subset;
- Convened a meeting on January 16, 2009 to review the MHAC clinical content and assignment logic and to review in detail the content of the individual case reports hospitals had received; invitations were broadly sent to case mix, clinical/quality and finance staff for the meeting, and participants included ~65 people from 30 hospitals.

⁵ 5 Maryland hospitals were not included in the analysis as their POA data was not of sufficient quality to be included.

Appendix 7 shows an example of a de-identified case record that is eligible for the application of the MHAC payment methodology. Applicable secondary diagnoses and the related PPCs (MHACs) are shown along with the change in the payment weight associated with the presence of these preventable complications (prior to the application of the MHAC logic payment would be increased to the hospital). With the application of the MHAC methodology, the hospital will experience a 90% payment decrement associated with the incremental DRG weight change driven by the presence of the highly preventable MHAC (or conversely the hospital now receives a 10% “retention factor” associated with the additional increase in DRG weight determined by the presence of the identified preventable complication).

In addition to coordinating with the hospital industry in the MHAC development, HSCRC staff has worked closely with the Office of Healthcare Quality (OHCQ) over the last few months to review specific data on cases, including cases identified in the MHAC analysis also reported by hospitals to OHCQ as reportable events. Data were also reviewed on cases identified in the MHAC analysis not reported to OHCQ, but on which OHCQ has been able to conduct chart reviews.

Conclusion

Staff believes that the proposed Maryland Hospital Acquired Condition methodology offers the State the ability to significantly reduce the incidence of the most highly preventable hospital acquired conditions and complications. The proposed initiative also contains the following related advantages:

- The use of less than 100% payment decrement: better reflects the ability of hospitals to influence rates of complications; provides an incentive for continued coding of MHACs in order for the HSCRC to track industry performance accurately over time; and allows for broader application of the financial incentives than would otherwise be the case;
- The use of existing administrative data means that hospitals are not saddled with additional data collection and reporting burdens (as is the case with the current process-based P4P and pay for reporting initiatives);
- The ability to identify highly preventable complications in the administrative data also opens up new opportunities for the HSCRC to collaborate with the Maryland Office of Health Care Quality (MOHCQ) in order to monitor hospital performance and the incidence of reportable adverse events over time;
- The clinical and coding-related mechanism utilized by this effort (the Potentially Preventable Complication Methodology developed by 3M Health Information Systems) was created to augment and support the existing APR-DRG grouping and payment logic (also developed by 3M) currently in use by the State of Maryland for All-Payer hospital payment. The HSCRC can use these complimentary tools to dramatically improve the payment incentives for Maryland hospitals and improve the overall quality of hospital care in the State;
- PPCs and APR-DRGs, in combination with the State’s existing well-developed data infrastructure, and sophistication in medical record documentation and coding, and the use of

case mix data means that hospitals now have an enhanced set of analytic tools at their disposal to further reduce complication rates and improve quality of care;

- Consistent with the implementation of other innovative payment reform initiatives in past years, the HSCRC staff will remain open to suggested modifications and refinements to the methodology both now in the initial development phase and in future years.

HSCRC Staff Recommendations

- 1) The Commission utilize the 12 PPCs (as listed below with the associated exclusion logic) as the basis for a Maryland – specific Hospital Acquired Conditions payment initiative;
- 2) Payment decrements of 90% be applied to both “in-lier” and “outlier” cases as defined in the methodology description and simulations described and presented above;
- 3) This initiative should commence April 1, 2009 with any payment-related decrements being reflected in each hospital’s final rate order for the following fiscal year;
- 4) Both one-time and permanent payment reductions associated with the approved payment decrements for the quarter commencing April 1, 2009 will be reflected in the final CPC targets and final approved revenue for hospitals effective July 1, 2009;
- 5) The approved methodology will also be applied to the Rate Year beginning July 1, 2009 (FY 2010);
- 6) The HSCRC staff will monitor the number of these highly preventable complications (MHACs) over time.

Identified Highly Preventable Complications (MHACs)

- Post-Op Wound Infection & Deep Wound Disruption w Procedure (PPC 38)
- Reopening of Surgical Site (PPC 39)
- Post-Op Hemorrhage & Hematoma w Hemorrhage Control Proc or I&D Procedure (PPC 41)
- Accidental Puncture/Laceration During Invasive Procedure (PPC 42)
- Post-Procedure Foreign Bodies (PPC 45)
- Iatrogenic Pneumothrax (PPC 49)
- Inflammation, & Other Complications of Devices, Implants or Grafts Except Vascular Infection (PPC 52)
- Infections due to Central Venous Catheters (PPC 54)
- Obstetrical Laceration & Other Trauma without Instrumentation (PPC 57)
- Obstetrical Laceration & Other Trauma with Instrumentation (PPC 58)
- Major Puerperal Infection and Other Major Obstetrical Complications (PPC 60)
- Post-Operative Respiratory Failure with Tracheostomy (PPC 63)

Appendix 1: The AHRQ PSIs

1. Hospital-level Patient Safety Indicators (20 Indicators)

- Complications of anesthesia (PSI 1)
- Death in low mortality DRGs (PSI 2)
- Decubitus ulcer (PSI 3)
- Failure to rescue (PSI 4)
- Foreign body left in during procedure (PSI 5)
- Iatrogenic pneumothorax (PSI 6)
- Selected infections due to medical care (PSI 7)
- Postoperative hip fracture (PSI 8)
- Postoperative hemorrhage or hematoma (PSI 9)
- Postoperative physiologic and metabolic derangements (PSI 10)
- Postoperative respiratory failure (PSI 11)
- Postoperative pulmonary embolism or deep vein thrombosis (PSI 12)
- Postoperative sepsis (PSI 13)
- Postoperative wound dehiscence in abdominopelvic surgical patients (PSI 14)
- Accidental puncture and laceration (PSI 15)
- Transfusion reaction (PSI 16)
- Birth trauma -- injury to neonate (PSI 17)
- Obstetric trauma -- vaginal delivery with instrument (PSI 18)
- Obstetric trauma -- vaginal delivery without instrument (PSI 19)
- Obstetric trauma -- cesarean delivery (PSI 20)

2. Area-level Patient Safety Indicators (7 Indicators)

- Foreign body left in during procedure (PSI 21)
- Iatrogenic pneumothorax (PSI 22)
- Selected infections due to medical care (PSI 23)
- Postoperative wound dehiscence in abdominopelvic surgical patients (PSI 24)
- Accidental puncture and laceration (PSI 25)
- Transfusion reaction (PSI 26)
- Post-operative hemorrhage or hematoma (PSI 27)

Appendix 2: The 10 categories of CMS HACs

1. Foreign Object Retained After Surgery
2. Air Embolism
3. Blood Incompatibility
4. Stage III and IV Pressure Ulcers
5. Falls and Trauma
 - Fractures
 - Dislocations
 - Intracranial Injuries
 - Crushing Injuries
 - Burns
 - Electric Shock
6. Manifestations of Poor Glycemic Control
 - Diabetic Ketoacidosis
 - Nonketotic Hyperosmolar Coma
 - Hypoglycemic Coma
 - Secondary Diabetes with Ketoacidosis
 - Secondary Diabetes with Hyperosmolarity
7. Catheter-Associated Urinary Tract Infection (UTI)
8. Vascular Catheter-Associated Infection
9. Surgical Site Infection Following:
 - Coronary Artery Bypass Graft (CABG) - Mediastinitis
 - Bariatric Surgery
 - Laparoscopic Gastric Bypass
 - Gastroenterostomy
 - Laparoscopic Gastric Restrictive Surgery
 - Orthopedic Procedures
 - Spine
 - Neck
 - Shoulder
 - Elbow
10. Deep Vein Thrombosis (DVT)/Pulmonary Embolism (PE)
 - Total Knee Replacement
 - Hip Replacement

Appendix 3 – The Centers for Medicare and Medicaid Services : HAC Example and Discussion

MS-DRG Assignment (Examples for a single secondary diagnosis)	POA Status of Secondary Diagnosis	Average Payment
Principal Diagnosis: MS-DRG 066 ▪ Stroke without CC/MCC	--	\$5,347.98
Principal Diagnosis: MS-DRG 065 ▪ Stroke with CC Example Secondary Diagnosis: ▪ Injury due to a fall (code 836.4 (CC))	Y	\$6,177.43
Principal Diagnosis: MS-DRG 066 ▪ Stroke with CC Example Secondary Diagnosis: ▪ Injury due to a fall (code 836.4 (CC))	N	\$5,347.98
Principal Diagnosis: MS-DRG 064 ▪ Stroke with MCC Example Secondary Diagnosis: ▪ Stage III pressure ulcer (code 707.23 (MCC))	Y	\$8,030.28
Principal Diagnosis: MS-DRG 066 ▪ Stroke with MCC Example Secondary Diagnosis: ▪ Stage III pressure ulcer (code 707.23 (MCC))	N	\$5,347.98

On February 8, 2006, the President signed the Deficit Reduction Act (DRA) of 2005. Section 5001(c) of DRA requires the Secretary to identify conditions that are: (a) high cost or high volume or both, (b) result in the assignment of a case to a DRG that has a higher payment when present as a secondary diagnosis, and (c) could reasonably have been prevented through the application of evidence-based guidelines. Section 5001(c) provides that CMS can revise the list of conditions from time to time, as long as it contains at least two conditions.

For discharges occurring on or after October 1, 2008, hospitals will not receive additional payment for cases in which one of the selected conditions was not present on admission. That is, the case would be paid as though the secondary diagnosis were not present. An example of how the HAC provision may affect an MS-DRG payment, beginning October 1, 2008, is presented above.

CMS also required hospitals to report present on admission information for both primary and secondary diagnoses when submitting claims for discharges on or after October 1, 2007.

Appendix 4 - 3M Health Information Systems: Potentially Preventable Complications

PPCs contain 64 mutually exclusive types of inpatient complications and represent a clinically-based classification system that identifies inpatient acute care hospital complications that are potentially preventable, based on computerized discharge abstract data. To facilitate the reporting and display of PPC information, each PPC is assigned to one of eight mutually exclusive clinically descriptive categories and one of two levels based on the relative clinical significance of the PPC. The full list of 64 PPCs can be found in two tables at the end of this section.

PPC Group

- 1 - Extreme Complications
- 2 - Cardiovascular-Respiratory Complications
- 3 - Gastrointestinal Complications
- 4 - Perioperative Complications
- 5 - Infectious Complications
- 6 - Malfunctions, Reactions, etc.
- 7 - Obstetrical Complications
- 8 - Other Medical and Surgical Complications

PPC Level:

- 1 - Other
- 2 - Major

Characteristics

PPCs form a comprehensive definition of complication using a consistent and uniform identification of complications and exclusions, resulting in a fully harmonized, internally consistent definition of complications. The 64 PPCs are based on similarities in clinical presentation and clinical impact. In the development of the PPCs, it was assumed that not all inpatient complications are preventable and that even with optimal care, inpatient complications will occur.

Development and Refinement over time

The process used in the development of the list of potentially preventable complications involves an iterative process of extensive literature review, formulating clinical hypotheses, and then testing the hypotheses with historical data. The historical data used in the development of the PPCs was the California statewide all payer database of over 2.5 million records per year for 1999, 2000, 2004 and 2005. Since 1996, the California statewide dataset has included the POA indicator data.

The first step in developing the list of potentially preventable complications was a review of the existing literature and incorporating into a preliminary list many of the diagnosis codes used in the Complications Screening Protocol (CSP) developed by Iezzoni and colleagues, and the Patient Safety Indicators (PSI) from the Agency for Healthcare Research and Quality (AHRQ) (Iezzoni 1994a; Iezzoni 1992; Agency for Healthcare Research and Quality 2003).

The second step in the process involved a complete review of all International Classification of Diseases-9th Revision-Clinical Modification (ICD-9-CM) diagnosis and procedure codes to identify additional potentially preventable complications. In-hospital complications are defined as harmful events or negative outcomes that may result from processes of care and treatment rather than from natural progression of the underlying illness. It is important to note that complications do not

necessarily represent medical errors, since they are not always preventable even with optimal care.

In considering when a post-admission secondary diagnosis should be considered a potentially preventable complication, the following conceptual guideline was adopted:

If a hospital or other health care facility has a statistically significant, higher rate of a complication than comparable hospitals, reasonable clinicians would suggest further investigation for possible problems with quality of care.

The third step in the process was to create specific criteria that a secondary diagnosis must meet to qualify as a PPC. The criteria are as follows. The secondary diagnosis:

- Should not be redundant with the diagnosis that was the reason for hospital admission (e.g., a diagnosis of stroke in a patient admitted with intracranial hemorrhage)
- Should not be an inevitable, natural, or expected consequence or manifestation of the reason for hospital admission (e.g., stroke in a patient admitted with a brain malignancy)
- Should be expected to have a significant impact on short or long-term debility, mortality, patient suffering, or resource use
- Should have a relatively narrow spectrum of manifestations, meaning that the impact of the diagnosis on the clinical course or on resource use must not be significant for some patients but trivial for others (e.g., iron deficiency anemia, atelectasis).

In addition to diagnosis codes, selected procedure codes were used to create some of the complication groups. In some cases, the procedure by itself could assign a patient to a complication group. For example, the procedure codes for endotracheal intubation, if they met the timing criteria of occurring at least 4 days after admission, generated the complication group Acute pulmonary edema. In other cases, the procedure code was combined with a diagnosis code to differentiate complication groups with greater clinical impact. For example, a patient with a secondary diagnosis of acute post-hemorrhagic anemia, not present on admission, would be assigned to a complication group named "Hemorrhage or anemia without transfusion." The same diagnosis, accompanied by a code for blood transfusion (at least two days after admission), would assign the patient to a different group, entitled "Hemorrhage or anemia with transfusion."

Conservatively based (exclusions)

A PPC diagnosis may be preventable for some types of patients but not for others. Therefore, the PPC methodology includes a series of clinical exclusions applied globally for all PPCs as well as exclusion criteria applied specifically for an individual PPC. The most common reason for exclusions is that the complication is a natural consequence of one of the diagnoses present at admission, and is therefore not preventable.

Several kinds of admissions with certain severe or catastrophic illnesses that are particularly susceptible to a range of complications are not considered preventable and therefore cannot be classified as having assigned a PPC. Due to their complexity and inherent unpredictability, which makes it difficult to discern a potentially preventable complication from a natural or frequent and predictable consequence of the illness, admissions for major or metastatic malignancies, organ transplants, multiple trauma, specific burns, and HIV illness are excluded. Because of their unique attributes and difficulty in identifying the diagnoses present at admission/birth, neonatal admissions are

also excluded and therefore ineligible for PPC assignment.

Each PPC has specific exclusion logic that causes the PPC not to be assigned to a patient when there are other underlying diseases present at admission for which the PPC would represent an inevitable, natural or expected progression, consequence or manifestation of an underlying condition that was present at admission (e.g. strokes are excluded for patients with a brain tumor). Further, a PPC diagnosis may be preventable for some types of patients but not for others. Some PPCs only apply to certain types of patients. For example, post-operative complications occur only in surgical patients, and obstetric complications occur only in women who deliver during an admission.

The evidence for global exclusions for all PPCs and clinical exclusions specific to each of the PPCs is based on the clinical panels' collective judgments about the preventability of post-admission complications. Global exclusions identify patients with certain severe or catastrophic conditions that are particularly susceptible to a range of complications, including those with trauma, HIV illness, and major or metastatic malignancies. For such severe conditions the preventability of a post admission complication and link to a quality problem is highly questionable. Clinical exclusions identify the clinical conditions in which, in the judgment of the clinical panel, a specific complication is an inevitable, natural or expected consequence or manifestation of the reason for hospital admission, or other conditions present at admission. That specific relationship with the condition present at admission makes the preventability of that complication and its link to a quality problem highly questionable. Therefore, such patients are excluded from assignment of a PPC.

Clinical Vetting and Discussions

PPCs were constructed as a categorical model using an approach of iterative sequential hypothesis testing by panels of clinical experts with repetitive data verification. This is the same approach used by Yale researchers to construct the original CMS DRGs, and subsequently by 3M to develop APR DRGs. As an inherent byproduct of this method, there is repetitive evaluation by clinical experts of the face validity of the model during the process of construction. While this approach is laborious and time consuming, it results in a categorical model with a high degree of clinical face validity.

Global and clinical exclusions are an integral part of the PPC methodology. As such, the same approach of iterative hypothesis testing by panels of experts with repetitive data verification was used to construct the PPC exclusions. As an inherent byproduct of this method, there was repetitive evaluation by the clinical panel and consulting experts of the face validity of the exclusions as the model was constructed.

Any judgments by physicians about whether the occurrence of a complication constitutes a quality of care problem are inherently subjective. For "true" medical errors that are related to mistakes in the delivery of care (so-called "never events", such as a foreign object left in after surgery), the link to a quality of care problem is clear. However, the vast majority of post admission complications (e.g., pulmonary embolism) are not as clearly linked to medical errors, and although they may relate to errors in judgment or lapses in execution, they do not always represent poor quality care. In the construction of PPCs, the physician panel adopted the following general criterion:

"If a hospital had a statistically significant, risk adjusted higher rate of a particular complication than comparable hospitals, reasonable physicians would be concerned that a quality of care problem existed at that hospital."

This focus on differential rates of complications allowed the physician panels to focus on the clinical circumstances in which a complication was potentially preventable, resulting in the panel members being able to reach a consensus on a far more comprehensive identification of potentially preventable complications than had been developed in any other prior research.

A core group of 3 physicians (2 general internists and 1 pediatrician) supplemented by surgical, medical, obstetric, and pediatric specialists as needed, was responsible for creating a list of potentially preventable complications. The core panel first reviewed the existing literature and incorporated most of the diagnosis codes used in the Complications Screening Program (CSP), the Patient Safety Indicators (PSI) from the Agency for Healthcare Research and Quality (AHRQ) and the NQF never events. The physician panel then conducted its own review of all International Classification of Diseases 9th Revision-Clinical Modification (ICD 9-CM) diagnosis codes to identify additional potentially preventable complications. During the construction of PPCs, the physician panels examined California data on the impact of the occurrence of a complication on mortality and length of stay. Such evidence demonstrated the negative consequences of specific complications.

The PPCs incorporate the great majority of the diagnosis codes used in both the CSP and PSI. PPCs use 502 of the 532 diagnosis codes (94%) and all 26 procedure codes used in CSP, and use 116 of 123 possible diagnosis codes (94%) and all 29 procedure codes used by the PSI. PPCs omitted 1 complication of anesthesia code used by PSI, and 6 codes relating to Obstetric lacerations (out of a total of 15) that our physician panel thought would have only a minor impact on patient care. We added 524 diagnosis codes that were present in neither system. The most important difference with CSP and PSI was that PPCs require the availability of present on admission indicator for all diagnoses which allowed the PPCs to apply the complications to a much larger group of patients – mainly to patients admitted with medical diagnoses. Most of the complications detected by both CSP and PSI occur in post-operative patients. While there is some substantial overlap in the codes included in PPCs with prior efforts to identify complications, the codes added by PPCs result in a substantial increase in the number of patients identified as having a complication.

Once the PPC definitions were completed, face validity was assessed in two stages. First, the clinician panelists reviewed abstracts of individual clinical claims for patients identified as having a PPC, and modified many of the PPC components based on specific clinical findings during this review process. Subsequently the New York State Department of Health (NYDoH) conducted 10 meetings across the state in which there was an in depth presentation of the PPC logic by the PPC clinical panel to the medical directors and quality of care professionals in each region. Comments and criticisms of the PPC logic were solicited and the complete PPC logic was also made available upon request. As a result of this process, only minor changes were made to the PPC logic, providing a strong indication of the face validity of the PPCs.

Use in other Jurisdictions

The PPC methodology is currently being used in New York for confidential reporting of major PPC rates to hospitals. The New York Department of Health (NYDoH) has used the major PPCs as the basis of comprehensive reporting of comparative complication rates to all New York hospitals that passed minimum POA data quality screens. The NYDoH major PPC reports include a measure of the rate of one or more major PPCs as well as the rates for each individual major PPC. This reporting of complication rates is done on a confidential basis and the results are not made public. Over the past four years, NYDoH has released three complete sets of major PPC comparative reports to hospitals

based on data from 2002-2006. NYDoH also provided patient level data back to individual hospitals that included the PPC assignment so that hospitals could review individual medical records

Further, four hospitals from Syracuse, New York (St. Joseph’s Medical Center, Crouse Hospital, University Hospital and Community General Hospital) have formed a collaborative to reduce major PPC rates. The overall project objective is to reduce the overall rate of complications in the community through sharing of comparative major PPC information and collaboration among the hospitals. From the Feb 10, 2008 issue of the Post Standard Newspaper in Syracuse NY, Dr Paul Kroneberg, the CEO of Crouse hospital stated “We take the information and really attack the complications in a much more focused way.” The project is being run by the Hospital Executive Council, which has done in depth follow-up of the differences in the major PPC rates across the four hospitals and has concluded that significant quality improvement opportunity were identified through the major PPC reports.

PPC	Description	Group	Level
01	Stroke & Intracranial Hemorrhage	2	2
02	Extreme CNS Complications	1	2
03	Acute Pulmonary Edema and Respiratory Failure without Ventilation	2	1
04	Acute Pulmonary Edema and Respiratory Failure with Ventilation	1	2
05	Pneumonia & Other Lung Infections	2	2
06	Aspiration Pneumonia	2	2
07	Pulmonary Embolism	2	2
08	Other Pulmonary Complications	2	1
09	Shock	1	2
10	Congestive Heart Failure	2	2
11	Acute Myocardial Infarction	2	2
12	Cardiac Arrhythmias & Conduction Disturbances	2	1
13	Other Cardiac Complications	2	1
14	Ventricular Fibrillation/ Cardiac Arrest	1	2
15	Peripheral Vascular Complications Except Venous Thrombosis	2	2
16	Venous Thrombosis	2	2
17	Major Gastrointestinal Complications without Transfusion or Significant Bleeding	3	1
18	Major Gastrointestinal Complications with Transfusion or Significant Bleeding	3	2
19	Major Liver Complications	3	2
20	Other Gastrointestinal Complications without Transfusion or Significant Bleeding	3	1
21	Clostridium Difficile Colitis	5	2
22	Urinary Tract Infection	5	2
23	GU Complications Except UTI	8	1
24	Renal Failure without Dialysis	8	1
25	Renal Failure with Dialysis	1	2
26	Diabetic Ketoacidosis & Coma	8	1
27	Post-Hemorrhagic & Other Acute Anemia with Transfusion	8	2
28	In-Hospital Trauma and Fractures	8	1
29	Poisonings Except from Anesthesia	6	1
30	Poisonings due to Anesthesia	6	1
31	Decubitus Ulcer	8	2
32	Transfusion Incompatibility Reaction	6	1
33	Cellulitis	5	1
34	Moderate Infections	5	1

PPC	Description	Group	Level
35	Septicemia & Severe Infections	5	2
36	Acute Mental Health Changes	8	1
37	Post-Operative Infection & Deep Wound Disruption without Procedure	4	1
38	Post-Operative Wound Infection & Deep Wound Disruption with Procedure	4	2
39	Reopening Surgical Site	4	2
40	Post-Operative Hemorrhage & Hematoma without Hemorrhage Control Procedure or I&D Procedure	4	1
41	Post-Operative Hemorrhage & Hematoma with Hemorrhage Control Procedure or I&D Procedure	4	2
42	Accidental Puncture/Laceration During Invasive Procedure	4	2
43	Accidental Cut or Hemorrhage During Other Medical Care	8	1
44	Other Surgical Complication - Moderate	8	1
45	Post-procedure Foreign Bodies	4	2
46	Post-Operative Substance Reaction & Non-O.R. Procedure for Foreign Body	4	1
47	Encephalopathy	8	2
48	Other Complications of Medical Care	8	1
49	Iatrogenic Pneumothorax	6	2
50	Mechanical Complication of Device, Implant & Graft	6	2
51	Gastrointestinal Ostomy Complications	6	1
52	Inflammation & Other Complications of Devices, Implants or Grafts Except Vascular Infection	6	2
53	Infection, Inflammation and Clotting Complications of Peripheral Vascular Catheters and Infusions	6	1
54	Infections due to Central Venous Catheters	6	2
55	Obstetrical Hemorrhage without Transfusion	7	1
56	Obstetrical Hemorrhage with Transfusion	7	2
57	Obstetric Lacerations & Other Trauma without Instrumentation	7	2
58	Obstetric Lacerations & Other Trauma with Instrumentation	7	2
59	Medical & Anesthesia Obstetric Complications	7	1
60	Major Puerperal Infection and Other Major Obstetric Complications	7	2
61	Other Complications of Obstetrical Surgical & Perineal Wounds	7	1
62	Delivery with Placental Complications	7	1
63	Post-Operative Respiratory Failure with Tracheostomy	1	2
64	Other In-Hospital Adverse Events	8	1

Appendix 5: Evidence and Background Documentation of Highly Preventable PPCs

Review of 12 Potentially Preventable Complications (PPCs) With High Preventability

The following summaries of the 12 highly preventable PPCs proposed for use with the Maryland Hospital system contain brief definitions and exclusion criteria for each PPC, and a review of whether there are similar PSIs or HACs. The summaries also contain a brief comment on origins, face validity, sensitivity and predictive value, and the degree to which they should be amenable to hospital actions.

Also included, for those PPCs where literature exists, is a comment about construct validity – that is, whether there is any evidence linking the PPC with hospital process or outcome quality measures.

A set of exclusion criteria was created that applies to all PPCs. These global exclusions include patients with certain severe or catastrophic illness that were particularly susceptible to a range of complications, including those with trauma, HIV illness, and major or metastatic malignancies. Globally excluded admissions are not eligible to be assigned any PPC.

For 'Origins', several sources are repeatedly referenced, listed below:

1. For the Complications Screening Program (CSP): Iezzoni et al. Identifying complications of care using administrative data. *Medical Care* 1994; 32(7):700-15
2. Hannen et al. A methodology for targeting hospital cases for quality of care record reviews. *Am J Public Health* 1989; 79(4):430-6
3. AHRQ original HCUP indicators: Johantgen et al. Quality indicators using hospital discharge data: Stat and national applications. *Jt Comm J Quality Improvement* 1998; 24(2):88-195
4. Original Patient Safety Indicators (PSI) proposal: Miller et al. Patient Safety Indicators: Using administrative data to identify potential patient safety concerns. *Health Services Research* 2001; 36(6 part II):110-132

There is also reference where applicable to the CSP validation study:

Iezzoni et al. Does the Complications Screening Program flag cases with process of care problems? Using explicit criteria to judge processes. *Int J Qual Health Care* 1999; 11(2):107-118

PPC 38 Post-Operative Wound Infection & Deep Wound Disruption with Procedure

Definition: Based on performance of a repeat procedure indicating post-op infection or dehiscence performed at least one day after a major abdomino-pelvic region surgery. Includes procedure 5461 – Reclose post-op abdominal wound disruption, by itself, OR either of two codes for post op infection or disruption of internal operative wound AND one of 7 other procedure codes.

Exclusions: Patients admitted with major infections, compromised immune states, or for a procedure to correct a complication of treatment.

PSI or HAC analogues: PSI 14 – Post-op wound dehiscence (proc code 5451 only)
HAC no. __ deals with bariatric surgery only

Origins: Proposed by Hannen; used in Iezzoni's CSP, original HCUP indicators.

Face Validity: High

Preventability/Hospital control: The most important factor is preoperative antibiotics given with appropriate timing, which should be under hospital control.

Construct Validity: Hannen found 3 times higher rate of quality problems in patients who had a diagnosis of wound infection.

PPC 39 Reopening Surgical Site

Definition: Similar in concept to PPC 38, but contains specific procedure codes for each of multiple different surgical areas (abdominal, thoracic, orthopedic, spine, intracranial, etc) performed at least one day after the original surgery, and indicating a need to reopen the surgical site. No diagnosis codes required.

Exclusions: Patients admitted with major infections, compromised immune states, or for a procedure to correct a complication of treatment.

PSI or HAC analogues: No exact analogues.

Origins: CSP used 6 surgical codes for reopening various surgical sites, but used no exclusion logic

Face Validity: We have taken pains to remove possible staged procedures. In general returning to the OR to reopen a surgical wound indicates a major problem.

Preventability/Hospital control: No data available, but patterns of frequent second procedures should trigger a hospital response

PPC 41 Post-Operative Hemorrhage & Hematoma with Hemorrhage Control Procedure or I&D Procedure

Definition: Patients with a diagnosis of post-operative hemorrhage or hematoma AND a surgical procedure suggesting the performance of a hemorrhage control procedure linked to an specific body system initial surgery and performed at least one day later.

Exclusions: Patients admitted for complications of treatment or for procedures related to post-op or post-trauma infections, or device infections. Also trauma, major malignancy

PSI or HAC analogues: PSI 9 Post-operative hemorrhage or hematoma – contains the same diagnoses and several of the same procedure codes, but a less extensive list, and no linkage to the specific initial surgery. There is no comparable HAC.

Origins: This was included in the CSP (although either by diagnosis or procedure code) and a variation was use in the original HCUP quality indicators.

Face Validity: High

Sensitivity, Predictive Value: Published literature suggests that the presence of one of the diagnosis codes has a relatively high sensitivity, and the use of a hemorrhage control procedure code should yield a high positive predictive value.

Preventability/Hospital control: To the extent that post-operative hemorrhage can be identified as occurring more frequently among certain surgeons or OR teams, it should be amenable to hospital-level intervention.

Construct Validity: Explicit process of care failures occurred in 66% of surgical cases with a diagnosis or procedure indicating post-operative hemorrhage in the CSP validation study

PPC 42 Accidental Puncture or Laceration During an Invasive Procedure

Definition: Patients with a diagnosis of 9982 accidental operative laceration, or E8700 accidental cut or hemorrhage in surgery, OR patients with a procedure of suture of a laceration in a specific body site linked to an initial surgery and occurring one day later.

Exclusions: Patients admitted for complications of treatment or for procedures related to post-op or post-trauma infections, or device infections. Also trauma, major malignancy

PSI or HAC analogues: PSI 15 Accidental Puncture or Laceration – very similar. No analogous HAC.

Origins: Included in two different sections of the CSP; also part of the AHRQ HCUP indicators

Face Validity: High

Sensitivity, Predictive Value: Limited literature, but sensitivity has been reported as low as 42%

Preventability/Hospital control: Hospitals should be able to monitor the frequency of accidental lacerations and punctures

PPC 45 Post-Procedure Foreign Bodies

Definition: The most important diagnosis code in this PPC is 9984, Foreign object left during procedure; there are several E-codes included that will have no impact in most states because they are not routinely coded.

Exclusions: Patients admitted for complications of treatment or for procedures related to post-op or post-trauma infections, or device infections. Also trauma, major malignancy

PSI or HAC analogues: Both PSI and HAC have very similar analogues

Origins: Included among a group of 'Sentinel Events' in the CSP, also in the original HCUP indicators, and in the original proposal for PSIs

Face Validity: Very high

Sensitivity, Predictive Value: This complication occurs rarely; there is no published information available on sensitivity.

Preventability/Hospital control: Preventable by means of proper OR team functioning

PPC 49 Iatrogenic Pneumothorax

Definition: This consists of the single code for iatrogenic pneumothorax

Exclusions: Patients admitted for a major chest or esophageal surgical procedure.

PSI or HAC analogues: This PPC was derived directly from PSI 6. There is no HAC.

Origins: Included in the original HCUP indicators

Face Validity: High

Sensitivity, Predictive Value: No published data

Preventability/Hospital control: Should be preventable with proper training and supervision of physicians performing thoracenteses, inserting subclavian catheters and performing needle biopsies of the chest.

PPC 52 Inflammation & Other Complications of Devices, Implants or Grafts Except Vascular Infection

Definition: Includes a series of codes for 'reactions' and 'complications' of a number of devices and grafts, including cardiac, CNS, GU, orthopedic, dialysis, and prosthetic devices

Exclusions: Patients admitted with malfunctions, reactions, infections and inflammatory reactions of any cardiac, vascular, orthopedic, renal, and GU devices, catheters, grafts, and implants

PSI or HAC analogues: None, except that the code 99667 "Reaction to orthopedic device" is included in one HAC

Origins: Several codes were included in the CSP group for 'Mechanical Complications'

Face Validity: High

Preventability/Hospital control: Most of these codes deal with inflammatory reactions and infections associated with grafts and catheters and should be preventable with proper technique and prophylactic antibiotics

PPC 54 Infections due to Central Venous Catheters

Definition: This PPC is limited to the new ICD-9-CM code 99931, "Other infections due to central venous catheters"

Exclusions: Patients admitted with malfunctions, reactions, infections and inflammatory reactions of any cardiac, vascular, or GU catheters or devices

PSI or HAC analogues: Identical to an HAC, except that it lacks exclusions

Origins: Included in the CSP. American Nurses Association designated CVC associated blood stream infections as a nursing-sensitive quality indicator.

Face Validity: High

Sensitivity, Predictive Value: No published information

Preventability/Hospital control: Should be highly preventable with proper nursing care and proper installation of CVC lines.

Construct Validity: Published information available.

PPC 57 Obstetric Lacerations & Other Trauma Without Instrumentation

Definition: Patients with 3rd or 4th degree lacerations at the time of delivery, identified by either a diagnosis or a procedure code for repair. This PPC contains patients who did not have obstetric instrumentation with delivery.

Exclusions: Non-obstetric patients

PSI or HAC analogues: Identical to PSI 19. There is no analogous HAC

Origins: Used by JCAHP as a core performance measure for Obstetric services. Part of a broader group of codes use the original HCUP indicators

Face Validity: High

Sensitivity, Predictive Value: Sensitivity of 89 & 90% in one study

Preventability/Hospital control: High

Construct Validity: Published information available.

PPC 58 Obstetric Lacerations & Other Trauma With Instrumentation

Definition: Patients with 3rd or 4th degree lacerations at the time of delivery, identified by either a diagnosis or a procedure code for repair. This PPC contains patients who did have an instrument-assisted delivery.

Exclusions: Non-obstetric patients

PSI or HAC analogues: Identical to PSI 18. There is no analogous HAC

Origins: Used by JCAHP as a core performance measure for Obstetric services. Part of a broader group of codes use the original HCUP indicators

Face Validity: High

Sensitivity, Predictive Value: Sensitivity of 89 & 90% in one study

Preventability/Hospital control: High

Construct Validity: Published information available.

PPC 60 Major Puerperal Infection and Other Major Obstetric Complications

Definition: This PPC includes patients with a variety of calamitous post-delivery complications, including obstetric shock, air embolism, amniotic embolism, ruptured uterus, etc. The most common diagnosis in this PPC is 67002, "Major Puerperal Infection."

Exclusions: Non-obstetric patients

PSI or HAC analogues: None

Origins: 3M staff created this PPC with Obstetrics consultants

Face Validity: High

Sensitivity, Predictive Value: No published information

Preventability/Hospital control: Should be largely preventable with sufficient oversight and feedback

Construct Validity: We have a compelling anecdotal report about results of a monitoring effort and performance improvement in New York State

PPC 63 Post Operative Respiratory Failure with Tracheostomy

Definition: Surgical patients who have post-operative respiratory failure and undergo tracheostomy at least 14 days after the initial surgical procedure

Exclusions: Patients with respiratory failure, mechanical ventilation, sepsis, shock, pulmonary edema, stroke, cerebral edema at the time of admission, and patients whose primary reason for admission was for a tracheostomy

PSI or HAC analogues: None

Origins: This PPC is an extension of PSI 11, 'Post-operative Respiratory Failure', and a similar CSP for 'Post-Op Pulmonary Complications'. Both PSI 11 and the CSP contain only diagnosis codes, however. We added the tracheostomy requirement to identify patients with the most severe and prolonged post-op respiratory failure.

Face Validity: High, since procedure codes tend to be recorded more accurately than diagnosis codes.

Sensitivity, Predictive Value: There is no published data on this issue. The sensitivity for detecting patients with prolonged post-op respiratory failure that require tracheostomy should be high for the reason cited above. The sensitivity for detecting post-op respiratory failure will not be high, since most patients with post-op respiratory failure recover before they require tracheostomy.

Preventability/Hospital control: Should be highly preventable in average risk patients undergoing surgery in usual circumstances

Appendix 6 - Estimate of the Marginal Additional Charge of MHAC - PPCs in Maryland

Objective: Estimate the marginal hospital charge increase when a patient develops a MHAC - PPC during a hospital stay (i.e., acquired post admission) in Maryland.

Data Source: Maryland inpatient acute care all payer statewide hospital data from July 2007 through June 2008 containing 765,519 discharges were used as the basis for the estimates. In Maryland hospitals are required to specify whether each reported diagnosis was present at admission (POA). Since the requirement to report the POA status of each diagnosis is a new requirement, hospitals with poor quality of the reporting of the POA status were excluded from the analysis. Discharges that died or were transferred to another acute care facility were excluded. Further, discharges with charge values below \$200 or above \$2,000,000 were excluded. Individual case level charges were standardized based the ratio of the statewide average hospital CPC \$9,959.11 to the hospital average CPC (CMI of 1.0). The resultant analysis file contained 659,816 discharges.

Method: Since the marginal charge impact of a PPC, will vary depending on a patient's reason for admission and severity of illness at the time of discharge, it was necessary to adjust for these factors in order to determine the marginal charges of a PPC. 3M All Patient Refined Diagnosis Related Groups (APR-DRGs) classify discharges to one of 314 reasons for admission and one of four severity of illness levels (1,256 unique patient categories). Each discharge in the analysis database was assigned to an APR DRG. Since patients who develop a post admission complication often develop multiple associated complications, it was necessary to adjust for the presence of multiple complications in order to determine the marginal charge of an individual PPC. 3M Potentially Preventable Complications (PPCs) identify 64 different types of post admission complications analyzing 1,450 ICD-9-CM diagnosis codes and a select set of procedure codes. All PPCs present on each discharge (potentially preventable or not) were identified and used in the regression analysis.

A simple linear regression was specified of the form:

$$\text{Charge}_i = \alpha + \beta_j \text{PPC}_{j,i} + \gamma_k \text{APR-DRG}_{k,i} + \varepsilon_i$$

Where:

Charge_i is the total charge standardized for discharge i

APR DRG_{k,i} is a binary variable (0,1) indicating which of the 1,256 APR DRGs was assigned to the ith discharge

PPC_{j,i} is a binary variable (0,1) indicating which of the j PPCs were present for the ith discharge

α is a constant value applied to each discharge in the model. α is the average baseline charge for a reference APR DRG.

γ_k is the coefficient associated with APR-DRG k and measures the marginal additional charge above α that is due to the patient's reason for admission and severity of illness level at the time of discharge.

β_j is the coefficient associated with PPC j and measures the marginal additional charge above α that is due to the presence of PPC j

ε_i is the residual error of the model for discharge i

The coefficient β_j for each PPC is a measure of the marginal additional charges due to the occurrence of the PPC taking into account the patient's reason for admission, severity of illness and the presence of any other post admission complications (PPCs).

The initial Maryland data set contained 659,816 discharges. 38,211 discharges were assigned to one or more PPCs. Cases in low volume APR-DRGs were omitted from the regression. Further, cases in APR-DRG cells that had significance (t) values below 95% were also omitted from the regression since their coefficients are indicative of too wide a dispersion of values. No effort was made to identify and exclude outlier cases.

Results: A regression model was calculated. Twelve of the 64 PPCs were selected as Maryland Hospital Acquired Conditions. The MHAC - PPC categories, coefficients (additional per case charges) and t-values are shown in table 1 below.

Table 1. MHAC - PPC Charge Regression

PPC	Desc	Additional Per Case Charges	t-value
38	Post-Operative Wound Infection & Deep Wound Disruption with Procedure	\$30,078.71	25.2652
39	Reopening Surgical Site	\$12,090.85	13.4271
41	Post-Operative Hemorrhage & Hematoma with Hemorrhage Control Procedure or I&D Procedure	\$9,199.40	14.7724
42	Accidental Puncture/Laceration During Invasive Procedure	\$3,288.79	14.8028
45	Post-procedure Foreign Bodies	\$8,810.37	4.6769
49	Iatrogenic Pneumothrax	\$5,387.64	17.0645
52	Inflammation & Other Complications of Devices, Implants or Grafts Except Vascular Infection	\$7,557.11	28.0836
54	Infections due to Central Venous Catheters	\$22,296.64	42.0901
57	Obstetric Lacerations & Other Trauma Without Instrumentation	\$80.52	0.2954
58	Obstetric Lacerations & Other Trauma With Instrumentation	\$349.15	0.9149
60	Major Puerperal Infection and Other Major Obstetric Complications	-\$2,013.62	-3.4983
63	Post-Operative Respiratory Failure with Tracheostomy	\$44,352.87	35.8274

The results of the regression are used for adjusting outlier dollars in approved revenue. For those MHAC-PPCs with less predictive t-values (under 1.96), the additional per case charge amounts were set to zero. For the purpose of determining the approved outlier dollars, discharges with one or more MHACs assigned may have the charges on the claim reduced by the additional per case charges associated with the MHACs before determining if the remaining adjusted charges exceed the associated APR DRG hospital specific outlier threshold. Since the charge values in the regression file used standardized charges, the additional per case charge value for each MHAC needs to be converted back to a hospital specific value by the ratio of the hospital CPC divided by the statewide average CPC of \$9,959.11. Further, since the additional per case charge amounts are isolated for a specific MHAC, discharges with more than one MHAC will have the associated MHAC additional per case charge values added for all MHACs assigned to a case.

Appendix 7 – Case Example of PPC (MHAC) Impact

Case Examples of Preventable Complications and how the current Payment System unfairly and inappropriately increases a Hospital's revenue when it makes a preventable mistake

A	B	C	D	E	F	G
Case 1 (page 1)						
	DRG	SOI	Approved Rev. Based Diag. (1)	PDX	DRG Revenue Rel. Wht	"Credit"
1	221	2	Major Small & Large Bowel Proc.	Ca in situ colon	1.6734	\$16,734
2	SDX Not POA	99859	PPC 38	Post-Op Wound infection & Deep Wound Disruption with Proc		
3	SDX Not POA	6822				
4	SDX Not POA	78659				
5	SDX Not POA	E8788				
6	PPC related Procedu	5412	Reopen recent lap site		\$9,204	Unintended Revenue
	DRG	SOI	Discharge Diag	PDX	Rel. Wht	
7	221	3	Major Small & Large Bowel Proc.	Ca in situ colon	2.59378	\$25,938
(1) DRG assignment based on all SDX (POA or non-POA) except PPC 38						

Original DRG "Payment" In the absence of the MHAC (PPC 38) highly preventable complication

Higher DRG "payment" resulting from presence of this highly preventable complication

Appendix 8 - Comment Letters



JAN 15 2009

Deputy Administrator
Baltimore, MD 21244-1850

Secretary John M. Colmers
Maryland Department of Health and Mental Hygiene
201 West Preston Street
Baltimore, MD 21201

Chairman Donald A. Young, MD
Health Services Cost Review Commission
4160 Patterson Avenue
Baltimore, MD 21215

Dear Secretary Colmers and Chairman Young:

I am writing to encourage you to adopt payment policy for Maryland hospitals that is consistent with Medicare policy that uses financial incentives to combat preventable hospital-acquired conditions (HACs).

Medical errors generally, and particularly HACs, are a huge burden for our society in terms of morbidity, mortality, and cost. The Institute of Medicine estimated in the 1999 report *To Err is Human* that as many as 98,000 Americans die each year as a result of medical errors and that the national cost of these errors totals \$17-\$29 billion. In 2000, CDC estimated that a specific type of HACs, hospital-acquired infections, adds nearly \$5 billion to US health care costs annually, while a 2007 study by Klevens found that 1.7 million hospital-acquired infections were associated with 99,000 deaths in 2002. Further, a 2007 Leapfrog Group survey of 1,256 hospitals found that 87% of those hospitals do not consistently follow recommendations to prevent many of the most common hospital-acquired infections.

In light of these sobering statistics, Congress instructed CMS to no longer pay more for the treatment of selected HACs, beginning October 1, 2008, if those conditions are acquired during hospitalization. That is, CMS will no longer pay the higher MS-DRG for certain preventable complications that arise during hospitalization. This policy is intended to enhance patient safety using financial incentives to raise awareness and encourage delivery system improvements directed at preventing complications. Implementation of this policy has had the desired effect of focusing national attention on HACs and "never events."

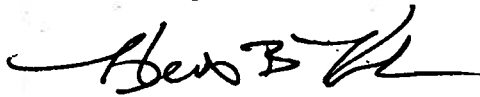
Maryland hospitals are exempt from Medicare payment policies in accordance with the waiver granted under Section 1814(b) of the Social Security Act. However, it is in the best interest of Maryland Medicare beneficiaries and other patients in your State's hospitals to use the payer's powerful tool of financial incentives to promote the prevention of HACs.

Page 2 – John M. Colmers

In a similar effort to extend the Medicare HAC payment policy, CMS issued a State Medicaid Directors' Letter on July 31, 2008. That letter encouraged states to implement payment policies to coordinate with the Medicare HAC policy. In fact, nearly half of the State Medicaid Agencies already have or are considering eliminating payment for HACs or other events on the National Quality Forum's list of Serious Reportable Events.

Please join CMS in this effort to improve the care that Medicare and Medicaid beneficiaries receive.

Sincerely,

A handwritten signature in black ink, appearing to read "Herb B. Kuhn". The signature is fluid and cursive, with a long horizontal stroke at the end.

Herb B. Kuhn
Deputy Administrator
Acting Director, Center for Medicaid & State Operations



STATE OF MARYLAND
DHMH

Maryland Department of Health and Mental Hygiene
201 W. Preston Street • Baltimore, Maryland 21201

Martin O'Malley, Governor – Anthony G. Brown, Lt. Governor – John M. Colmers, Secretary

January 30, 2009

Donald Young, M.D.
Chairman, Health Services Cost Review Commission
4160 Patterson Avenue
Baltimore, MD 21215

Dear Dr. Young:

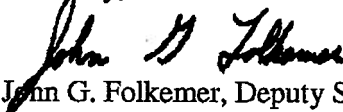
The Centers for Medicare & Medicaid Services (CMS) has issued a policy effective October 1, 2008 whereby Medicare will no longer pay for the higher MS-DRG payment associated with certain hospital-acquired conditions (HAC) that occur during the course of a patient's stay. All state Medicaid Directors received a letter from CMS dated July 31, 2008 (attached) strongly encouraging Medicaid programs nationally to consider including the entire Medicaid population under an identical or similar never event policy.

As you know, Maryland is exempt from Medicare and Medicaid reimbursement requirements under Section 1814(b) of the Social Security Act. To comply with the CMS request, either Medicaid would have to establish its own policy or follow a statewide HAC policy. We support an all-payer approach that would eliminate the practice of Medicaid continuing to pay hospitals the incremental costs associated with highly preventable events that occur after an admission to a Maryland hospital.

The intent of the CMS HAC policy is to alter the financial incentives in the payment structure to appropriately align financial incentives and enhance hospital quality of care. During these difficult economic times, the Medicaid program will be required to reduce expenditures on many fronts. It is prudent to impose cuts relative to preventable adverse events. We believe this strategy can be beneficial to Maryland patients and the Medicaid program alike. Under the all-payer system, Maryland has a historical record of implementing innovative and effective public health policy initiatives. A Maryland HAC policy seems to fit well with this tradition.

Again, the Department of Health and Mental Hygiene is hopeful that Maryland will follow the lead of CMS by establishing an HAC policy that applies to all payers in Maryland and under the guiding principle that payment and performance need to be linked.

Sincerely,


John G. Folkemer, Deputy Secretary
Health Care Financing

cc: Robert Murray, HSCRC

Hal Cohen, Inc.
Health Care Consulting
17 Warren Road, 13B
Baltimore, Maryland 21208
(410) 602-1696; Fax (410) 602-1678; e-mail JandHCohen@aol.com

January 30, 2009

Via e-mail

Robert Murray
Executive Director
Health Services Cost Review Commission
4201 Patterson Avenue
Baltimore, MD 21215

Re: Staff proposal on MHACs

Dear Bob:

This letter, written on behalf of CareFirst BlueCross BlueShield and Kaiser Permanente, is in support of the HSCRC applying the proposed MHAC policy effective April 1, 2009. I, and representatives of my clients, have attended and followed several meetings regarding this topic. We recognize that the April 1, 2009 start date is six months following Medicare's implementation and think the time has been well spent to develop the list of 12 highly preventable conditions with clinical exclusion rules. The reduction in the list from 14 to 12, to reflect the idea that hospitals were not able to prevent the two complications that were on the previous list, shows the cooperative and learning nature of this project. The time has also been well spent in developing incentives for reporting MHACs, reviewing data and developing the well thought out methodology for payment reductions.

While this letter is on behalf of CareFirst and Kaiser Permanente, I can mention that in recent meetings with representatives of other payers, including United, Medicaid, Amerigroup and the State of Maryland Employees, the payer representatives unanimously endorsed the MHAC initiative, as we reported to staff and hospital representatives earlier this week.

We know the financial impact is not huge. The historical data is projected to produce savings of about \$9.4 million on an annual basis or about 0.12% of inpatient revenue on an annual basis. This means the RY 2009 impact will be about 0.03% of inpatient revenue and 0.02% of total revenue. While very small, this is still a significant multiplier of Medicare's proposed impact. Further, we fully expect the impact to be less due to the welcome incentives for hospitals to both improve quality and improve the accuracy of their data reporting, including the reporting of POA status for the MHACs.

We thank both staff and 3M for the excellent work done in this project and look forward to working with staff, 3M, hospitals and other payers as the Commission works to continue to improve the incentives associated with quality care.

Thank you for your consideration.

Yours truly,

A handwritten signature in black ink, appearing to read 'Hal Cohen', written in a cursive style.

Hal Cohen
Consultant

Cc: Greg Vasas
Rich Gold
Beverly Collins
Kay Lewis



Maryland
Hospital Association

MHA
6820 Deerpath Road
Elkridge, Maryland 21075-6234
Tel: 410-379-6200
Fax: 410-379-8239

January 30, 2009

Sent via e-mail. Hard copy to follow.

Dr. Donald A Young, Chairman
Health Services Cost Review Commission
4160 Patterson Avenue
Baltimore, Maryland 21215

Dear Dr. Young:

On behalf of the 68 members of the Maryland Hospital Association (MHA), I am writing to express our opposition to the Health Service Cost Review Commission's (HSCRC) current policy proposal to reduce payment associated with 12 conditions known as "Potentially Preventable Complications" (PPCs). **The approach has not yet been tested, but that research will begin shortly by experts at Johns Hopkins Medical Institutions. The approach is also inconsistent with the commission's principles for quality-based reimbursement.** This proposal will penalize hospitals for circumstances that may be outside their control.

The HSCRC suggested it must move forward with a program, because the Centers for Medicare and Medicaid Services (CMS) have begun a program of non-payment for certain preventable events. But the CMS program is controversial and creates flawed incentives for reporting, with little benefit for quality improvement. Worse, HSCRC's proposal goes further than CMS' to cases that may, in fact, not be preventable. **By reducing payments for cases where the degree of preventability is not ascertained, the HSCRC runs the risk of holding hospitals accountable for things beyond their control, reducing data quality, limiting incentives for research, increasing litigation risk for providers, and potentially threatening access to care.**

- Maryland regulators and hospitals have collaborated toward creating a culture of safety through the Maryland Patient Safety Center (MPSC). The HSCRC's proposal could undermine the trust that has been built, as a result of these efforts.
- The proposal could threaten access to care and limit research efforts by creating disincentives to treat more complex and vulnerable patients.
- The HSCRC could make 3M's methodology the standard of care and put increased pressure on our precarious medical liability situation.

The key question is whether these 12 conditions are clinical relevant complications and truly preventable? Maryland hospitals, by adopting a voluntary statewide policy to forego all payment in the case of certain serious adverse events, have already implemented a program where patients do not pay for any part of a stay when truly preventable conditions occur. *(See Appendix I.)* **While the HSCRC has indicated that their proposed conditions are "highly preventable," there is little clinical justification of this designation.** None of 3M's PPCs have been validated in the manner in which core measures are validated. In fact, PPC 49, Iatrogenic Pneumothorax, is a condition that CMS did not include, because no evidence-based guidelines exist.¹

¹ Comment Letter to CMS. June 11, 2008. American College of Chest Physicians, American Thoracic Society, Society of Critical Care Medicine, the National Association for Medical Direction of Respiratory Care, American Association of Critical Care Nurses, and the American Association for Respiratory Care. Pages 5-7.

An initial review by hospitals suggests that further study, not payment reductions, is a more appropriate course of action for the cases flagged by 3M. Most hospitals are still reviewing their share of the over 5,700 cases flagged statewide. But, some have indicated that their study suggests that very few—less than five percent—are truly preventable, after chart review and consultation with clinicians. MHA is in the process of collecting information from all hospitals to better understand these issues. **We would welcome the opportunity to share our findings and believe that any proposal by the HSCRC should take into account a data-driven review of these issues.**

This proposal represents another layer of complexity in an already complex case-mix methodology. For example, hospitals may already be writing off part or all of the payments associated with a flagged case, under MHA's voluntary statewide serious adverse events policy. This proposal could create confusion and potentially double penalize hospitals. It also requires a commitment of resources to improve documentation while not providing any appeals process for hospitals to demonstrate that a case was not clinically preventable. (*See Appendix 2.*)

Implementing payment reductions for cases identified through administrative data review carries substantial risks. The State of Maryland, in particular the Maryland Health Care Commission, has been a leader in quality improvement, from being early adopters of public quality reporting to supporting the MPSC. This ability to lead is rooted in an inclusive and deliberate regulatory approach, combined with voluntary efforts by the hospital community. This HSCRC proposal is a departure from this collaborative approach and jeopardizes much of the foundation that has been laid.

Reimbursement can play a role in quality improvement, but so far there is no coordinated statewide strategy for quality improvement. A tool like the 3M methodology could have a role in such a broader framework. One possibility is for the MPSC to provide hospitals with confidential reporting of their Potentially Preventable Complications. The MPSC is uniquely positioned to study these data and provide guidance on how they might be used to facilitate quality improvement more broadly.

In summary, we *oppose* the HSCRC's proposal to reduce hospital payments for 12 Potentially Preventable Complications as identified by 3M. This could lead to serious reversals in the progress made in quality reporting, increase litigation risk, and threaten access to care and research efforts. This new 3M methodology merits further exploration. But, not in the payment realm. A coordinated statewide plan for quality improvement is key.

I appreciate the opportunity to outline our strong opposition to this proposed policy approach. I look forward to continuing discussions on how we can continue to work together to improve the quality of care in Maryland hospitals.

Sincerely,



Carmela Coyle
President and CEO

cc: HSCRC Commissioners
Robert Murray, Executive Director, HSCRC

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Commentary

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The Wisdom and Justice of Not Paying for "Preventable Complications"

Peter J. Pronovost, MD, PhD; Christine A. Goeschel, RN, MPA, MPS;
Robert M. Wachter, MD

JAMA. 2008;299(18):2197-2199.

Far too many patients experience preventable harm from medical care in US hospitals. To promote quality and safety, many employers and insurers are linking financial incentives to clinical performance. These programs, often called pay for performance, use a carrot (pay more for better quality) or a stick (pay less for lower quality). To date, most pay-for-performance programs have encouraged physicians to use evidence-based interventions or improve patient satisfaction.¹

The Centers for Medicare & Medicaid Services (CMS) has taken the lead, with many insurers following, in linking pay for performance to reducing harm.² In October 2008, hospitals will no longer derive additional payments they sometimes receive when Medicare patients develop 1 of the following 8 preventable complications: objects (such as surgical instruments or sponges) left in patients after surgery, hospital-acquired urinary tract infections, central line-associated bloodstream infections, administration of incompatible blood products, air embolism, patient falls, mediastinitis after cardiac surgery, and pressure ulcers. In addition, CMS has published that conditions being considered for 2009 expansion of the list include ventilator-associated pneumonia, *Staphylococcus aureus* septicemia, and deep venous thrombosis or pulmonary embolism.²

The tacit assumption to the "not paid for preventable complications" approach is that an error occurred in a patient's care that, if avoided, would have prevented the harm and ensuing costs. For one complication on the CMS list, foreign objects inadvertently left in patients after surgery, this is undeniably true.

Linking errors to harm for the remaining complications is more complex. For strategies built around the "not paid for preventable complications" concept to be clinically and morally acceptable and to achieve the policy goal of improving quality of care, it must be certain that preventable complications are important and measurable and truly are preventable. In this Commentary, we discuss the CMS initiative in the context of these metrics.

Complications Should Be Important and Measurable

How various stakeholders perceive importance is likely a function of how commonly the event occurs and the amount of preventable harm and marginal costs associated with the event. Although an explicit process is needed to further define importance, all complications listed by CMS have face validity for being important.

The ability to validly measure each complication on the CMS list varies widely. Complications such as central line-associated bloodstream infection can be measured with reasonable accuracy. Accurately diagnosing other complications, such as air embolism, pulmonary embolism, deep venous thrombosis, and ventilator-associated pneumonia, which may be present on admission in some cases, is more difficult. Agreement among experts about these diagnoses is poor or unknown.³⁻⁵ Also, the different methods (medical record vs discharge data) of identifying events can dramatically influence performance,⁵ and

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aggressive screening strategies can markedly increase case-finding rates without an effect on quality of care. The absence of a standardized surveillance system could lead to a spurious association between more preventable harm and lower-quality care. For example, rates of postoperative deep venous thrombus increased 10-fold at one center when standardized duplex ultrasound screening was implemented for trauma patients for deep venous thrombosis.⁶

The CMS will use discharge data to identify patients who had 1 of the 8 listed preventable complications. Because the sensitivity and specificity of diagnosing many of these complications are imperfect or unknown and because the prevalence for many of these complications is low, measurement error will likely introduce substantial biases. Some patients experiencing the complication will not be diagnosed as having one (a false negative due to low sensitivity), and many more patients who do not have the complication will be diagnosed as having one (false positive due to low specificity).

For example, the most prevalent noninvasive method to diagnose ventilator-associated pneumonia⁴ is the Clinical Pulmonary Infection Score (CPIS), a valid tool based on clinical data.³ The CPIS has 79% sensitivity (percentage of patients with the complication that CPIS identifies as having ventilator-associated pneumonia) and 75% specificity (percentage of patients without the complication that CPIS identifies as not having ventilator-associated pneumonia).⁷

If 1 in 100 hospitalized patients truly develops ventilator-associated pneumonia, in a cohort of 10 000 patients, 100 will develop it and 9900 will not (1% prevalence).⁷ Using the CPIS (with 79% sensitivity), 79 patients will be correctly diagnosed as having ventilator-associated pneumonia (true positives), and 21 patients with it will be labeled as not having it (false negatives). With a 75% specificity, screening all mechanically ventilated patients with the CPIS will falsely label 2475 of the original 10 000 patients as having ventilator-associated pneumonia ($9900 \times [1 - 0.75]$).

The extent to which hospitals treating these patients will have payment denied under the "not paid for preventable complications" system is uncertain. Withholding payment for patients with false-positive findings is just, but may be unwise because many patients will be falsely identified and subsequently treated for a disorder.⁸⁻⁹ Clinicians and hospitals will likely lose trust in the whole enterprise if they are falsely identified as having high adverse event rates. In addition, the CMS policy may preferentially target sicker patients, creating disincentives for hospitals to treat these patients. Finally, patients will be misled if hospital rates for these complications are publicly reported, which is likely.

The ability to accurately diagnose most of the CMS complications is poor, if even known, with false positives vastly outnumbering true positives. Thus, more aggressive screening for these complications will lead clinicians to treat many patients without the disease, thereby increasing health care costs and harming quality. Because those who look harder for complications will find more and because most of the diagnoses of complications will be false positives, complication rates will have substantial error, rendering them uninformative. Seen this way, the "not paid for preventable complications" program raises a fundamental question: what false-positive rate is clinically and morally acceptable?

Complications Should Be, to a Large Extent, Preventable

Even when complications can be measured with reasonable accuracy, the degree of preventability also must be estimated accurately, which is no easy task.¹⁰ There is an active debate in the medical literature regarding the extent to which notions of preventability should adhere to traditional scientific standards.¹¹

Experience and face validity may be sufficient evidence of preventability for some rare events, but only if the risk for unintended consequences is small; the outcome easily measured; and the link between exposure and outcome is direct, unambiguous, and not influenced by bias or confounding. For example, for foreign objects retained after surgery, preventability is self-evident and strong scientific evidence not needed.¹²

However, in most health care, the link between an intervention and an outcome is less direct and more subject to bias. Unintended consequences are the norm rather than the exception. As such, it is risky and

likely harmful to substantially relax evidentiary standards when making national patient safety policy.

Yet policy makers face a dilemma. Should they chance harming patients by promoting prevention interventions with little to no evidence or hold clinicians and systems accountable for complications that may not be preventable? The CMS program will inevitably be incorrect sometimes, leading it to deny payment for complications that are not preventable and pay for preventable complications. This raises another fundamental question: how much error is acceptable in the estimate of preventability?

One approach to this question is to use a measure of preventability that would evaluate 1 of 2 dimensions. First, a complication would be deemed preventable if a minimally biased effectiveness study with robust measurement from a variety of health care organizations demonstrates that most complications can be prevented. For example, published studies demonstrated that a series of achievable process changes can substantially reduce central line-associated bloodstream infections in a wide variety of hospitals.¹³ In pursuing this strategy, *most* must be defined and methods must be developed to grade the evidence of effectiveness studies.

Second, a complication would be deemed preventable if substantial variation in complication rates were found among hospitals, assuming those rates were accurately measured.¹⁴ Again, *substantial variation* must be defined. This method assumes that significant variation in complications rates are not from systematic error or random error, but rather are from differences in the quality of care (preventable complications).

The ability to prevent complications is a matter of degree rather than absolute; the proportion of a complication that must be prevented before a complication is labeled preventable is uncertain. It would be naive to set a threshold of 100% absolute risk reduction since this will rarely if ever be met. For example, although hospitals in Michigan substantially reduced the incidence of central line-associated bloodstream infection, those hospitals did not eliminate these infections.¹³ The few remaining infections were deemed nonpreventable because patients appeared to have received the evidence-based care designed to prevent central line-associated bloodstream infection. Whether these residual infections are preventable is uncertain.

For many complications on the CMS list, the degree of preventability raises concerns. For instance, preventability may differ among patients who developed a pulmonary embolism. One patient who received heparin for an appropriate indication developed heparin-induced thrombocytopenia complicated by deep venous thrombosis and pulmonary embolism. Another patient who had sustained a traumatic spinal cord injury could not receive anticoagulation and had an inferior vena cava filter placed but still developed a pulmonary embolism. These patients received optimal evidence-based care, yet each developed pulmonary embolism. It would be inappropriate to deny payment.

A Way Forward

Policies to withhold payment for some complications, such as foreign objects retained after surgery, are likely wise (a reasonable method to decrease preventable complications) and just (true positives vastly exceed false positives). The policy is likely also wise and just for central line-associated bloodstream infections, although some risks remain. Hospitals typically use surveillance definitions that emphasize sensitivity over specificity rather than more accurate clinical definitions when diagnosing central line-associated bloodstream infections; the error introduced by using surveillance definitions is uncertain.¹³

What about the remainder of diagnoses on the initial "not paid for preventable complications" list? The ability to diagnose the remaining complications is error ridden and there is limited to no evidence about their degree of preventability. Although a payment policy is a blunt instrument and the true-positive/false-positive tradeoff may be an unavoidable adverse effect of a generally wise CMS policy (a few penalized for the greater good), diagnoses other than central line-associated bloodstream infection and retained foreign body should be pilot tested before widespread implementation.

There are broader concerns. Nonpayment for complications that are truly not preventable may destroy trust in quality improvement programs, reduce access for patients at-risk for these complications (eg, obese patients at increased risk for decubitus ulcers, deep venous thrombosis, and infections may be shunned), reduce the frequency of diagnosis after admission, and misinform the public when safety and quality results are publicly reported. Also, treating the large number of patients with a false-positive diagnosis identified on admission screening will decrease the quality of care and increase costs of care. The net effect could be greater harm.

The efforts of CMS to align payment incentives with the quality delivered by health care organizations, if done wisely, can stimulate broad improvements in quality and reduce medical costs.¹⁵ To reach the desired effect, complications in the "not paid for preventable complications" category must be important, measurable, and largely preventable. The CMS should start with central line-associated bloodstream infection and retained foreign body, evaluate the benefits and risks of this novel program, and invest resources to better understand how to diagnose and prevent the remaining complications. In the end, CMS must advance the science of quality improvement and measurement for its "not paid for preventable complications" program to realize true improvements in patient outcomes. There is no shortcut.

AUTHOR INFORMATION

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REFERENCES

1. Epstein AM. Paying for performance in the United States and abroad. *N Engl J Med*. 2006;355(4):406-408. [FREE FULL TEXT](#)
2. Centers for Medicare & Medicaid Services Web site. <http://www.cms.hhs.gov>. Accessed April 8, 2008.
3. Swoboda SM, Dixon T, Lipsett PA. Can the clinical pulmonary infection score impact ICU antibiotic days? *Surg Infect (Larchmt)*. 2006;7(4):331-339. [FULL TEXT | PUBMED](#)
4. Klompas M, Platt R. Ventilator-associated pneumonia—the wrong quality measure for benchmarking. *Ann Intern Med*. 2007;147(11):803-805. [FREE FULL TEXT](#)
5. Zhan C, Battles J, Chiang YP, Hunt D. The validity of ICD-9-CM codes in identifying postoperative deep vein thrombosis and pulmonary embolism. *Jt Comm J Qual Patient Saf*. 2007;33(6):326-331. [PUBMED](#)

6. Haut ER, Noll K, Efron DT; et al. Can increased incidence of deep vein thrombosis (DVT) be used as a marker of quality of care in the absence of standardized screening? the potential effect of surveillance bias on reported DVT rates after trauma. *J Trauma*. 2007;63(5):1132-1135. ISI | PUBMED
7. Hayward RA, Heisler M, Adams J, Dudley RA, Hofer TP. Overestimating outcome rates: statistical estimation when reliability is suboptimal. *Health Serv Res*. 2007;42(4):1718-1738. FULL TEXT | ISI | PUBMED
8. Larson DM, Menssen KM, Sharkey SW; et al. "False-positive" cardiac catheterization laboratory activation among patients with suspected ST-segment elevation myocardial infarction. *JAMA*. 2007;298(23):2754-2760. FREE FULL TEXT
9. Wald HL, Kramer AM. Nonpayment for harms resulting from medical care: catheter-associated urinary tract infections. *JAMA*. 2007;298(23):2782-2784. FREE FULL TEXT
10. Lawthers AG, McCarthy E, Davis R, Peterson L, Palmer R, Iezzoni L. Identification of in-hospital complications from claims data: is it valid? *Med Care*. 2000;38(8):785-795. FULL TEXT | ISI | PUBMED
11. Berwick DM. The science of improvement. *JAMA*. 2008;299(10):1182-1184. FREE FULL TEXT
12. Smith GC, Pell JP. Parachute use to prevent death and major trauma related to gravitational challenge: systematic review of randomised controlled trials. *BMJ*. 2003;327(7429):1459-1461. FREE FULL TEXT
13. Pronovost P, Needham D, Berenholtz S; et al. An intervention to decrease catheter-related bloodstream infections in the ICU. *N Engl J Med*. 2006;355(26):2725-2732. FREE FULL TEXT
14. Lilford R, Mohammed M, Spiegelhalter D, Thomson R. Use and misuse of process and outcome data in managing performance of acute medical care: avoiding institutional stigma. *Lancet*. 2004;363(9415):1147-1154. FULL TEXT | ISI | PUBMED
15. Wachter RM, Foster NE, Dudley RA. Medicare's decision to withhold payment for serious preventable events: the devil is in the details. *Jt Comm J Qual Patient Saf*. 2008;34(2):116-123. PUBMED

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Appendix 1

Payment Guidelines on Serious Adverse Events July 2008

Maryland hospitals work every day to make patient care as safe and free from harm as possible. Evidence of the priority hospitals' place on patient safety is the creation of the Maryland Patient Safety Center. This Center is a collaborative partnership between the Maryland Hospital Association and the Delmarva Foundation, that brings Maryland health care providers together to work to make Maryland health care the safest in the nation. To further safeguard patient safety, the state of Maryland requires mandatory reporting of serious adverse events resulting in unexpected death or serious disability and an intensive internal review of what caused the problem. Hospitals too have taken extensive steps to avoid errors that harm patients.

Despite these individual and collective efforts, human error can and does occur. Certain types of serious adverse events that cause the patient significant harm are preventable and under the direct control of the hospital. While rare, they can have tragic consequences for the patient, some resulting in permanent disability or death.

As an extension of their patient safety programs many hospitals have put informal practices in place to waive payments when certain serious adverse events* occur that result in serious disability lasting greater than seven days or death. To make this uniform, Maryland hospitals will voluntarily adopt a policy, effective September 1, 2008, agreeing to waive payment from patients, insurers, or other payors for the following seven serious adverse events. These events were selected because they clearly meet the four criteria listed below. The seven events, when they result in serious disability lasting greater than seven days or death, are:

- *Surgery on the wrong body part;*
- *Surgery on the wrong patient;*
- *Wrong surgical procedure;*
- *Unintended retention of a foreign object;*
- *An air embolism that occurs while being treated in a hospital;*
- *A medication error attributable to the hospital; and,*
- *A hemolytic reaction due to administration of incompatible blood or blood products.*

As part of the policy, whenever one of these seven serious adverse events results in a patient's death or serious disability, hospitals agree to waive payment for the entire hospital patient stay.

Beyond these seven specific types of serious adverse events, Maryland hospitals will individually evaluate, on a case-by-case basis, whether full or partial payment should be waived for other events. Hospitals will be guided in their consideration by the work of the National Quality Forum (NQF) and those serious adverse events that are reportable to the state's Office of Health Care Quality.

- more -

*Note: A serious adverse event, as defined by the state, is an event that results in death or serious disability, which means a physical or mental impairment that substantially limits one or more of the major life activities of an individual lasting more than 7 days or still is present at the time of discharge.

In making the decision whether to waive full or partial payment for these other events hospitals will use the following criteria to guide their decision:

1. **The error or event was preventable.** Hospitals should not be held accountable for something that could not be reasonably prevented by the hospital in the first place. An indepth, internal analysis may be required to determine preventability.
2. **The error or event was within the control of the hospital.** Hospitals should not be held accountable for errors that may have occurred, for example, in the manufacture of drugs, devices or equipment, well before the materials reached a hospital's doors. An indepth, internal analysis may be required to determine the source of the error.
3. **The error or event was the result of a mistake made in the hospital.** The event must clearly and unambiguously be the result of a mistake made or hospital procedures not followed, rather than something that could otherwise occur.
4. **The error or event resulted in patient death or serious disability.** The list of events should be limited to those that yield very serious adverse results.

This policy establishes a uniform approach for all Maryland hospitals. It is intended to send a clear message to patients that hospitals are committed to their safe care through the elimination of serious adverse events which are preventable and within the control of the hospital.

These guidelines were adopted by the MHA Executive Committee on July 15, 2008.

Appendix 2

Problems with the HSCRC's Proposal

The HSCRC's proposal adds complexity to an already complex case mix methodology.

Costs of Implementation

This complexity adds costs in terms of staffing and software. Hospitals would need to bring on additional coding and documentation staff to improve the quality of their data, particularly around coding present on admission diagnoses. Evaluating whether or not each of 30 diagnoses were present-on-admission is time intensive and also requires significant querying of physicians. Coding and documentation staff are in high demand, and anecdotal evidence suggests that hospitals are paying a substantial premium for bringing in temporary support.

Because the HSCRC's payment proposal is based on a proprietary methodology, hospitals would also need to invest in licensing or royalties in order to have access to this 3M product so that they can identify their own cases in a reasonable time frame. To manage compliance effectively under this proposal, it is absolutely critical for hospitals to be able to identify cases with these 12 conditions on a relatively real time basis, such as in widely-used tools like St. Paul Computer Center's Snapshot. It is also essential that hospitals' access to this real time information is priced reasonably. These added costs come at a time when hospitals' are experiencing significant losses and less able to absorb extra costs.

Need for Appeals Process

This complexity necessitates an appeals process so hospitals can petition on the reduction or flagging of a case. Two levels of appeals would be needed. A technical appeal would allow hospitals to raise and address issues associated with the Potentially Preventable Complications and APR-DRG grouper themselves. These could include ensuring the Potentially Preventable Complications algorithm is based on the Maryland version of the APR-DRG with Maryland modifications. A second level of clinical appeal is also vital. This would allow hospitals to share information derived from the chart that would challenge the designation of the case as a Potentially Preventable Complication. An appeals committee comprised of clinicians and quality experts should review the appeals, and not payment policy experts.

Need for Further Validation

This complexity suggests that chart review is a critical part of determining how a methodology like the 3M Potentially Preventable Complications can be used for quality improvement. We commend the HSCRC for undertaking a study to look at the sensitivity and specificity of the methodology with regard to a few of 3M's Potentially Preventable Complications. This study will provide key information on the degree to which cases identified by the 3M methodology are clinically preventable complications and shed light on the need for further risk adjustment. The HSCRC's proposal to reduce payments for the 12 conditions contains no provisions for validation, demonstration periods or pilot testing.

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TO: Commissioners

FROM: Legal Department

DATE: January 30, 2009

SUBJECT: Hearing and Meeting Schedule

Public Session

March 4, 2009 **Time to be determined, 4160 Patterson Avenue, HSCRC Conference Room**

April 15, 2009 **Time to be determined, 4160 Patterson Avenue, HSCRC Conference Room**

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