

Final Recommendation for Modifying the Maryland Hospital Acquired Conditions Program for FY 2017

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

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This document contains the final staff recommendations for updating the Maryland Hospital Acquired Conditions (MHAC) Program for FY 2017.

A. Introduction

The HSCRC quality-based payment methodologies are important policy tools for providing strong incentives for hospitals to improve their quality performance over time.

The MHAC program was implemented in state FY 2011. In order to enhance our ability to incentivize hospital care improvements and meet the MHAC reduction targets in the CMMI All-payer model demonstration contract that began on January 1, 2014, Commission staff developed recommendations with significant changes to the MHAC existing policy within the context of the Performance Measurement and Payment Models Workgroup activity. The Commission approved the updated recommendations at the April 2014 meeting that modified the measurement, scoring and payment scaling methodologies to translate scores into rate adjustments for the MHAC initiative. These updates were effective for performance in calendar year 2014 (beginning January 1, 2014) and are to be applied to FY 2016 rates for each hospital. Among these changes were measuring hospital performance using observed to expected ratio values for each PPC rather than the additional incremental cost of the PPCs measured at each hospital, and shifting from relative scaling to pre-established PPC performance targets for payment adjustments. The revised approach also established a statewide MHAC improvement target with tiered amounts of revenue at risk based on whether or not the target is met, and the allocation of rewards for FY 2016 consistent with the amount of revenue in penalties collected.

This recommendation proposes to continue with the current MHAC initiative methodology for FY 2017 with updates to the policy that allow for rewards not limited to the penalties collected, and to the statewide improvement target for applying tiered scaling amounts.

B. Background

1. Centers for Medicare & Medicaid Services (CMS) Hospital Acquired Conditions (HAC) Program

The federal HAC program began in FFY 2012 when CMS disallowed an increase in DRG payment for cases with added complications in 14 narrowly defined categories. Beginning in FFY 2015, CMS established a second HAC program, which reduces payments of hospitals with scores in the top quartile for the performance period on their rate of Hospital Acquired Conditions as compared to the national average. In FY 2015, the maximum reduction is one percent of total DRG payments.

The CMS HAC measures for FY 2016 are listed in Appendix I.

2. MHAC Measures, Scaling and Magnitude at Risk to Date

The MHAC program currently uses 65 Potentially Preventable Complications (PPCs) developed by 3M Health Information Systems.

In the process of developing the MHAC updated recommendations for FY 2016, staff vetted several guiding principles for the revised MHAC program that overlap significantly with those identified by the MHA. They include:

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- Program must improve care for all patients, regardless of payer.
- Breadth and impact of the program must meet or exceed the Medicare national program in terms of measures and revenue at risk.
- Program should identify predetermined performance targets and financial impact.
- First year target for the program must be established in context of the trends of complication reductions seen in the previous years as well as the need to achieve the new All-payer model goal of a 30% cumulative reduction by 2018.
- Program should prioritize high volume, high cost, opportunity for improvement and areas of national focus.
- Program design should encourage cooperation and sharing of best practices.
- Program scoring method should hold hospitals harmless for lack of improvement if attainment is highly favorable.
- Hospitals should have ability to track progress during the performance period.

To achieve a policy that supports the guiding principles, staff's approved recommendations effective for CY 2014 performance and applied to rate year FY 2016 (see detailed description in Appendix II) included:

- Using Observed (O)/Expected (E) value for each PPC to measure each hospitals' performance
- Establishing appropriate exclusion rules to enhance measurement fairness and stability.
- Prioritizing PPCs that are high cost, high volume, have opportunity to improve, and are of national concern in the final hospital score through grouping the PPCs and weighting the scores of PPCs in each group commensurate with the level of priority.
- Calculating rewards/penalties using preset positions on the scale based on the base year scores.
- Based on performance trends and CMMI contract goals, establishing annual statewide targets with tiered scaling, with a statewide target set at 8% improvement with 1% of permanent revenue at risk if the target is met, and 4% at risk and no rewards paid if the target is missed; penalties were limited to 0.5% of permanent inpatient revenue statewide.

C. Assessment

HSCRC continues to solicit input from stakeholder groups comprising the industry and payers to determine appropriate direction regarding areas of needed updates to the programs. These include the measures used, and the program's methodology components.

The Performance Measurement Workgroup has deliberated pertinent issues and potential changes to Commission policy for FY 2017 that may be necessary to enhance our ability to continue to improve quality of care and reduce costs caused by hospital acquired complications, as well as to achieve the reduction target set forth in the contract with CMMI— a 30% reduction in MHACs over five years. In its October to December meetings, the Workgroup discussed issues related to:

- PPC measurement trends,
- Present on admission (POA) auditing,
- The stability of the PPC measures themselves over time,

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- The appropriate time period for establishing norms and benchmarks for FY 2017,
- The reward and penalty structure of the program, and,
- Setting and use of a statewide reduction target for the MHAC program on which to base tiered payment of rewards and penalties.

In addition to the meeting discussions, HSCRC received four comment letters from the Maryland Hospital Association (MHA), CareFirst BlueCross BlueShield, the Johns Hopkins Health System (JHHS), and Medstar Health on the draft MHAC recommendation. The four MHAC comment letters as well as four additional letters commenting on the draft recommendation updates to the Readmissions Reduction Program and Aggregate Revenue Amounts at Risk for Quality Programs are in the attachments to this recommendation

In general, all the comment letters support continuing the current MHAC methodology with the changes implemented for FY 2016 where prospective benchmarks are provided and hospitals can monitor their performance “real time.” However, other specific comments, as outlined in the sections below, suggest changes to the recommendations.

1. Updated PPC Measurement Trends

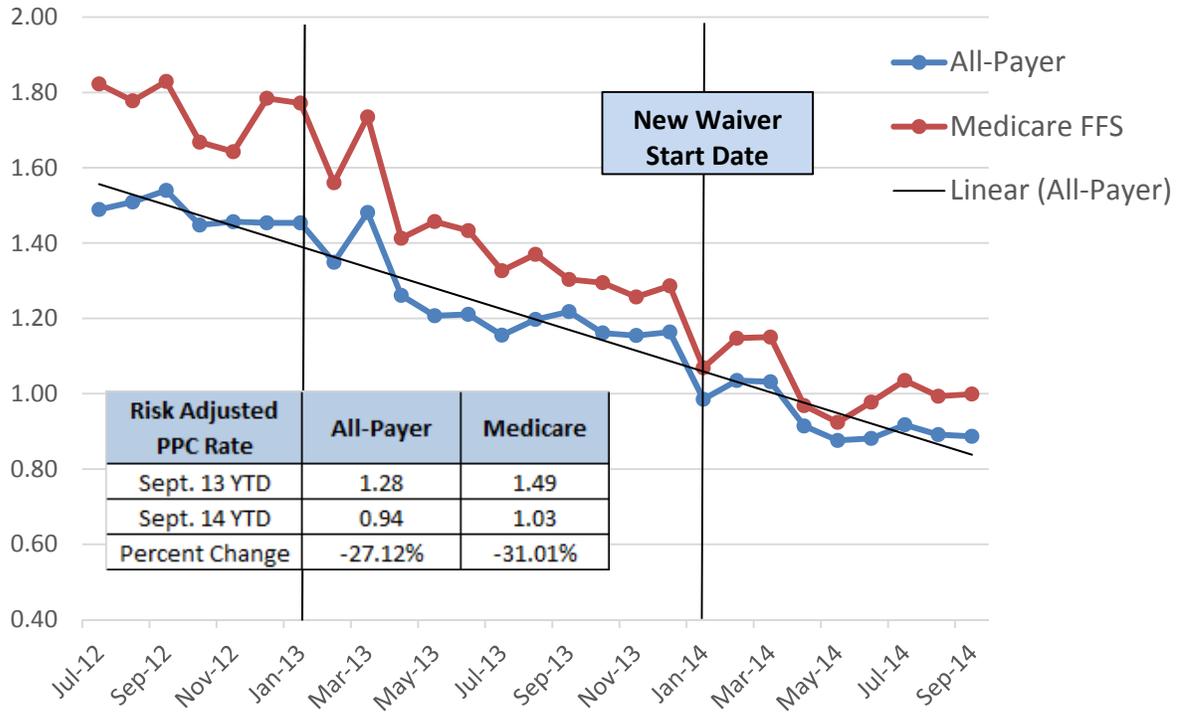
As illustrated in Figure 1 below, Maryland has seen a significant drop from year to year from 2010 to 2014 in the statewide PPC rates with a total rate per 1,000 decrease of 60.8% unadjusted, and an average annual risk adjusted decrease of 13.9%.

Figure 1. PPC Reduction Trends FY 10 to FY 14

Potentially Preventable Complication (PPC) Rates in Maryland- State FY2010-FY2014														
	PPC RATES (FY2010 NORMS, vs. 30)				PPC RATES (CY2013 NORMS, vs. 31)			Annual Change (FY2010 Norms, vs. 30)				Annual Change (CY2013 Norms, vs. 31)	FY2010 Norms, vs. 30	
	FY10	FY11	FY12	FY13	FY13	FY14		FY11	FY12	FY13	FY14		Annual Change	Total Change
TOTAL NUMBER OF COMPLICATIONS	53,494	48,416	42,118	34,200	34,143	26,900		-9.5%	-13.0%	-18.8%	-21.2%		-15.6%	50.4%
UNADJUSTED COMPLICATION RATE PER 1,000 AT RISK CASES	1.92	1.82	1.65	1.41	1.40	1.16		-5.2%	-9.3%	-14.5%	-17.1%		-11.6%	60.8%
RISK ADJUSTED COMPLICATION RATE PER 1,000 AT RISK CASES	1.92	1.77	1.58	1.30	1.40	1.13		-7.8%	-10.7%	-17.7%	-19.3%		-13.9%	54.7%

In addition to the annual change in PPC rates, staff also analyzed monthly year to date PPC Medicare and all-payer changes and discussed the findings at a public Commission meeting and with the Workgroup. As Figure 2 below illustrates, there was a sharp decrease in the rate in January 2014, but the linear trend line decrease is constant and consistent for September 2013 year to date (YTD) compared to September 2014 YTD.

Figure 2. 2013 and 2014 Monthly YTD PPC Rate Comparisons



Note: Based on final data for January 2013 - September 2014.

2. Present on Admission (POA) Auditing

To a very large extent, POA coding drives MHAC assignment. Auditing POA, then, is important in order to validate or discover to what extent that change in PPC rates is related to clinical care rather than hospital coding practices. Staff discussed with the Workgroup modifying the plans for auditing POA in 2014.

- For FY 2014, the HSCRC is primarily focusing on auditing 10 hospitals that have had significant improvements in PPC rates.
- Cases selected for audit (N = 230)
 - 50% random sample for ICD-9 Audits
 - 50% for POA audits (used to be 30%); select from a file of discharges at-risk for PPC's with large improvements and those where the PPC status changed between the preliminary and final data submission.
- Other hospital selection factors include hospital size, date of last audit (not auditing in 2013 or 2014), percent change between preliminary and final data submission.

Related to both the PPC reduction trends and POA coding driving MHAC performance, in their comment letters, MHA, JHHS and CareFirst all acknowledge and concur with staff that the PPC reductions are likely due to a combination of clinical documentation, coding and actual reduced complications. CareFirst also raised concerns that the implementation of Global Budget Rate arrangements may provide a disincentive to fully code complications.

Staff notes that under-coding complications will still require hospitals to provide the additional care needed by patients with complications from their global budgets, and that monitoring

shifts in case mix index (CMI) will continue to be important under GBR. Staff will present findings of the ongoing POA audits as well as the routine APR-DRG coding audits in public Workgroup meetings in 2015 and discuss any implications for considering adjustments to the MHAC program based on the findings.

3. Stability of PPC Measures Over Time

Workgroup members expressed concern over the stability of individual PPC measures, in particular noting that some PPCs rates could potentially increase rather than decrease over time as definitions for the PPCs are potentially interpreted differently from hospital to hospital, and measurement practices evolve over time. “The more you look, the more you find” was an example raised for infection PPCs, as an example.

To explore the question of hospital-specific PPC stability and also that of hospital PPC scores, staff analyzed the correlations for the following performance results:

- Individual PPC rates for FY2012, FY2013, FY2014
- Hospital PPC scores for FY2013 and FY2014, for both improvement and attainment.

Appendix III contains the individual PPC rates per 1,000 correlation results that indicate majority of the PPC rates for hospitals were statistically significantly correlated from FY2012 through FY2014. Figure 3 below illustrates the correlation in improvement and attainment scores that the staff modelled. The results indicate that there was statistically significant correlation for attainment but not for improvement. Based upon these results, staff are less concerned about the stability of measurement of the PPCs but this must continue to be monitored to ensure that the measure is reliable and valid.

Figure 3. Correlation of FY2013 and FY2014 Improvement and Attainment Scores

	Correlation Coefficient	p-value
Attainment Scores FY13 and FY14	0.6248	<0.0001
Improvement Scores FY13 and FY14	-0.03931	0.7977

4. Setting PPC Benchmarks for FY 2017

The Workgroup discussed issues to consider in setting the base year performance benchmarks. Because of the sharp decrease in PPC rates in January 2014, staff initially supported the position of setting PPC benchmarks using FY 2014 performance data with an adjustment that recognized the sharp one month decrease; this would entail weighting more heavily the results in the latter 6 months of the fiscal year in setting the benchmarks. Alternatively, the Johns Hopkins Health System comment letter advocates keeping constant CY 2013 benchmarks for calculating hospital scores. To balance the Workgroup’s desire to lower the benchmarks and concern about sustainability of the current improvement results, and staff concerns about continuing the momentum with improving on MHACs and establishing reasonable benchmarks, the staff

supports a revised “middle” approach which is to use the full FY 2014 rates to set benchmarks for FY2017.

5. MHAC Reward and Penalty Structure

Staff reviewed with the Workgroup modeling of the rewards and penalties for FY 2016 using data for the first 9 months of CY 2014 (FY2014 Qtrs 3 and 4, and FY2015 Qtr 1). A table with hospital specific results can be found in Appendix IV. Workgroup members discussed the impact of a revenue neutrality adjustment to the MHAC program, specifically noting that limiting the rewards to the penalties collected did not recognize the effort expended to achieve the performance levels for the better performing hospitals. As was discussed, Figure 4 below illustrates that total rewards are reduced to ~5% of what would have been earned if they were not capped at the penalties collected.

Staff supports removing the cap on rewards based on discussions at the payment and performance workgroup meetings.

Figure 4. MHAC Modeling of Total Rewards and Penalties Using FY 2014 Qtrs 3 and 4 Data

	Count of Hospitals receiving Reduction or Reward	Total Revenue	Revenue Neutral Adjustment
Total Reduction	2	\$ (449,188)	\$ (449,188)
Total Reward	18	\$9,468,894	\$449,188

6. Annual Statewide MHAC Reduction Target and Score Scaling FY 2017

The Workgroup discussed options for the revised annual MHAC reduction target. Some participants noted that the state has achieved ~27% of that required by the All-payer Model contract with CMMI in the first year. Staff noted the need to continue to improve care and reduce cost. Staff also noted that using FY 2014 to set benchmarks and base period rates does not account for the additional 6 months from July to December 2014 where the MHAC rates would continue to improve.

Several comments were received on targets and scaling. In their comment letters, MHA and Medstar advocate for little or no increase in the improvement target for FY2017, arguing that it does not impact the state negatively in achieving the 30% MHAC reduction over five years. In their comment letter, CareFirst also expressed concern regarding the use of a tiered approach with more revenue at risk if a statewide target is not met versus met, as well as non-continuous scaling where there is a hold harmless neutral zone. CareFirst supports using one scale for payment adjustments where each hospital’s performance is directly proportionate to the rewards and penalties they receive. Alternatively, MHA and JHHS indicate in their comment letters that they believe the statewide target with tiered scaling provides an incentive for hospitals to work collaboratively on reducing complications.

Staff continues to advocate for a target of 7% improvement from FY2015 to CY2015, which is equal to 5% annual improvement rate and on par with the improvement trends the state has been observing and reduced from last year's annual improvement target of 8%. Staff also advocates for no change in the scaling approach by keeping constant the tiered score scaling with no rewards if the statewide target is not met (Appendix V). Using a tiered approach provides strong incentives for collaboration between hospitals to share best practices and continue to improve to ensure the statewide target is achieved. While MHAC scaling is based on rewards and penalties for hospitals at the tail end of the scores and holds hospitals with scores in the middle harmless, revenue reduction programs (Potentially Avoidable Utilization, and Readmission Shared Savings) are based on a continuous scale where all hospitals receive reductions in proportion to their performance.

D. Recommendations

Based on the work completed to date on updating the MHAC program for FY 2017, staff makes the following recommendations:

1. The statewide reduction target should be set at 7 % comparing FY2014 to CY2015 risk adjusted PPC rates.
2. The program should continue to use a tiered approach where a lower level of revenue at risk is set if the statewide target is met versus not met as modelled in FY2016 policy.
3. Rewards should be distributed only if the statewide target is met, and should not be limited to the penalties collected.

Appendix I. CMS HAC Measures for FY 2016

CMS HAC MEASURES Implemented Since FY 2012

HAC 01: Foreign Object Retained After Surgery
HAC 02: Air Embolism
HAC 03: Blood Incompatibility
HAC 04: Stage III & Stage IV Pressure Ulcers
HAC 05: Falls and Trauma
HAC 06: Catheter-Associated Urinary Tract Infection
HAC 07: Vascular Catheter-Associated Infection
HAC 08: Surgical Site Infection - Mediastinitis After Coronary Artery Bypass Graft (CABG)
HAC 09: Manifestations of Poor Glycemic Control
HAC 10: Deep Vein Thrombosis/Pulmonary Embolism with Total Knee Replacement or Hip Replacement
HAC 11: Surgical Site Infection – Bariatric Surgery
HAC 12: Surgical Site Infection – Certain Orthopedic Procedure of Spine, Shoulder, and Elbow
HAC 13: Surgical Site Infection Following Cardiac Device Procedures
HAC 14: Iatrogenic Pneumothorax w/Venous Catheterization

CMS HAC Measures Implemented FY 2015

- Domain 1- the Agency for Health Care Research and Quality (AHRQ) composite PSI #90 which includes the following indicators:
 - Pressure ulcer rate (PSI 3);
 - Iatrogenic pneumothorax rate (PSI 6);
 - Central venous catheter-related blood stream infection rate (PSI 7);
 - Postoperative hip fracture rate (PSI 8);
 - Postoperative pulmonary embolism (PE) or deep vein thrombosis rate (DVT) (PSI 12);
 - Postoperative sepsis rate (PSI 13);
 - Wound dehiscence rate (PSI 14); and
 - Accidental puncture and laceration rate (PSI 15).
- Domain 2- two healthcare-associated infection measures developed by the Centers for Disease Control and Prevention's (CDC) National Health Safety Network:
 - Central Line-Associated Blood Stream Infection and
 - Catheter-Associated Urinary Tract Infection.

Appendix II: PPC Measurement Definitions, Points Calculation, PPC Tiers and Weighting

Definitions

The PPC measure would then be defined as:

Observed (O)/Expected (E) value for each measure

The threshold value is the minimum performance level at which a hospital will be assigned points and is defined as:

Weighted mean of all O/E ratios (O/E =1)

(Mean performance is measured at the case level. In addition, higher volume hospitals have more influence on PPCs' means.)

The benchmark value is the performance level at which a full ten points would be assigned for a PPC and is defined as:

Weighted mean of top quartile O/E ratio

For PPCs that are serious reportable events, the benchmark will be set at 0.

Performance Points

Performance points are given based on a range between "Benchmark" and a "Threshold", which are determined using the base year data. The Benchmark is a reference point defining a high level of performance, which is equal to the mean of the top quartile. Hospitals whose rates are equal to or above the benchmark receive 10 full Attainment points.

The Threshold is the minimum level of performance required to receive minimum Attainment points, which is set at the weighted mean of all the O/E ratios which equals to 1. The Improvement points are earned based on a scale between the hospital's prior year score (baseline) on a particular measure and the Benchmark and range from 0 to 9.

The formulas to calculate the Attainment and Improvement points are as follows:

- Attainment Points: $[9 * ((\text{Hospital's performance period score} - \text{threshold}) / (\text{benchmark} - \text{threshold}))] + .5$, where the hospital performance period score falls in the range from the threshold to the benchmark
- Improvement Points: $[10 * ((\text{Hospital performance period score} - \text{Hospital baseline period score}) / (\text{Benchmark} - \text{Hospital baseline period score}))] - .5$, where the hospital performance score falls in the range from the hospital's baseline period score to the benchmark.

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PPC Tiers: Tier A Scores Weighted 60%, Tier B 40% and Tier C 20%

Tier A	Tier C
Selected as high cost, high volume statewide plus those that match CMS HAC policy of AHRQ Patient Safety Indicators	Remaining PPCs
3 Acute Pulmonary Edema and Respiratory Failure without Ventilation	1 Stroke & Intracranial Hemorrhage
4 Acute Pulmonary Edema and Respiratory Failure with Ventilation	2 Extreme CNS Complications
5 Pneumonia & Other Lung Infections	12 Cardiac Arrhythmias & Conduction Disturbances
6 Aspiration Pneumonia	13 Other Cardiac Complications
7 Pulmonary Embolism	15 Peripheral Vascular Complications Except Venous Thrombosis
9 Shock	20 Other Gastrointestinal Complications without Transfusion or Significant Bleed
14 Ventricular Fibrillation/Cardiac Arrest	21 Clostridium Difficile Colitis
16 Venous Thrombosis	23 GU Complications Except UTI
24 Renal Failure without Dialysis	25 Renal Failure with Dialysis
28 In-Hospital Trauma and Fractures	26 Diabetic Ketoacidosis & Coma
31 Decubitus Ulcer	29 Poisonings Except from Anesthesia
35 Septicemia & Severe Infections	30 Poisonings due to Anesthesia
37 Post-Operative Infection & Deep Wound Disruption Without Procedure	32 Transfusion Incompatibility Reaction
38 Post-Operative Wound Infection & Deep Wound Disruption with Procedure	33 Cellulitis
40 Post-Operative Hemorrhage & Hematoma without Hemorrhage Control Procedure or I&D Proc	34 Moderate Infectious
42 Accidental Puncture/Laceration During Invasive Procedure	36 Acute Mental Health Changes
49 Iatrogenic Pneumothrax	39 Reopening Surgical Site
54 Infections due to Central Venous Catheters	43 Accidental Cut or Hemorrhage During Other Medical Care
65 Urinary Tract Infection without Catheter	44 Other Surgical Complication - Mod
66 Catheter-Related Urinary Tract Infection	45 Post-procedure Foreign Bodies
	46 Post-Operative Substance Reaction & Non-O.R. Procedure for Foreign Body
	47 Encephalopathy
	50 Mechanical Complication of Device, Implant & Graft
	51 Gastrointestinal Ostomy Complications
	52 Inflammation & Other Complications of Devices, Implants or Grafts Except Va Infection
	53 Infection, Inflammation & Clotting Complications of Peripheral Vascular Cathe Infusions
	55 Obstetrical Hemorrhage without Transfusion
	56 Obstetrical Hemorrhage with Transfusion
	57 Obstetric Lacerations & Other Trauma Without Instrumentation
	58 Obstetric Lacerations & Other Trauma With Instrumentation
	59 Medical & Anesthesia Obstetric Complications
	60 Major Puerperal Infection and Other Major Obstetric Complications
	61 Other Complications of Obstetrical Surgical & Perineal Wounds
	62 Delivery with Placental Complications
	63 Post-Operative Respiratory Failure with Tracheostomy
	64 Other In-Hospital Adverse Events
Tier B	
Selected as remaining PPCs with high Medicare percentage (>60%) and high number of Maryland hospitals (>43)	
8 Other Pulmonary Complications	
10 Congestive Heart Failure	
11 Acute Myocardial Infarction	
17 Major Gastrointestinal Complications without Transfusion or Significant Bleeding	
18 Major Gastrointestinal Complications with Transfusion or Significant Bleeding	
19 Major Liver Complications	
27 Post-Hemorrhagic & Other Acute Anemia with Transfusion	
41 Post-Operative Hemorrhage & Hematoma with Hemorrhage Control Procedure or I&D Proc	
48 Other Complications of Medical Care	

APPENDIX III. Hospital PPC Rate per 1,000 Correlation Results

PPC Number	PPC Description	Correlation Coefficient FY12-FY13	Correlation Coefficient FY13-FY14	Correlation Coefficient FY12-FY14
1	Stroke & Intracranial Hemorrhage	0.435	0.598	0.558
2	Extreme CNS Complications	0.043	0.345	0.154
3	Acute Pulmonary Edema and Respiratory Failure without Ventilation	0.770	0.695	0.656
4	Acute Pulmonary Edema and Respiratory Failure with Ventilation	0.806	0.866	0.760
5	Pneumonia & Other Lung Infections	0.524	0.453	0.317
6	Aspiration Pneumonia	0.592	0.397	0.362
7	Pulmonary Embolism	0.661	0.593	0.669
8	Other Pulmonary Complications	0.930	0.930	0.900
9	Shock	0.789	0.570	0.579
10	Congestive Heart Failure	0.908	0.870	0.754
11	Acute Myocardial Infarction	0.565	0.237	0.328
12	Cardiac Arrhythmias & Conduction Disturbances	0.933	0.830	0.848
13	Other Cardiac Complications	0.683	0.413	0.339
14	Ventricular Fibrillation/Cardiac Arrest	0.663	0.605	0.630
15	Peripheral Vascular Complications Except Venous Thrombosis	0.347	0.522	0.479
16	Venous Thrombosis	0.797	0.737	0.675
17	Major Gastrointestinal Complications without Transfusion or Significant Bleeding	0.583	0.609	0.524
18	Major Gastrointestinal Complications with Transfusion or Significant Bleeding	0.508	0.032	0.378
19	Major Liver Complications	0.437	0.276	0.149
20	Other Gastrointestinal Complications without Transfusion or Significant Bleeding	0.106	0.118	0.323
21	Clostridium Difficile Colitis	0.652	0.641	0.661
23	GU Complications Except UTI	0.372	0.231	0.431
24	Renal Failure without Dialysis	0.723	0.680	0.582
25	Renal Failure with Dialysis	0.132	0.193	0.426
26	Diabetic Ketoacidosis & Coma	0.568	0.810	0.825
27	Post-Hemorrhagic & Other Acute Anemia with Transfusion	0.685	0.583	0.518
28	In-Hospital Trauma and Fractures	0.242	0.167	0.142
29	Poisonings Except from Anesthesia	-0.074	0.029	-0.079
31	Decubitus Ulcer	0.715	-0.021	-0.068
32	Transfusion Incompatibility Reaction	1.000	-0.023	-0.023
33	Cellulitis	0.664	0.756	0.711

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34	Moderate Infectious	0.691	0.658	0.634
35	Septicemia & Severe Infections	0.503	0.399	0.303
36	Acute Mental Health Changes	0.681	0.705	0.584
37	Post-Operative Infection & Deep Wound Disruption Without Procedure	0.520	0.504	0.699
38	Post-Operative Wound Infection & Deep Wound Disruption with Procedure	0.647	0.275	0.563
39	Reopening Surgical Site	0.570	0.667	0.615
40	Post-Operative Hemorrhage & Hematoma without Hemorrhage Control Procedure or I&D Proc	0.643	0.559	0.517
41	Post-Operative Hemorrhage & Hematoma with Hemorrhage Control Procedure or I&D Proc	0.396	0.346	0.131
42	Accidental Puncture/Laceration During Invasive Procedure	0.725	0.348	0.430
43	Accidental Cut or Hemorrhage During Other Medical Care	0.798	0.761	0.326
44	Other Surgical Complication - Mod	0.272	0.350	0.450
45	Post-procedure Foreign Bodies	0.226	0.126	-0.133
46	Post-Operative Substance Reaction & Non-O.R. Procedure for Foreign Body	0.275	0.359	0.689
47	Encephalopathy	0.610	0.735	0.385
48	Other Complications of Medical Care	0.400	0.443	0.240
49	Iatrogenic Pneumothrax	0.371	-0.014	0.066
50	Mechanical Complication of Device, Implant & Graft	-0.028	0.579	0.103
51	Gastrointestinal Ostomy Complications	0.566	0.856	0.492
52	Inflammation & Other Complications of Devices, Implants or Grafts Except Vascular Infection	0.571	0.273	0.434
53	Infection, Inflammation & Clotting Complications of Peripheral Vascular Catheters & Infusions	0.305	0.562	0.290
54	Infections due to Central Venous Catheters	0.679	0.272	0.368
55	Obstetrical Hemorrhage without Transfusion	0.798	0.831	0.586
56	Obstetrical Hemorrhage with Transfusion	0.820	0.653	0.790
57	Obstetric Lacerations & Other Trauma Without Instrumentation	0.770	0.753	0.496
58	Obstetric Lacerations & Other Trauma With Instrumentation	0.772	0.401	0.369
59	Medical & Anesthesia Obstetric Complications	0.378	0.368	-0.107
60	Major Puerperal Infection and Other Major Obstetric Complications	0.620	0.456	0.478
61	Other Complications of Obstetrical Surgical & Perineal Wounds	0.497	0.495	0.435
62	Delivery with Placental Complications	0.613	0.561	0.621
63	Post-Operative Respiratory Failure with Tracheostomy	0.864	0.559	0.857
64	Other In-Hospital Adverse Events	0.838	0.791	0.686

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65	Urinary Tract Infection without Catheter	0.663	0.861	0.618
66	Catheter-Related Urinary Tract Infection	0.365	0.301	0.209
Statistically Significant at $p < 0.05$				

Results for PPC30 not presented and McGready was removed from analysis.

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APPENDIX IV.

2b. CY2014 Jan-September Final Data- MHAC Scaling Modeling

HOSPITAL ID	HOSPITAL NAME	Estimated Inpatient Revenue (FY15*2.6%)	Base Year Score	Final Score Jan-Sept	% Improvement in Base Scores	% Scaling Adjustment	\$ Scaling Adjustment	\$ Revenue Neutral Scaling Adjustment	% Revenue Neutral Adjustment
210062	SOUTHERN MARYLAND	\$ 163,208,213	0.29	0.40	38%	-0.21%	\$ (337,672)	\$ (337,672)	-0.21%
210016	WASHINGTON ADVENTIST	\$ 161,698,669	0.42	0.44	4%	-0.07%	\$ (111,516)	\$ (111,516)	-0.07%
210051	DOCTORS COMMUNITY	\$ 136,225,391	0.33	0.46	39%	0.00%	\$ -	\$ -	0.00%
210023	ANNE ARUNDEL	\$ 310,117,075	0.37	0.46	24%	0.00%	\$ -	\$ -	0.00%
210022	SUBURBAN	\$ 181,410,188	0.17	0.46	170%	0.00%	\$ -	\$ -	0.00%
210033	CARROLL COUNTY	\$ 138,209,278	0.40	0.48	19%	0.00%	\$ -	\$ -	0.00%
210048	HOWARD COUNTY	\$ 167,386,497	0.22	0.48	118%	0.00%	\$ -	\$ -	0.00%
210034	HARBOR	\$ 124,002,220	0.45	0.48	7%	0.00%	\$ -	\$ -	0.00%
210044	G.B.M.C.	\$ 201,533,345	0.26	0.49	87%	0.00%	\$ -	\$ -	0.00%
210055	LAUREL REGIONAL	\$ 77,501,975	0.47	0.51	9%	0.00%	\$ -	\$ -	0.00%
210043	BALTIMORE WASHINGTON MEDICAL CENTER	\$ 223,155,126	0.29	0.52	79%	0.00%	\$ -	\$ -	0.00%
210005	FREDERICK MEMORIAL	\$ 189,480,763	0.40	0.52	30%	0.00%	\$ -	\$ -	0.00%
210004	HOLY CROSS	\$ 319,596,342	0.29	0.52	81%	0.00%	\$ -	\$ -	0.00%
210049	UPPER CHESAPEAKE HEALTH	\$ 148,917,096	0.36	0.53	48%	0.00%	\$ -	\$ -	0.00%
210057	SHADY GROVE	\$ 228,731,775	0.51	0.54	5%	0.00%	\$ -	\$ -	0.00%
210017	GARRETT COUNTY	\$ 18,724,074	0.69	0.54	-22%	0.00%	\$ -	\$ -	0.00%
210018	MONTGOMERY GENERAL	\$ 87,652,208	0.39	0.54	38%	0.00%	\$ -	\$ -	0.00%
210024	UNION MEMORIAL	\$ 242,505,500	0.26	0.54	110%	0.00%	\$ -	\$ -	0.00%
210015	FRANKLIN SQUARE	\$ 285,691,170	0.39	0.55	40%	0.00%	\$ -	\$ -	0.00%
210010	DORCHESTER	\$ 25,127,935	0.45	0.55	21%	0.00%	\$ -	\$ -	0.00%
210006	HARFORD	\$ 47,089,618	0.37	0.56	51%	0.00%	\$ -	\$ -	0.00%
210002	UNIVERSITY OF MARYLAND	\$ 863,843,449	0.30	0.56	88%	0.00%	\$ -	\$ -	0.00%
210027	SYSTEM	\$ 184,484,266	0.35	0.58	66%	0.00%	\$ -	\$ -	0.00%
210056	GOOD SAMARITAN	\$ 180,861,011	0.57	0.58	3%	0.00%	\$ -	\$ -	0.00%
210008	MERCY	\$ 233,163,594	0.34	0.59	75%	0.00%	\$ -	\$ -	0.00%
210038	UMMC MIDTOWN	\$ 133,787,811	0.44	0.60	37%	0.00%	\$ -	\$ -	0.00%
210003	PRINCE GEORGE	\$ 177,243,165	0.45	0.61	35%	0.00%	\$ -	\$ -	0.00%
210011	ST. AGNES	\$ 239,121,556	0.38	0.61	62%	0.00%	\$ -	\$ -	0.00%
210009	JOHNS HOPKINS	\$ 1,292,515,919	0.18	0.62	244%	0.05%	\$ 680,272	\$ 32,271	0.00%
210019	PENINSULA REGIONAL	\$ 233,728,496	0.26	0.63	142%	0.11%	\$ 246,030	\$ 11,671	0.00%
210032	UNION HOSPITAL OF CECIL COUNT	\$ 67,852,189	0.34	0.65	91%	0.21%	\$ 142,847	\$ 6,776	0.01%
210012	SINAI	\$ 429,154,679	0.26	0.67	158%	0.32%	\$ 1,355,225	\$ 64,290	0.01%
210001	MERITUS	\$ 187,434,497	0.26	0.67	158%	0.32%	\$ 591,898	\$ 28,079	0.01%
210037	EASTON	\$ 94,828,132	0.43	0.67	57%	0.32%	\$ 299,457	\$ 14,206	0.01%
210035	CHARLES REGIONAL	\$ 76,338,049	0.54	0.68	26%	0.37%	\$ 281,245	\$ 13,342	0.02%
210058	REHAB & ORTHO	\$ 69,104,846	0.33	0.68	107%	0.37%	\$ 254,597	\$ 12,078	0.02%
210063	UM ST. JOSEPH	\$ 216,335,128	0.29	0.69	137%	0.42%	\$ 910,885	\$ 43,211	0.02%
210029	HOPKINS BAYVIEW MED CTR	\$ 356,396,901	0.33	0.69	110%	0.42%	\$ 1,500,619	\$ 71,187	0.02%
210061	ATLANTIC GENERAL	\$ 38,640,762	0.56	0.69	24%	0.42%	\$ 162,698	\$ 7,718	0.02%
210040	NORTHWEST	\$ 142,186,717	0.24	0.73	206%	0.63%	\$ 898,021	\$ 42,601	0.03%
210028	ST. MARY	\$ 69,520,305	0.56	0.74	33%	0.68%	\$ 475,665	\$ 22,565	0.03%
210013	BON SECOURS	\$ 78,212,787	0.58	0.75	29%	0.74%	\$ 576,305	\$ 27,339	0.03%
210030	CHESTERTOWN	\$ 29,416,674	0.80	0.76	-6%	0.79%	\$ 232,237	\$ 11,017	0.04%
210060	FT. WASHINGTON	\$ 17,776,133	0.45	0.77	72%	0.84%	\$ 149,694	\$ 7,101	0.04%
210039	CALVERT	\$ 67,385,287	0.48	0.80	66%	1.00%	\$ 673,853	\$ 31,966	0.05%
210045	MCCREADY	\$ 3,734,618	0.78	1.00	28%	1.00%	\$ 37,346	\$ 1,772	0.05%
						Total Reduct	\$ (449,188)	\$ (449,188)	
						Total Award	\$ 9,468,894	\$ 449,188	
							0.047438328		

Appendix V. MHAC Score Tiered Scaling of Final MHAC Scores

Final MHAC Score	Below State Quality Target	Exceed State Quality Target
Scores less than or equal to 0.17	-4.00%	-1.00%
0.18	-3.88%	-0.97%
0.19	-3.76%	-0.93%
0.20	-3.65%	-0.90%
0.21	-3.53%	-0.86%
0.22	-3.41%	-0.83%
0.23	-3.29%	-0.79%
0.24	-3.18%	-0.76%
0.25	-3.06%	-0.72%
0.26	-2.94%	-0.69%
0.27	-2.82%	-0.66%
0.28	-2.71%	-0.62%
0.29	-2.59%	-0.59%
0.30	-2.47%	-0.55%
0.31	-2.35%	-0.52%
0.32	-2.24%	-0.48%
0.33	-2.12%	-0.45%
0.34	-2.00%	-0.41%
0.35	-1.88%	-0.38%
0.36	-1.76%	-0.34%
0.37	-1.65%	-0.31%
0.38	-1.53%	-0.28%
0.39	-1.41%	-0.24%
0.40	-1.29%	-0.21%
0.41	-1.18%	-0.17%
0.42	-1.06%	-0.14%
0.43	-0.94%	-0.10%
0.44	-0.82%	-0.07%
0.45	-0.71%	-0.03%
0.46	-0.59%	0.00%
0.47	-0.47%	0.00%
0.48	-0.35%	0.00%
0.49	-0.24%	0.00%
0.50	-0.12%	0.00%
0.51	0.00%	0.00%
0.52	0.00%	0.00%
0.53	0.00%	0.00%
0.54	0.00%	0.00%

Final Staff Recommendation for Modifying the Maryland Hospital Acquired Conditions Program

0.55	0.00%	0.00%
0.56	0.00%	0.00%
0.57	0.00%	0.00%
0.58	0.00%	0.00%
0.59	0.00%	0.00%
0.60	0.00%	0.00%
0.61	0.00%	0.00%
0.62	0.00%	0.05%
0.63	0.00%	0.11%
0.64	0.00%	0.16%
0.65	0.00%	0.21%
0.66	0.00%	0.26%
0.67	0.00%	0.32%
0.68	0.00%	0.37%
0.69	0.00%	0.42%
0.70	0.00%	0.47%
0.71	0.00%	0.53%
0.72	0.00%	0.58%
0.73	0.00%	0.63%
0.74	0.00%	0.68%
0.75	0.00%	0.74%
0.76	0.00%	0.79%
0.77	0.00%	0.84%
0.78	0.00%	0.89%
0.79	0.00%	0.95%
Scores greater than or equal to		
0.80	0.00%	1.00%

Penalty threshold:	0.51	0.46
Reward Threshold	No rewards	0.61

*Minimum and maximum scaling scores based on CY 2013 Final Data Attainment Scores. Not changed for RY17 MHAC Program.