NOTICE OF WRITTEN COMMENT PERIOD

Notice is hereby given that the public and interested parties are invited to submit written comments to the Commission on the staff draft recommendation that will be presented at the February 12, 2020 Public Meeting:

1) Draft Recommendation on the Readmissions Reduction Incentive Program (RRIP) for RY 2022

WRITTEN COMMMENTS ON THE AFOREMENTIONED STAFF DRAFT RECOMMENDATION ARE DUE IN THE COMMISSION'S OFFICES ON OR BEFORE FEBRUARY 19, 2020, UNLESS OTHERWISE SPECIFIED IN THE RECOMMENDATION.

Notice is hereby given that the public and interested parties are invited to submit written comments to the Commission on the Staff Report on the Medicare Advantage Hospital Quality Improvement Partnership that will be presented at the February 12, 2020 Public Meeting.

WRITTEN COMMENTS ON THE AFOREMENTIONED STAFF REPORT ARE DUE IN THE COMMISSION'S OFFICES ON OR BEFORE FEBRUARY 20, 2020, UNLESS OTHERWISE SPECIFIED IN THE REPORT.

Health Services Cost Review Commission
4160 Patterson Avenue, Baltimore, Maryland 21215
Phone: 410-764-2605 · Fax: 410-358-6217
Toll Free: 1-888-287-3229
hscrc.maryland.gov

568th MEETING OF THE HEALTH SERVICES COST REVIEW COMMISSION
February 12, 2020

EXECUTIVE SESSION
11:30 a.m.

(The Commission will begin in public session at 11:00 am for the purpose of, upon motion and approval, adjourning into closed session. The open session will resume at 1:00 p.m.)

1. Discussion on Planning for Model Progression – Authority General Provisions Article, §3-103 and §3-104

2. Update on Administration of Model - Authority General Provisions Article, §3-103 and §3-104

PUBLIC SESSION
1:00 p.m.

1. **Review of the Minutes from the Public and Closed Meetings held on December 11, 2019**

2. **Recommendation on Alternative Methods of Rate Determination Applications**

3. **Docket Status – Cases Closed**
   2490R – Suburban
   2492A - MedStar Health
   2493A - Johns Hopkins Health System
   2499A – Maryland Physicians Care
   2506A - University of Maryland Medical Center
   2506A - University of Maryland Medical Center
   2508A - Johns Hopkins Health System
   2509A - Johns Hopkins Health System
   2510A - Johns Hopkins Health System
   2511A - Johns Hopkins Health System

4. **Docket Status – Cases Open**
   2497N – UM Shore Emergency Center Queenstown
   2503R – Johns Hopkins Bayview Medical Center
   2512A - Johns Hopkins Health System
   2513A - Johns Hopkins Health System
   2514A - Johns Hopkins Health System
   2515A - Johns Hopkins Health System
   2516R – J. Kent McNew Family Medical Center

5. **Recommendation on One-Time Adjustment to Capital Region Hospitals**

6. **Final Innovation Policy**

7. **Final Recommendation on Maryland Hospital Acquired Conditions (MHAC) Policy for RY 2022**

8. **Draft Recommendation on the Readmissions Reduction Incentive Program (RRIP) Policy for RY 2022**

9. **Staff Report on Medicare Advantage Hospital Quality Improvement Partnership**

10. **Update on Potentially Avoidable Utilization (PAU) Measurements**

11. **Policy Update and Discussion**

    a **Executive Director's Report**
    b **Model Monitoring**
    c **Legislative Update**

12. **Hearing and Meeting Schedule**

STAFF RECOMMENDATION ON THE PROCESSING OF ALTERNATIVE METHODS OF RATE DETERMINATION (ARM) APPLICATIONS

February 12, 2020

Background:

The HSCRC is authorized by law to promote and approve alternative methods of rate determination and payment that are of an experimental nature in order to promote the most efficient and effective use of health care facility services, if it is the public interest and consistent with the law (Health-General Article § 19-219(c) and the Cost of Care Model. The Commission is further authorized to accept, evaluate, and act on applications in accordance with its regulations under COMAR 10.37.10.06.

Alternative rate setting constitutes the Commission's efforts to encourage innovative and cost-saving payment arrangements without compromising the Commission's long-standing principles of equity and access. To preserve equity a hospital must be paid Commission approved rates and may not directly take financial risks. However, it may take risks through a related entity.

Any hospital or related entity that seeks to contract for payment at other than Commission approved rates must receive prior Commission approval, especially if the arrangement involves financial risks. Capitation contracts, global or case-rate pricing or other forms of fixed price contracting are examples of financial risks for which prior approval must be obtained.

Currently, hospitals are participating in two types of ARM Arrangements:

1) Global Price or Case-Rate Pricing - Bundling of a hospital's unit rates associated with the course of treatment for a particular patient visit or inpatient stay, often defined at the level of a DRG or ICD group. Global Price or Case-Rate Pricing arrangements encompass not only hospital rates associated with the case, but also the professional services provided during the course of treatment. The hospital must provide evidence that both the hospital and professional components of the price are reasonably related to historical costs.

2) Capitation – Involving significant risk for a broad range of services including regulated hospital services. There are two types of capitation arrangements:

- Negotiated payment capitation arrangements. There is currently only one such arrangement with TRICARE as the payer.

- Non-negotiated capitation arrangements. There are currently eight such arrangements: 2 Medicare Advantage Plans, 4 Medicaid MCOs, a PACE Program for the frail elderly, and a Creative Alternatives Program for mental health issues. The payments for these capitated arrangements are set by a governmental payer without negotiation.

Reporting: Quarterly revenue and expenses experience and annual financial statements from hospital related entities.

Recommendation:

1) Discontinue reporting and staff recommendations and approval by the Commission for non-negotiated capitation arrangements.

2) Grant staff authority to approve global price and negotiated capitation arrangements, continue current reporting, and report to the Commission monthly (in the public meeting packet) on activity. Hospitals that contest staff's decision may come before the Commission to appeal the staff decision.

3) Allow approval of global price and negotiated capitation arrangements for up to three years.

4) Initiate an Annual Special Audit Procedure to ensure that hospitals are being paid Commission approved rates by related entities for hospital services provided to ARM patients.

Cases Closed

The closed cases from last month are listed in the agenda

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

AS OF JANUARY 27, 2020

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

Docket Number	Hospital Name	Date Docketed	Decision Required by:	Rate Order Must be Issued by:	Purpose	Analyst's Initials	File Status
2497N	UM Shore Emergency Center Queenstown	9/11/2019	2/10/2020	2/10/2020	OBSERVATION	WH	OPEN
2503R	Johns Hopkins Bayview Medical Center	10/15/2019	3/13/2020	3/13/2020	FULL RATE	GS	OPEN
2512A	Johns Hopkins Health System	12/13/2019	N/A	N/A	ARM	DNP	OPEN
2513A	Johns Hopkins Health System	12/17/2019	N/A	N/A	ARM	DNP	OPEN
2514A	Johns Hopkins Health System	12/20/2019	N/A	N/A	ARM	DNP	OPEN
2515A	Johns Hopkins Health System	1/15/2020	N/A	N/A	ARM	DNP	OPEN
2516R	J. Kent McNew Family Medical Center	1/6/2020	3/9/2020	6/4/2020	FULL RATE	GS	OPEN

PROCEEDINGS REQUIRING COMMISSION ACTION - NOT ON OPEN DOCKET

NONE

IN RE: THE PARTIAL RATE	*****	**BEFORE THE HEALTH SERVICES**
APPLICATION OF THE	*****	**COST REVIEW COMMISSION**
UNIVERSITY OF MARYLAND	*****	**DOCKET: 2019**
SHORE EMERGENCY CENTER	*****	**FOLIO: 2307**
QUEENSTOWN	*****	
QUEENSTOWN, MARYLAND	*****	**PROCEEDING: 2497N**

Staff Recommendation

February 12, 2020

I. **Introduction**

On April 30, 2019, The University of Maryland Shore Emergency Center at Queenstown ("SMCQ", or "Hospital"), a member of the University of Maryland Medical System, submitted a partial rate application to the Commission pursuant to COMAR 10.37.10.03-1. The Hospital requests to establish a unit rate for Observation (OBV) effective March 1, 2020.

II. **Staff Evaluation**

Currently at SMCQ, patients that require OBV services must be transferred to Shore Medical Center at Easton ("SMCE"). Establishing OBV services at SMCQ will allow the patient to be observed without the inconvenience of being transferred.

The creation of the new observation rate will be revenue neutral to the system. The Hospital is requesting a shift of Global Budget Revenue ("GBR") from SMCE to SMCQ based on the projected volume at SMCQ. To determine if the Hospital's OBV rate should be set at the statewide median or at the rate based on its own cost experience, the staff evaluated the supporting documentation of cost and statistical data for OBV services for FY19. Based on information received, it was determined that the OBV rate based on the Hospital's actual data would be $73.40 per hour, while the statewide median is $73.35 per hour. The Hospital is requesting a rate of $72.93 per hour.

III. **Recommendation**

After reviewing the Hospital's application, the staff recommends as follows:

1. That an OBV rate of $72.93 per hour be approved effective March 1, 2020;
2. That the OBV rate center not be rate realigned until a full year of cost data has been reported to the Commission; and
3. That the OBV services will be subject to the provisions of the Global Budget Revenue polices.

IN RE: THE APPLICATION FOR	*****	**BEFORE THE MARYLAND HEALTH**	
ALTERNATIVE METHOD OF RATE	*****	**SERVICES COST REVIEW**	
DETERMINATION	*****	**COMMISSION**	
JOHNS HOPKINS HEALTH	*****	**DOCKET:**	**2019**
SYSTEM	*****	**FOLIO:**	**2322**
BALTIMORE, MARYLAND	*****	**PROCEEDING:**	**2512A**

Staff Recommendation

February 11, 2019

I. INTRODUCTION

On December 13, 2019, the Johns Hopkins Health System ("System") filed a renewal application on behalf of its member hospitals Johns Hopkins Hospital and Johns Hopkins Bayview Medical Center (the "Hospitals") requesting approval from the HSCRC to continue to participate in a global rate arrangement for cardiovascular surgery with Quality Health Management. The Hospitals request that the Commission approve the arrangement for one year effective February 1, 2020.

II. OVERVIEW OF APPLICATION

The contract will continue to be held and administered by Johns Hopkins HealthCare, LLC ("JHHC"), which is a subsidiary of the System. JHHC will continue to manage all financial transactions related to the global price contract including payments to the System hospitals and bear all risk relating to regulated services associated with the contract.

III. FEE DEVELOPMENT

The hospital portion of the global rates was developed by calculating mean historical charges for patients receiving the procedures for which global rates are to be paid. The remainder of the global rate is comprised of physician service costs. Additional per diem payments were calculated for cases that exceed a specific length of stay outlier threshold.

IV. IDENTIFICATION AND ASSESSMENT OF RISK

The Hospitals will continue to submit bills to JHHC for all contracted and covered services. JHHC is responsible for billing the payer, collecting payment, disbursing payments to the Hospitals at their full HSCRC approved rates, and reimbursing the physicians. The System contends that the arrangement among JHHC, the Hospitals, and the physicians holds the Hospitals harmless from any shortfalls in payment from the global price contract. JHHC maintains it has been active in similar types of fixed fee contracts for several years, and that JHHC is adequately capitalized to bear the risk of potential losses.

V. STAFF EVALUATION

Staff found that the experience under this arrangement for the prior year has been

favorable.

VI. STAFF RECOMMENDATION

The staff recommends that the Commission approve the Hospitals' application for an alternative method of rate determination for cardiovascular surgery for one year beginning February 1, 2020. The Hospitals must file a renew application annually for continued participation.

Consistent with its policy paper regarding applications for alternative methods of rate determination, the staff recommends that this approval be contingent upon the execution of the standard Memorandum of Understanding ("MOU") with the Hospitals for the approved contract. This document will formalize the understanding between the Commission and the Hospitals, and will include provisions for such things as payments of HSCRC-approved rates, treatment of losses that may be attributed to the contract, quarterly and annual reporting, and confidentiality of data submitted, penalties for noncompliance, project termination and/or alteration, on-going monitoring, and other issues specific to the proposed contract. The MOU will also stipulate that operating losses under the contract cannot be used to justify future requests for rate increases.

IN RE: THE APPLICATION FOR	*	**BEFORE THE MARYLAND HEALTH**	
ALTERNATIVE METHOD OF RATE	*	**SERVICES COST REVIEW**	
DETERMINATION	*	**COMMISSION**	
JOHNS HOPKINS HEALTH	*	**DOCKET:**	**2019**
SYSTEM	*	**FOLIO:**	**2323**
BALTIMORE, MARYLAND	*	**PROCEEDING:**	**2513A**

Staff Recommendation

February 12, 2020

I. INTRODUCTION

Johns Hopkins Health System (System) filed an application with the HSCRC on December 17, 2019 on behalf of Johns Hopkins Hospital and Johns Hopkins Bayview Medical Center (the Hospitals) for an alternative method of rate determination, pursuant to COMAR 10.37.10.06. The System requests approval from the HSCRC to continue to participate in an amended global rate arrangement for solid organ transplant, bone marrow transplant, and cardiovascular services with Global Excel Management for a period of one year beginning February 1, 2020.

II. OVERVIEW OF APPLICATION

The contract will continue to be held and administered by Johns Hopkins HealthCare, LLC ("JHHC"), which is a subsidiary of the System. JHHC will manage all financial transactions related to the global price contract including payments to the Hospitals and bear all risk relating to regulated services associated with the contract.

III. FEE DEVELOPMENT

The hospital portion of the global rates was developed by calculating mean historical charges for patients receiving kidney, bone marrow transplants, and cardiovascular services at the Hospitals. The remainder of the global rate is comprised of physician service costs. Additional per diem payments were calculated for cases that exceed a specific length of stay outlier threshold.

IV. IDENTIFICATION AND ASSESSMENT OF RISK

The Hospitals will continue to submit bills to JHHC for all contracted and covered services. JHHC is responsible for billing the payer, collecting payments, disbursing payments to the Hospitals at their full HSCRC approved rates, and reimbursing the physicians. The System contends that the arrangement among JHHC, the Hospitals, and the physicians holds the Hospitals harmless from any shortfalls in payment from the global price contract. JHHC maintains it has been active in similar types of fixed fee contracts for several years, and that JHHC is adequately capitalized to bear the risk of potential losses.

V. STAFF EVALUATION

Staff found that the experience under this arrangement was favorable last year. Staff believes that the Hospitals can continue to achieve a favorable experience under this arrangement.

VI. STAFF RECOMMENDATION

The staff recommends that the Commission approve the Hospitals' application for an alternative method of rate determination for solid organ, bone marrow transplant, and cardiovascular services for a one year period commencing February 1, 2020. The Hospitals will need to file a renewal application for review to be considered for continued participation. Consistent with its policy paper regarding applications for alternative methods of rate determination, the staff recommends that this approval be contingent upon the execution of the standard Memorandum of Understanding ("MOU") with the Hospitals for the approved contract. This document would formalize the understanding between the Commission and the Hospitals, and would include provisions for such things as payments of HSCRC-approved rates, treatment of losses that may be attributed to the contract, quarterly and annual reporting, confidentiality of data submitted, penalties for noncompliance, project termination and/or alteration, on-going monitoring, and other issues specific to the proposed contract. The MOU will also stipulate that operating losses under the contract cannot be used to justify future requests for rate increases.

IN RE: THE APPLICATION FOR	*	**BEFORE THE MARYLAND HEALTH**	
ALTERNATIVE METHOD OF RATE	*	**SERVICES COST REVIEW**	
DETERMINATION	*	**COMMISSION**	
JOHNS HOPKINS HEALTH	*	**DOCKET:**	**2019**
SYSTEM	*	**FOLIO:**	**2324**
BALTIMORE, MARYLAND	*	**PROCEEDING:**	**2514A**

Staff Recommendation

February 12, 2020

I. INTRODUCTION

Johns Hopkins Health System ("System") filed an application with the HSCRC on December 20, 2019 on behalf of its member hospitals, Johns Hopkins Hospital, Johns Hopkins Bayview Medical Center, and Howard County General Hospital (the "Hospitals") for an alternative method of rate determination, pursuant to COMAR 10.37.10.06. The System requests approval from the HSCRC to continue to participate in a revised global rate arrangement with the Priority Partners Managed Care Organization. Inc., the Johns Hopkins Employer Health Programs, Inc., and the Johns Hopkins Uniformed Services Family Health Plan for Spine and Bariatric surgery services. The System requests approval of the arrangement for a period of one year beginning February 1, 2020.

II. OVERVIEW OF APPLICATION

The contract will continue to be held and administered by Johns Hopkins HealthCare, LLC ("JHHC"), which is a subsidiary of the System. JHHC will manage all financial transactions related to the global price contract including payments to the System hospitals and bear all risk relating to regulated services associated with the contract.

III. FEE DEVELOPMENT

The hospital portion of the global rates was developed by calculating mean historical charges for patients receiving the procedures for which global rates are to be paid. The remainder of the global rate is comprised of physician service costs. Additional per diem payments were calculated for cases that exceed a specific length of stay outlier threshold.

IV. IDENTIFICATION ANDASSESSMENT OF RISK

The Hospitals will continue to submit bills to JHHC for all contracted and covered services. JHHC is responsible for billing the payer, collecting payments, disbursing payments to

the Hospitals at their full HSCRC approved rates, and reimbursing the physicians. The System contends that the arrangement among JHHC, the Hospitals, and the physicians holds the Hospitals harmless from any shortfalls in payment from the global price contract. JHHC maintains it has been active in similar types of fixed fee contracts for several years, and that JHHC is adequately capitalized to bear risk of potential losses.

V. STAFF EVALUATION

Staff found that the experience under this arrangement for the last year has been favorable.

VI. STAFF RECOMMENDATION

The staff recommends that the Commission approve the Hospitals' application for an alternative method of rate determination for Bariatric and Spine Surgery Procedures for a one year period commencing February 1, 2020. The Hospitals will need to file a renewal application for review to be considered for continued participation.

Consistent with its policy paper regarding applications for alternative methods of rate determination, the staff recommends that this approval be contingent upon the execution of the standard Memorandum of Understanding ("MOU") with the Hospitals for the approved contract. This document would formalize the understanding between the Commission and the Hospitals, and would include provisions for such things as payments of HSCRC-approved rates, treatment of losses that may be attributed to the contract, quarterly and annual reporting, confidentiality of data submitted, penalties for noncompliance, project termination and/or alteration, on-going monitoring, and other issues specific to the proposed contract. The MOU will also stipulate that operating losses under the contract cannot be used to justify future requests for rate increases.

IN RE: THE APPLICATION FOR	*****	**BEFORE THE MARYLAND HEALTH**	
ALTERNATIVE METHOD OF RATE	*****	**SERVICES COST REVIEW**	
DETERMINATION	*****	**COMMISSION**	
JOHNS HOPKINS HEALTH	*****	**DOCKET:**	**2020**
SYSTEM	*****	**FOLIO:**	**2325**
BALTIMORE, MARYLAND	*****	**PROCEEDING:**	**2515A**

Staff Recommendation

February 12, 2020

I. INTRODUCTION

Johns Hopkins Health System ("System") filed an application with the HSCRC on January 15, 2020 on behalf of its member hospitals, Johns Hopkins Hospital, Johns Hopkins Bayview Medical Center, and Howard County General Hospital ("the Hospitals") and on behalf of Johns Hopkins HealthCare, LLC (JHHC) and Johns Hopkins Employer Health Programs, Inc. for an alternative method of rate determination, pursuant to COMAR 10.37.10.06. The System and JHHC request approval from the HSCRC to continue to participate in a global rate arrangement for Executive Health Services with Under Armor, Inc. for a period of one year beginning May 1, 2020.

II. OVERVIEW OF APPLICATION

The contract will continue to be held and administered by Johns Hopkins HealthCare, LLC ("JHHC"), which is a subsidiary of the System. JHHC will manage all financial transactions related to the global price contract including payments to the System hospitals and bear all risk relating to regulated services associated with the contract.

III. FEE DEVELOPMENT

The hospital portion of the global rates was developed by calculating mean historical charges for patients receiving the procedures for which global rates are to be paid. The remainder of the global rate is comprised of physician service costs.

IV. IDENTIFICATION ANDASSESSMENT OF RISK

The Hospitals will continue to submit bills to JHHC for all contracted and covered services. JHHC is responsible for billing the payer, collecting payments, disbursing payments to the Hospitals at their full HSCRC approved rates, and reimbursing the physicians. The System contends that the arrangement among JHHC, the Hospitals, and the physicians holds the

Hospitals harmless from any shortfalls in payment from the global price contract. JHHC maintains it has been active in similar types of fixed fee contracts for several years, and that JHHC is adequately capitalized to bear risk of potential losses.

V. STAFF EVALUATION

Although there was no activity in the last year. Staff believes that the Hospitals can continue to achieve a favorable experience under this arrangement.

VI. STAFF RECOMMENDATION

The staff recommends that the Commission approve the Hospitals' application for an alternative method of rate determination for Executive Health Services for a one year period commencing May 1, 2020. The Hospitals will need to file a renewal application for review to be considered for continued participation.

Consistent with its policy paper regarding applications for alternative methods of rate determination, the staff recommends that this approval be contingent upon the execution of the standard Memorandum of Understanding ("MOU") with the Hospitals for the approved contract. This document would formalize the understanding between the Commission and the Hospitals, and would include provisions for such things as payments of HSCRC-approved rates, treatment of losses that may be attributed to the contract, quarterly and annual reporting, confidentiality of data submitted, penalties for noncompliance, project termination and/or alteration, on-going monitoring, and other issues specific to the proposed contract. The MOU will also stipulate that operating losses under the contract cannot be used to justify future requests for rate increases.

Recommendation for University of Maryland Capital Region Health

February 12, 2020

Health Services Cost Review Commission
4160 Patterson Avenue
Baltimore, Maryland 21215
(410) 764-2605
FAX: (410) 358-6217

BACKGROUND

Effective January 1, 2019, the University of Maryland Capital Region Health discontinued inpatient services at the University of Maryland Laurel Regional Hospital (Laurel) and relocated those services to the University of Maryland Prince George's Hospital Center (PGHC). With the relocation of inpatient services, Laurel became a Freestanding Medical Facility (FMF). The conversion of Laurel from an acute care hospital to an FMF began in the fall of 2018 with the relocation of Inpatient Chronic and Inpatient Rehabilitation services. The remaining Inpatient Medical Surgical, Intensive Care, and Psychiatric Services were relocated on January 1, 2019. The matter of the conversion of Laurel to an FMF and the relocation of inpatient services to PGHC were considered by the Commission in conjunction with the Staff Recommendation in Proceeding 2450R dated September 12, 2018. The fixed costs retained by PGHC would be used to pay for the principal and interest associated with the borrowing needed to finance the construction of a new hospital facility in Landover, Maryland.

PRIOR ACTIONS

Effective January 1, 2019, Staff transferred $58,642,874 from Laurel to PGHC to account for all of the inpatient services that were anticipated to be transferred to PGHC. In November of 2019, the Staff estimated that of the $58.6 million total transferred, $51.9 million of that total transfer actually received care at other hospitals. Applying the standard 50 percent variable cost factor for market shift associated with the movement of those volumes to other facilities results in a reduction of ($25,393,431) to the GBR of PGHC (See attached Exhibit for details). In December of 2019, the Staff further recommended, and the Commission approved, the removal of an additional ($1,666,948) related to dissipation and savings to the public. The total permanent reduction approved at that time was ($27,060,379), and the retained revenue at PGHC after these adjustments for market shift and dissipation was $31,582,495. However, that still left a $13.5 million one-time adjustment unaccounted for in the recommendation. The Commission directed Staff to return with a recommendation regarding the treatment of these one-time monies.

DISCUSSIONS

Staff and representatives from PGHC discussed various scenarios to pay back these one-time monies. All scenarios contemplated a payback period of 3 to 4 years and included requirements regarding quality improvements and cost reductions. Dr. Mohan Suntha, President and CEO of the University of Maryland Medical System (UMMS) (Parent of UM Capital Region Health), suggested making an additional permanent adjustment in order to settle this matter and allow PGHC to enact changes without the threat of unknown or unbudgeted revenues occurring over the next few years. Staff believes that a $4 million additional permanent adjustment would be adequate even if the market shift estimates are understated. Staff will continue to monitor quality improvements through our current quality policies. Currently, PGHC has approximately $6.0 million removed from the FY 20120 GBR due to low quality scores.

Additionally, the Staff will continue to monitor for cost reductions in order to ensure improved profitability. UMMS and PGHC representatives have assured the Staff that quality improvements and cost reductions are imperative in order to have PGHC succeed in the future.

RECOMMENDATION

Therefore, staff recommends that an additional ($4.0 million) permanent reduction be implemented effective for fiscal year 2020. This would result in a total permanent reduction of ($31,060,379) and allow the PGHC to retain $27,582,495 to cover the costs associated with the new hospital facility. See exhibit, below.

UM Capital Region Health	**Exhibit**			
Proposed Reduction at 7/1/2019				
			Permanent	One-Time
Permanent GBR Dollar Adjustment from Laurel to PGHC on January 1, 2019			**$ 58,642,874**	
Of the $58.6 Million that moved to PGHC, $51.9 million received care at other hospitals				
$7.4 Million dissipated and cannot be attributed to market shift to other hospitals				
		Variable Cost		
Estimated Market Shift for CY 2019 (based on Jan. to June 2019)	At 100%	At 50%		
Market Shift Adjustment to MD Hospitals at 100%/50%	$ (35,365,582)	$ (17,682,791)		
Market Shift Adjustment to DC Hospitals at 100%/50%	$ (7,380,000)	$ (3,690,000)		
Market Shift Adjustment for PAU to other Hospitals at 100%/50%	$ (9,165,280)	$ (4,582,640)		
Chronic Patient Growth at 100%/50%	$ 1,124,000	$ 562,000		
Dissipation Adjustment at 100%/50%	$ (3,333,896)	$ (1,666,948)		
Total Market Shift to be removed at 50% (July 1, 2019)	**$ (54,120,758)**		**$ (27,060,379)**	**$ (13,530,190)**
Additional Permanent Market Shift Adjustment in Lieu of One Time Adjustment	**$ (8,000,000)**		**$ (4,000,000)**	**$ -**
Total Permanent/One-time Reductions to PG	**$ (62,120,758)**		**$ (31,060,379)**	
Total GBR Dollars Retained at PG			**$ 27,582,495**	**$ -**
Estimated Laurel Dissipation at 100% for CY 2019	**$ (7,440,324)**			
Previous PAU Dissipation	$ (4,106,428)			
Dissipation that cannot be attributed to Market Shift or PAU	$ (3,333,896)			

Final Recommendation for a Complexity and Innovation Policy

February 12, 2020

Health Services Cost Review Commission
4160 Patterson Avenue
Baltimore, Maryland 21215
(410) 764-2605
FAX: (410) 358-6217

This document contains the final recommendation for the Complexity and Innovation Policy.

TABLE OF CONTENTS

EXECUTIVE SUMMARY

This document puts forth a final recommendation for evaluating and prospectively funding highly complicated and innovative care at the Academic Medical Centers in Maryland, i.e. University of Maryland Medical Center and Johns Hopkins Hospital, in lieu of the current practice of providing a flat funding rate through an annual Intensity Adjustment with no formulaic evaluation methodology to determine the actual use of that funding.

Final Recommendations for the Complexity and Innovation Policy

1. Determine the differential funding needs due to complexity and innovation at the University of Maryland Medical Center and Johns Hopkins Hospital through two measures of clinical significance:
    A. A casemix acuity approach, whereby all cases with a casemix index of less than 1.5 will be excluded from the policy with the exception of newly emergent cases that were not in the base year performance ("Zero to Dominant")
    B. A cell dominance approach, whereby in-state, inpatient cases are deemed highly specialized (referred to as "categorical exclusions") if the two academic medical centers comprise 95% or more of an ICD-10 procedure code.
        - Dominance will be assessed in four capacities:
            a) Dominant, i.e. greater than or equal to 95%, in the Base Period to Dominant in the Performance Period
            b) Zero in the Base Period to Dominant in the Performance Period
            c) Dominant in the Base Period to Non-Dominant in the Performance Period
            d) Dominant in the Base Period to Zero in the Performance Period
2. Prospectively fund a working capital advance in concert with the annual Update Factor that reflects historical annual growth rates for categorical exclusions cases and cumulative funding status.
    A. Funding associated with the working capital advance will be part of the annual guardrail tests.
    B. Non-Academic Medical Centers will be eligible for Complexity and Innovation funding but only retrospectively.
3. Remove categorical exclusions from various methodologies:
    A. Market Shift
    B. Transfers
    C. Demographic Adjustment
    D. Inter-Hospital Cost Comparison
    E. Potentially Avoidable Utilization Shared Savings Program
4. For RY 2021, remove high cost outpatient drugs from the current definition of categorical exclusions and use the same approach currently applied state-wide for high cost outpatient drug growth (the CDS-A adjustment) to regulate volume funding.

INTRODUCTION

Since 2014, the State has operated under a per capita constraint under the All-Payer Model and the Total Cost of Care (TCOC) Model Agreements with the Centers for Medicare and Medicaid (CMS). The Commission has set the Global Budget Revenue (GBR) for hospitals and the annual update factor to manage the per capita growth rate. The GBR limits a hospital's incentive to grow volume unnecessarily. However, volume growth, especially lower acuity, low variable cost care was historically used to finance the additional costs associated with highly complicated cases and healthcare innovation, creating an inherent tension between the incentives of the TCOC Model and the ability for Maryland hospitals to be leaders in highly specialized, innovative care.

Stakeholders have thus expressed concern that there should be a predictable and formulaic methodology for specially funding highly complicated cases and innovative care, one that still comports with the aims of the TCOC Model and requirements specified in the Contract that governs the TCOC Model, as well as the Commissioner's directive that funding be provided only for verifiable differentiated cost growth. This final policy recommendation will outline staff's proposed methodology for funding in-state, inpatient highly complicated cases and healthcare innovation through a prospective budgetary amount that uses historical growth patterns to determine an appropriate working capital advance that will be provided in concert with the annual Update Factor policy recommendation.

BACKGROUND

In the first three years of the All-Payer Model, the Commission addressed the concern that access to highly specialized care and healthcare innovation in Maryland could potentially be restricted under the new Model by carving out these types of cases, known as categorical exclusions, from methodologies that regulate most of the State's hospital volume. Specifically, in-state, inpatient categorical exclusions were removed from the market shift policy and categorical cost growth was funded prospectively based on a 50 percent variable cost per case except for the cost of drugs, supplies, and organ acquisition, where the funding was 100 percent of estimated costs. As this funding mechanism was not meeting the needs of Academic Medical Centers, the Commission moved away from funding categorical exclusions in RY 2017 and instead has provided prospective "Intensity Adjustments" in the annual Update Factor policy recommendation. Below are the annual adjustments provided to University of Maryland Medical Center and Johns Hopkins Hospital for high intensity cases and health care innovation:

Table 1: Intensity Adjustments Provided to Academic Medical Centers

	RY 2017	RY 2018	RY 2019	RY 2020
% Funding provided in rates (applied to Total Revenue)	.5%	.5%	1%	1%
$ Funding provided in rates	$15,852,689	$19,332,282	$40,268,368	$40,995,888

In both the RY 2019 and RY 2020 annual Update Factor policy recommendation, Commissioners expressed concern that continuing to provide funding for assumed growth with no verification is detrimental to a global fixed revenue system. Academic Medical Centers also expressed concern that in the absence of a formulaic methodology that allows for growth in line with advances in medicine, providers of highly specialized, innovative care will erode hospital margins and could be faced with restricting access to tertiary and quaternary care. This is especially true under the larger global budget revenue framework, as Academic Medical Centers were historically able to support the additional costs of highly specialized care by growing lower acuity, low variable cost care in a fee-for-service system, which is undesirable from an affordability standpoint and has been phased out in the Total Cost of Care Model.

Various stakeholders have posited that profitability or additional discretionary funding that was historically supported through volume growth has been substituted with the incentive to reduce Potentially Avoidable Utilization (PAU), and therefore Academic Medical Centers have an opportunity to fund highly specialized care through reduced PAU and do not require a separate volume methodology. However, as you can see from the table below, this opportunity is not uniform across all hospitals.

Table 2: Potentially Avoidable Utilization Opportunity across 17 Maryland Hospitals with Graduate Medical Education

Hospital	PAU Revenue as a % of Eligible Revenue	Statewide Rank
Rehab & Ortho Institute	0.24%	1
University Medical Center	11.79%	3
Mercy Medical Center	13.16%	5
Holy Cross Hospital	14.61%	7
Johns Hopkins Hospital	14.87%	8
Suburban Hospital	14.99%	9
Sinai Hospital	16.57%	11
Greater Baltimore Medical Center	17.02%	12
Prince Georges Hospital	19.37%	20
Union Memorial Hospital	20.20%	22
Johns Hopkins Bayview Medical Center	21.28%	25
Baltimore Washington Medical Center	22.89%	30
Harbor Hospital Center	24.22%	33
Franklin Square Hospital Center	24.44%	34
St. Agnes Hospital	25.56%	38
UMMC Midtown	27.48%	42
Good Samaritan Hospital	30.41%	46
Statewide	18.44%	

In light of all these concerns, staff has developed a methodology that determines highly specialized care through a casemix acuity and cell dominance approach but still maintains the annual prospective funding mechanism, i.e. a working capital advance. In effect, the proposal creates a monitoring methodology to ensure volume growth associated with highly specialized care actually occurs, which in turn can be used to prospectively realign the working capital advance provided to the State's two Academic Medical Centers. Maintaining this funding mechanism ensures that Academic Medical

Centers have an allotment of funding for highly specialized care in line with historical annual growth while at the same time keeping fidelity to Total Cost of Care contract parameter that 95% of all Regulated Revenue for Maryland residents is paid according to a Population-Based Payment methodology.[1]

Establishing a Definition of Academic Medical Centers & Evaluating Non-Academic Medical Center Growth

The intent of this policy is to address the need for a methodology to substantiate the funding provided to the State's two Academic Medical Centers through the annual Intensity Adjustments. However, staff believed it was important to first establish a definition of Academic Medical Centers in Maryland in order to isolate the Complexity and Innovation policy to select hospitals.

National definitions of academic medical centers are descriptive but not prescriptive. For example, the Association of Academic Health Centers cites that "Academic Medical Centers provide tertiary and quaternary healthcare services, specializing in the most complex and difficult diagnoses and treatments while educating the next generation of health professionals. Their research provides important new knowledge leading to advances in understanding and treatment of diseases." Under this definition, one could argue that all of Maryland's seventeen hospitals with graduate medical education could qualify. However, while many of these hospitals provide specialized care, none are providing the level of research, teaching, and range of quaternary care provided by Johns Hopkins Hospital and University of Maryland Medical Center. Staff has therefore determined that to qualify for a prospective adjustment for highly specialized care under this draft policy, hospitals must have more than 500 beds, an intern/resident to bed ratio of .60 or higher, an Inpatient Casemix Index greater than 130% of the statewide average and the presence of a medical school.

[1] Population-Based Payment is defined to mean hospital payment that either (1) is directly population-based, such as prospectively tying hospitals' reimbursement to the projected utilization of services by a specific population or subpopulation of Maryland residents, or (2) establishes a fixed budget for Regulated Maryland Hospitals for services projected to be furnished.

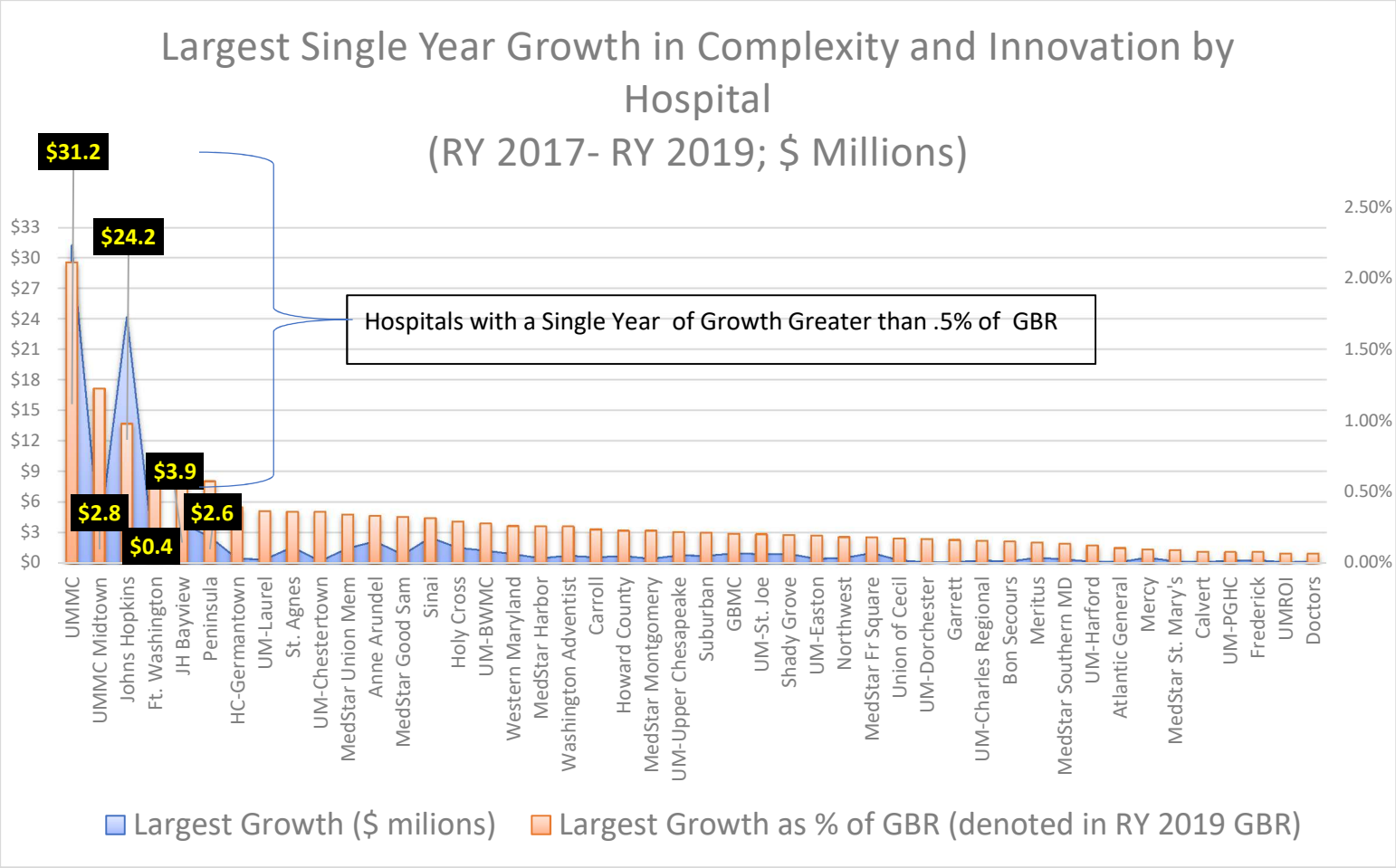
Table 3: Criteria for Prospective Intensity and Innovation Adjustment

Hospital	FTE interns and residents	Total beds	IRB ratio	Med School	2018 IP MD Casemix Index
Johns Hopkins Hospital	915	993	0.92	Yes	1.5576
University Medical Center	565	711	0.83	Yes	1.8364
Union Memorial Hospital	86	211	0.40	No	1.4228
Harbor Hospital Center	45	113	0.39	No	0.8083
Johns Hopkins Bayview Medical Center	155	442	0.35	No	1.1327
Sinai Hospital	131	470	0.28	No	1.2899
University of Maryland Medical Center—Midtown	48	187	0.26	No	0.9731
Mercy Medical Center	51	210	0.25	No	1.1980
Prince Georges Hospital	48	249	0.19	No	1.1255
Franklin Square Hospital Center	70	386	0.17	No	0.9404
Good Samaritan Hospital	31	216	0.14	No	0.9958
UMROI	10	125	0.08	No	1.6825
Suburban Hospital	8	220	0.05	No	1.2351
Holy Cross Hospital	25	469	0.04	No	1.0139

Staff acknowledges that other hospitals in the State may provide unique and costly services that do not occur elsewhere in the State, and therefore could be eligible for special consideration under this policy. In light of this acknowledgement, staff recommends that other hospitals be eligible for the Complexity and Innovation policy if the hospital exhibits cell dominance and the cases have a casemix index greater than 1.5, the latter of which is an additional validation metric to ensure classified services are more complicated that average acuity cases that would have a casemix index of 1.0.[2] However, staff does not recommend that the funding mechanism for non-academic medical centers be a working capital advance, as growth among non-academics in these types of cases has been very limited.

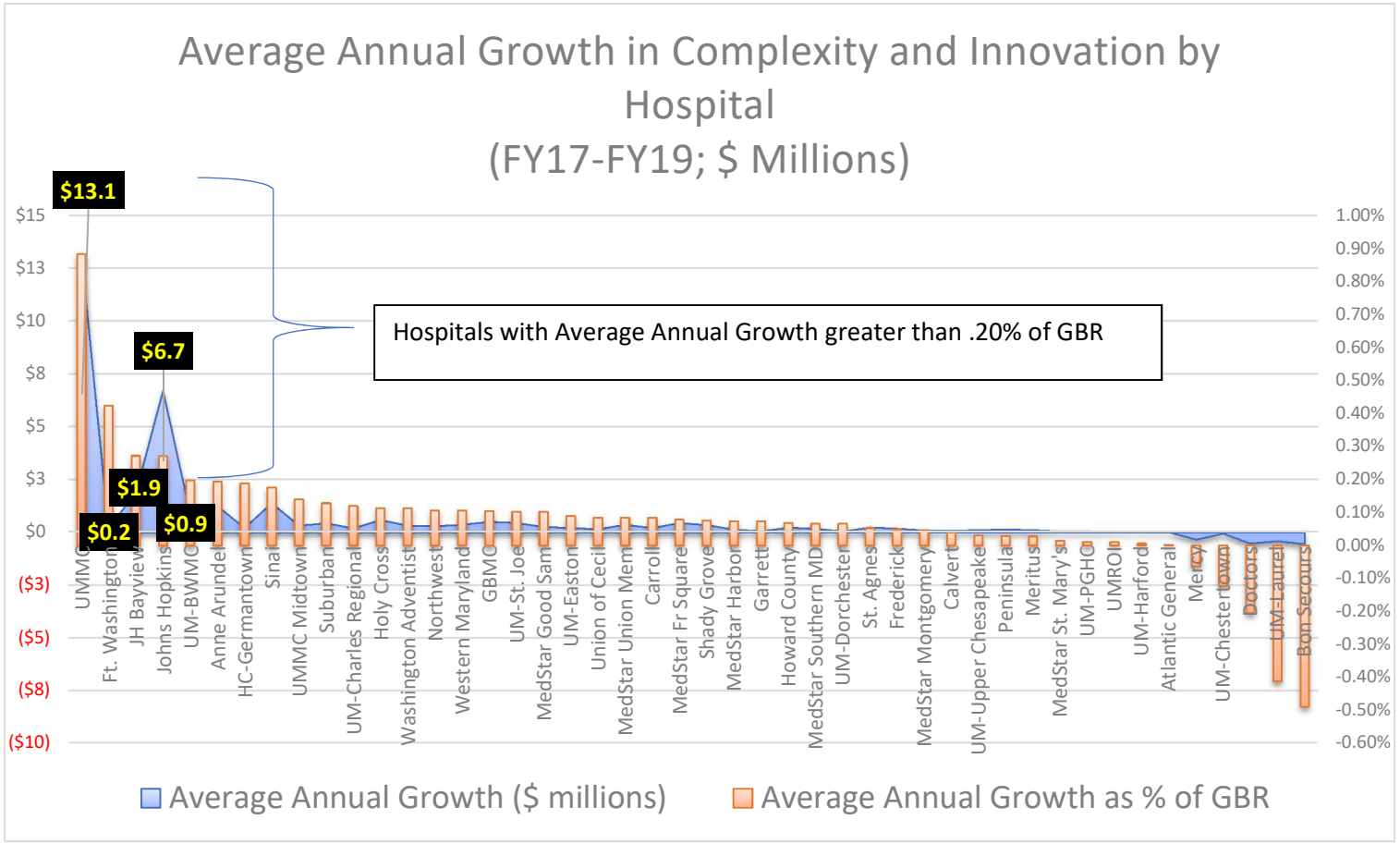
[2] The service line of inpatient rehabilitation has been removed from consideration in this policy despite having a casemix greater than 1.5, because a central aim of this policy is to address cost pressures associated with procedures that have high variable costs and rehabilitation does not.

Table 4: Non-Academic Complexity and Innovation Growth



As demonstrated in Table 4, only a handful of hospitals (including the academic medical centers) experienced growth in a single year since RY 2017 that surpassed .50% of its global budget. This amount (.50% of a hospital's GBR) is relevant because it was considered by the Commission to be a significant threshold, meriting targeted prospective funding for the academic medical centers for Complexity and Innovation in RY 2017 and RY 2018. (The amount of prospective funding for the academic medical centers was increased to 1% of their GBRs for RY 2019 and RY 2020.) Moreover, of these six hospitals, two of the hospitals are academic medical centers, for which this policy is intended, and only two other hospitals (Fort Washington and Bayview Medical Center) exhibited significant, sustained growth across the last three fiscal years (that is, average annual growth of at least .2% of their GBR), as demonstrated in Table 5 below:

Table 5: Non-Academic Complexity and Innovation Growth



Because the academic medical centers demonstrated significant growth both in terms of a single year and over the course of the last three fiscal years, staff believes it is important to create a volume methodology that prospectively estimates growth in highly complicated, innovative services. For all other hospitals, including Bayview Medical Center, which experienced significant growth exclusively because of burn cases, and Fort Washington, which experienced growth due to potential coding anomalies, staff recommends that a retrospective adjustment be provided on ad-hoc basis once staff has validated growth and deducted funding from any realized gains due to the market shift methodology as well as associated Demographic Adjustment funding - see *Stakeholder Comments* section for more details.

Determining Highly Specialized Care (Cell Dominance & Casemix Threshold)

Staff considered several approaches to determining highly specialized care, including using preexisting lists of healthcare innovation, most notably the Center for Medicare and Medicaid Services (CMS) list of procedures from the New Technology Add-On Payments (NTAP) policy. Two prevailing concerns

prevented staff from using this type of approach. First, HSCRC staff is not comprised of clinical experts who can differentiate between regular acute care and highly specialized acute care at the procedure code level. This is especially true for emerging technologies that would not have charges to develop case weights for and which would require a clinical significance evaluation similar to the NTAP policy:

> "(1) The technology offers a treatment option for a patient population unresponsive to, or ineligible for, currently available treatments.
>
> (2) The technology offers the ability to diagnose a medical condition in a patient population where that condition is currently undetectable or diagnose a medical condition earlier in a patient population than allowed by currently available methods. There must also be evidence that use of the device to make a diagnosis affects the management of the patient.
>
> (3) Use of the technology significantly improves clinical outcomes for a patient population as compared to currently available treatments."[3]

Secondly, available preexisting lists only enumerated a handful of procedures as new or innovative, and none of these lists covered the historical high specialized cases that academic medical centers perform with enhanced cost based reimbursement, e.g. organ transplant cases.[4]

As such, staff proposes to identify cases for the Complexity and Innovation policy by isolating cases where Academic Medical Centers perform 95% of all procedures statewide, based on the presence of an International Classification of Disease (ICD-10) procedure code. Evaluation will allow cost plus markup for drugs, supplies and organ acquisition (similar to select CMS payment methodologies) and 50% for all other charges, which equates approximately to a 70% variable cost factor.[5]

Staff elected to use procedure codes in lieu of diagnosis related groupings (DRGs), as the latter is more prone to subjectivity. All procedure codes will be used to determine dominance and no hierarchy will be considered, e.g. the primary procedure code or the secondary procedure code on a record may be used to determine dominance. Finally, it is important to note that staff will consider four types of dominance across the base fiscal year period and performance fiscal year period:

1. Dominant in the Base Period to Dominant in the Performance Period – all growth will be evaluated and cases will be removed from the market shift policy
2. Zero in the Base Period to Dominant in the Performance Period – this type of dominance will ensure that the Commission accounts for new emerging innovation. All growth will be evaluated and cases will be removed from the market shift policy.
3. Dominant in the Base Period to Non-Dominant in the Performance Period – this type of dominance will ensure that the evaluation of cost growth properly accounts for volume declines with a ~70% variable cost factor. All growth will be evaluated and cases will be placed into the market shift policy to ensure non-academic hospitals receive credit for market shifts.

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[3] Health Affairs: *Experience With Medicare's New Technology Add-On Payment Program* https://www.healthaffairs.org/doi/full/10.1377/hlthaff.27.6.1632

[4] "Approved transplant centers are paid a PPS rate based on a MS-DRG for the actual organ transplant and they are also reimbursed for the reasonable and necessary costs associated with acquiring the organ (that is, organ acquisition costs)." - https://www.cms.gov/Outreach-and-Education/Medicare-Learning-Network-MLN/MLNMattersArticles/downloads/MM11087.pdf

[5] 50% represents the statewide average of variable costs, which is incorporated in the market shift policy.

4. Dominant in the Base Period to Zero in the Performance Period – this type of dominance is a subset of Dominant in the Base Period to Non-Dominant in the Performance Period and is a new development since the Draft Recommendation. Staff have developed this additional criteria because under the Dominant to Non-Dominant growth analysis, staff is developing a list of procedures that cannot be eligible for Complexity and Innovation funding in future years, as cases have diffused out of the academic medical centers and can be performed in non-academic medical centers—that is, these cases do not deserve a unique funding mechanism. Without an identification of cases that go from dominant to zero, most likely due to select procedures only occurring in rare circumstances, staff would be suggesting diffusion to non-academic medical centers as opposed to the phenomenon of select highly specialized procedures occurring infrequently.

Commissioners and stakeholders raised concerns that while the cell dominance does serve as a good initial proxy for clinical significance, it is possible that only identifying cases as highly complicated and innovative through such an approach may be too broad. As such, staff have added an additional criteria that all cases that with a casemix less than 1.5 will be excluded from the policy. The lone exception to this exclusion are Zero to Dominant cases that did not exist in the base and therefore could not influence the weights associated with a casemix index analysis. This approach comports with staff's initial determination that academic medical centers should have access to a standalone volume methodology due to having higher casemix indices relative to other State hospitals, and it provides an additional validity analysis to determine clinical significance.

Implications for Other Methodologies

As mentioned, the Complexity and Innovation policy has material impact on the market shift policy, as cases deemed to be highly complicated and/or innovative will be removed from the market shift algorithm. Similarly, these cases will also be removed from the State's transfer policy and the Demographic Adjustment to ensure that funding is not provided twice for volume growth.

Staff will also remove existing innovative high cost outpatient drugs from the categorical exclusion definition and by extension the Complexity and Innovation policy, as these cases can be more properly regulated through the existing CDS-A methodology, which provides partial cost based reimbursement for high cost outpatient drugs. Existing outpatient drugs classified as categorical exclusions, such as Spinraza and Lutathera, will be included in the retroactive analyses outlined in the *Assessment* section that will help determine the appropriate working capital advance for RY 2021, but moving forward will be removed from future consideration in the Complexity and Innovation policy. Staff will continue to monitor the appropriateness of CDS-A inflation and increases each year to address high cost outpatient and infusion drugs.

Finally, staff will continue to remove categorical exclusions from the Inter-hospital Cost Comparison methodology (ICC) used to determine hospital's efficiency relative to its peers, and staff will also remove categorical exclusions from the current Potentially Avoidable Utilization Shared Savings policy.

ASSESSMENTS

In this section, staff provides modeling back to RY 2017 when Intensity Adjustment funding was first put into rates. In doing so, staff will be able to provide an appropriate RY 2021 working capital advance for University of Maryland Medical Center and Johns Hopkins University that is in line with historical growth patterns. This calculated figure is an estimate and subject to revision; the final working capital advance will be included in the RY 2021 Update Factor Recommendation.

When determining the working capital advance associated with the newly proposed Complexity and Innovation policy for RY 2021, staff had to vet various important modelling decisions in order to most accurately account for the funding and volume growth that occurred between RY 2017 and RY 2019. The specifications are enumerated below:

Table 6: Modelling Specifications for Creating RY 2021 Working Capital Advance Estimate

Modelling Specification	Additional Comments
Used actual historical funding put into rates	Differed slightly from calculating percentage of funding approved by Commission for Intensity Adjustment
Used base year of 2016; stopped analysis at RY 2019	Incorporated OP Drugs Spinraza and Lutathera in retroactive analysis; will be excluded moving forward
Only included cases that exhibited >=95% cell dominance	Academics assessed as one collective; all other hospitals assessed individually
Excluded all cases with a casemix of less than 1.5	Exception were cases flagged as zero to dominant because these cases did not exist in the base
Procedures that met criteria were put into hierarchy such that procedure code sequencing determines allocation of charges	Necessary to ensure charges are not double counted
Identified cases through four categories and assessed growth in revenue through total charges or base year charge per case	Dom-Dom Growth (total charge growth) Dom-Zero Growth (total charge growth) Zero to Dom Growth (total charge growth) Dom-Non Dom Growth (charge per case)
Charges were converted to costs by using Experience Report cost-to-charge ratio for drugs, supplies, and organ acquisition; 50% for all other charges	Analyses of Level I and Level II cost-to-charge ratios from annual filings demonstrated greater volatility between years and therefore were not used
Utilized evergreen list to preclude procedures previously marked as non-dominant from being included in the policy, thereby removing truly diffused services	Created new growth category of zero to dominant to ensure small volume cases that did not diffuse to community hospitals were not put into evergreen list
Used combined AMC simple average to determine average annual growth	Necessary as dominance categories are determined across University of Maryland Medical Center and Johns Hopkins Hospital, i.e. they are treated as one hospital, and simple average removes influence of inflation
Developed pro rata market shift analyses based on associated ECMAD growth in policy to calculate share of Complexity and Innovation of volume recognized in historical market shift adjustments	Calculated Market Shift Charge Per ECMAD (Market Shift Adjustment / Shifted ECMADS) - Already takes into account 50% VCF and inflation factor

	Calculated Innovation MS assuming 100% recognized MS (MS Charge Per ECMAD X Innovation ECMAD Growth) Calculated Innovation Market Shift to account for unrecognized shifts (Innovation Market Shift X IP % of ECMAD Growth Recognized in MS)
Historical Over Funding was deducted from RY 2021 working capital advance.	While the growth rate was determined by the combined average of the two hospitals, it was important to deduct individual hospital funding status from the RY 2021 working capital advance.

Tables 7a and 7b below demonstrate the cumulative funding status of University of Maryland Medical Center and Johns Hopkins Hospital, respectively, based on the aforementioned modelling specifications. It is important to note again that these estimates are subject to revision and will be finalized during the RY 2021 Update Factor Recommendation process.

Table 7a: Historical Funding Status Calculation (UMMC & Shock Trauma)

	FY17	FY18	FY19	TOTAL	ALGEBRA
GBR	$ 1,603,012,672	$ 1,673,488,785	$ 1,781,319,834		A
FUNDING PUT INTO RATES	$ 7,555,330	$ 7,862,166	$ 16,342,534	$ 31,760,030	B
VOLUME GROWTH	$ 5,503,331	$ 26,904,030	$ 843,932	$ 33,251,292	C
OP VOLUME GROWTH	$ -	$ -	$ -	$ -	D
DIFFERENCE	$ 2,052,000	$ (19,041,864)	$ 15,498,602	$ (1,491,262)	E=B-(C+D)
GROWTH AS % OF GBR	0.34%	1.61%	0.05%		F=(C+D)/A
CONCLUSION	Over Funded	Under Funded	Over Funded		
MARKET SHIFTS				$ 6,285,741	G
CUMULATIVE FUNDING STATUS	Over Funded	By		$ 4,794,479	H=E Total -G Total

Table 7a demonstrates that from RY 2017 through RY 2019, University of Maryland Medical Center was under funded $1.5 million when strictly accounting for funding put into rates and volume growth associated with highly specialized cases. When accounting for market shift, however, University was over funded by $4.8 million.

Table 7b: Historical Funding Status Calculation
(Johns Hopkins Hospital)

HOPKINS	FY17	FY18	FY19	TOTAL	ALGEBRA
GBR	$ 2,352,306,792	$ 2,412,311,008	$ 2,476,494,742		A
FUNDING PUT INTO RATES	$ 8,297,358	$ 11,470,116	$ 23,925,835	$ 43,693,309	B
VOLUME GROWTH*	$ (3,764,049)	$ 16,352,753	$ (596,774)	$ 11,991,930	C
OP VOLUME GROWTH	$ 132,000	$ 5,837,000	$ 1,767,600	$ 7,736,600	D
DIFFERENCE	$ 11,929,407	$ (10,719,637)	$ 22,755,009	$ 23,964,779	E=B-(C+D)
GROWTH AS % OF GBR	-0.15%	0.92%	0.05%		F=(C+D)/A
CONCLUSION	Over Funded	Under Funded	Over Funded		
MARKET SHIFTS				$ (1,005,961)	G
CUMULATIVE FUNDING STATUS	Over Funded		by	$ 22,958,818	H=E Total -G Total

Johns Hopkins Hospital, on the other hand, has been over funded by approximately $23.9 million and this value is slightly reduced to $22.9 million when market shift is accounted for. Following calculating historical funding statistics inclusive of market shift, the next step to estimate the RY 2021 working capital advance is to calculate the historical average growth using a simple average approach across both hospitals – see Table 8.

Table 8: Historical Growth Rate Calculation
(UMMC & Shock Trauma and Johns Hopkins Hospital)

		1	2	3	4	
ALGEBRA	**Descriptions**	**FY17**	**FY18**	**FY19**		
A	GBR	$ 3,955,319,464	$ 4,085,799,793	$ 4,257,814,576		
B	Funding Put into Rates	$ 15,852,689	$ 19,332,282	$ 40,268,368		
C	Volume Growth*	$ 1,739,282	$ 43,256,783	$ 247,158		
D	OP Volume Growth	$ 132,000	$ 5,837,000	$ 1,767,600		
E=B-(C+D)	Difference	$ 13,981,407	$ (29,761,500)	$ 38,253,610		
F=(C+D)/A	Growth as % of GBR	0.05%	1.20%	0.05%	0.43%	F4=average(F1-F3)

As demonstrated in Table 8, the historical average growth rate for Johns Hopkins Hospital and University of Maryland Medical Center when using a simple average and treating both hospitals as one, which is necessary because dominance is determined across both hospitals, is .43%. Incorporating this value into each hospital's RY 2021 estimated GBR and deducting out prior funding status yields the RY 2021 estimated working capital advance itemized in Table 9.

Table 9 Tentative RY 2021 Working Capital Advance

		UMMC & SHOCK TRAUMA	HOPKINS
ALGEBRA	**Descriptions**	**RY 2021**	**RY 2022**
A=RY2020 GBR *1.03	RY 2021 Base GBR (calculated)	$ 1,717,988,387	$ 2,707,159,456
B=C/A	RY 2021 Recommendation %	0.15%	-0.42%
C=A*D-E	RY 2021 Recommendation $	$ 2,628,379	$ (11,262,080)
D	Average Annual Growth	0.43%	0.43%
E	Over (Under Funding)	$ 4,794,479	$ 22,958,818

As previously mentioned, this calculation of the RY 2021 working capital advance is subject to revision and will be finalized once global budgets are better established for the RY 2021 rate year. A final calculation of the working capital advance will be provided in the Update Factor Recommendation.

STAKEHOLDER COMMENTS

Staff received 5 comment letters from the following organizations: MedStar Health, University of Maryland Medical System and Johns Hopkins Health System (combined letter), Maryland Hospital Association, CareFirst, and the Rockburn Institute. All letters were generally supportive of a policy to specially recognize complex and innovative procedures, but did seek additional clarification and proposed various considerations for the final policy. Support was expressed for the following:

A) Using cell dominance as means to determine complex and innovative cases
B) Acknowledging this policy should be applied to the state's two academic medical centers
C) Prospectively adjusting hospitals global budgets in recognition of historical average growth

Comments that required staff feedback can be categorized into four areas:

A) Rebranding
B) Broaden Policy
C) Additional Clarification
D) Additional Assurances

Rebranding

1) The Rockburn Institute recommended changing the name of the policy from the Intensity and Innovation Policy to the Complexity and Innovation Policy, because "intensity is usually associated with the amount of effort or cost or quantity of services." Whereas, "complexity has salience and is associated with: medical factors; socioeconomic and mental illness factors; and patient behaviors and traits."

Staff concurs with this recommendation.

Additional Clarification

1) Commissioners and CareFirst expressed concern about how rebates and discounts would be handled in the policy, most notably 340B rebates.

Staff notes that the Complexity and Innovation policy is purposely restricted to inpatient service; therefore, the 340B rebates are not relevant to this policy as they are only applied to outpatient drugs. Staff would also note that 340B costs are considered in the CDS-A methodology.

Staff would also point out that the Complexity and Innovation Policy is using the invoice cost-to-charge ratio from HSCRC experience reports to approximate costs, and these costs are net of any other rebates. Finally, staff notes that because markup is not uniform across all drugs, staff will implement an annual special audit process to ensure that cost-to-charge ratios do not over time become higher for innovative cases, thereby allowing the AMCs to collect a greater increase in revenues from charge variation as opposed to actual volume growth.

2) CareFirst requested that staff provide greater clarification on funding calculations. Specifically, CareFirst asked that staff address the following aspects of the calculation:

A) What years will be included in the average run rate?
The years included for the calculation of the average annual growth rate for the RY 2021 working capital advance will be RY 2016 base, RY 2017, 2018 and 2019 growth. RY 2022

working capital advance will include the same years but also RY 2020. In effect, the working capital advance will always be based on growth from RY 2016 and will not include the most recent rate year growth because of data lag.

B) Whether the average will be weighted or simple?
The historical annual average growth rate will be based on a simple average. This ensures that more recent years with greater inflation do not have larger influence on the calculation purely because of inflation and not growth trends.

C) If the calculated average will directly match the up-front working capital advance?
The working capital advance will be equivalent to the historical average growth rate expressed as a percentage of GBR multiplied by the current GBR.

D) If UMMC and JHH will have the same working capital advance or if it will be calculated individually?
Because the historical analysis is limited to 3 years of growth and the dominance determination of greater than or equal to 95% is calculated across both hospitals, staff is recommending using the average of the two academic medical centers' historical average growth. Staff believes that using the combined average growth for both academic medical centers will create more stability in the statistic and prevent an individual hospital from driving additional volume in order to increase its working capital advance. In future years, staff may develop the growth rate independently for each hospital once more data is available and trends normalize.

E) Whether drugs will be included or excluded from this calculation?
Inpatient drugs are included in the Complexity and Innovation policy. Outpatient drugs are excluded from the policy moving forward, but Spinraza and Lutathera will be included in retroactive analyses to determine historical over/under funding, as these drugs were purposely removed from the existing CDS-A methodology, which provides partial cost based reimbursement for high cost outpatient drugs. Moving forward these drugs will be included in the CDS-A methodology.

Broaden Policy

1) The Rockburn Institute recommended utilizing Information Theory to derive a hospital's complexity and supplement that to staff's cell dominance approach, thereby ensuring clinical significance through additional validating analyses.

Staff concurred with this recommendation but with modifications, as aforementioned. Specifically, staff amended its recommendation such that the Complexity and Innovation Policy may only be accessed if:

A) Procedure code cell dominance is exhibited – that is, greater than 95% – AND
B) Cases have a casemix index of 1.5 or greater

Staff notes that the casemix index consideration will not be applied to cases that did not exist in the base and occur in the performance period – that is, zero to dominant – as these cases do not have casemix weights.

Staff also notes that the service line of inpatient rehabilitation will be removed from consideration despite having a casemix greater than 1.5, because a central aim of this policy is to address cost pressures associated with procedures that have high variable costs and rehabilitation does not.

2) MedStar, Maryland Hospital Association, and CareFirst requested that the Complexity and Innovation Policy be extended to all Hospitals.

Staff concurs with this recommendation but with modifications:

A) Staff recommends that other hospitals be eligible for the Complexity and Innovation policy if an individual hospital exhibits cell dominance and the cases have a casemix index greater than 1.5.

B) Based on review of hospitals statewide that meet this criteria, growth is very limited, as demonstrated in Tables 4 and 5. Therefore, staff recommends that in lieu of a prospective adjustment, hospitals that meet the criteria for this policy present to HSCRC staff, prior to the Update Factor Recommendation, growth that occurred during the prior fiscal year. To better assist hospitals, staff will provide six months after the close of fiscal year dominant procedures for the prior fiscal year by facility. See below for an example timeline of this process

Table 10: Example Timeline for Non-Academic Complexity and Innovation Funding

Rate Year 2020	Rate Year 2021				Rate Year 2022			
Q1-Q4	**Q1**	**Q2**	**Q3**	**Q4**	**Q1**	**Q2**	**Q3**	**Q4**
Growth Assessed		**Staff provides Dominance codes for RY 2020 by Hospital**	**Hospitals submit RY 2020 Complexity and Innovation Growth Proposal**	**Staff validates and makes recommendation for RY 2022 Update Factor**	**Rate Orders issued for RY 2022 inclusive of ad hoc Complex and Innovation Policy Recommendation for non-AMC's**			**Staff provides Dominance codes for RY 2021 by Hospital**

Following submission from a hospital, staff will then validate the growth and provide funding in the upcoming fiscal year equivalent to 100% funding for drugs, supplies, and organ acquisition costs plus 50% for all other charges. Staff will also deduct from this funding any realized gains from the market shift methodology that occurred due to growth in the select highly specialized volume as well as associated Demographic Adjustment funding.

3) University of Maryland Medical Center and Johns Hopkins Health System recommended that staff consider extending the policy to outpatient services. Additionally, the two academic medical centers also expressed concerns that the CDS-A methodology, which provides funding for growth in high cost

outpatient drugs, only covers 50% of the actual drug cost and even with the enhanced inflation factor on high cost drugs, only 70% of costs would be covered. Therefore, it is important to monitor the adequacy of funding in the CDS-A program.

Staff believes the main driver of complexity and innovation in outpatient care is drugs and there is already a methodology available to all hospitals to address high cost drugs. Also, while staff agrees that it is important to monitor the adequacy of funding through the CDS-A program, several contextual points are important:

- **A) The CDS-A program in the initial year covers 50% of costs permanently, and 50% of the costs on a one time basis, such that 100% of costs are covered in year one**
- **B) The CDS-A program, through the combination of providing 50% of costs on a permanent basis and providing a differential update factor for high cost drugs (10%), has covered the increased costs associated with growing and static drugs with escalating prices.**
- **C) The complexity and innovation policy should be reserved for inpatient only services, as:**
    - **a. the vast majority of highly specialized tertiary and quaternary cases occur in inpatient settings,**
    - **b. the casemix index differential for inpatient services is far starker than for outpatient services, and**
    - **c. Johns Hopkins Hospital and University of Maryland Medical Center are not among the top 10 hospitals for OP casemix acuity (excludes high cost drugs).**

4) CareFirst recommended that non-academic medical center "innovation" volume that decreases due to referrals to academic medical centers and not picked up in the market shift policy should result in an offset to the update factor. CareFirst also recommended the policy have a revenue-neutral offset against statewide inflation equivalent to any incremental innovation funding provided prospectively.

Staff does not believe inflation offsets for non-academic medical centers are necessary, as volume evaluated in the Complexity and Innovation policy will be included in the market shift methodology but will be flagged, similar to the current categorical exclusion flag. Staff will be able to evaluate any declines at non-academic medical centers that occur through this flag. Declines will be defunded through the market shift policy; the corollary increases at the academic medical centers will be addressed through the Complexity and Innovation policy. Staff expects this to be a fairly small amount of volume, as the 95% cell dominance rule will, by definition, reduce the extent to which non-academics have volume in this policy

Staff also does not believe the funding associated with growth in highly specialized cases should be automatically deducted from statewide hospital inflation, because staff will continue to use total cost of care guardrails, as well as the State GDP growth to evaluate the adequacy of the annual update factor. In short, staff does not agree that automatically reducing inflation to offset growth in innovative volume is appropriate given the larger cost trends hospitals are held accountable to.

Additional Assurances

1) CareFirst indicated that the policy uses relatively low potential avoidable utilization volume as justification for the Complexity and Innovation policy, and that there is no mention of revisiting this

statistic to ensure the same inelasticity of academic medical centers budgets is maintained. Furthermore, CareFirst recommended using a more holistic measure of efficiency, such as the Integrated Efficiency policy, to determine a hospital's eligibility for the Complexity and Innovation policy. MedStar similarly requested that the policy include national utilization and reimbursement/charge benchmarking to ensure growth in both are reasonable.

In future reports on the Complexity and Innovation policy, staff will update the Commission on the academic medical centers' standing in terms of potentially avoidable utilization as a percentage of eligible revenue. Staff would note though that this statistic will be widely distributed, as it forms the basis of the potentially avoidable utilization credit in the capital methodology.

While staff appreciates CareFirst's support of the Integrated Efficiency policy, which was developed to evaluate both hospital cost per case and total cost of care performance for purposes of scaling the annual update factor, staff recommends not conflating analyses. Instead, staff recommends handling efficiency concerns through the Integrated Efficiency policy and adjusting funding for highly specialized care through the Complexity and Innovation policy.

2) Maryland Hospital Association recommended that staff annually Report on Innovation funding at a public meeting and validate the impact of innovation funding in market shift adjustments.

Staff intends to recommend to the Payment Model Work Group each year a prospective amount for complexity and innovation in line with historical average growth. During these public meetings and at the Commission meeting when staff recommends inflation for the Update Factor, staff will provide a report on volume, spending and funding for services under this policy.

For the RY 2022 Update Factor Recommendation, staff will include a validation analysis of the interplay between Market Shift and the Complexity and Innovation policy.

3) CareFirst recommended building in appropriate sampling and clinical input to validate the qualifying procedures year over year to ensure volume is truly innovative and bringing incremental value to patients.

Staff have added a second proxy for clinical significance in the complexity and innovation policy: All volume that has a casemix index less than 1.5 will be excluded from the policy. In doing so, staff believes there is not a need for additional sampling and clinical input to validate the qualifying procedures.

RECOMMENDATIONS

Final Recommendations for the Complexity and Innovation Policy

1. Determine the differential funding needs due to complexity and innovation at the University of Maryland Medical Center and Johns Hopkins Hospital through two measures of clinical significance:
    A. A casemix acuity approach, whereby all cases with a casemix index of less than 1.5 will be excluded from the policy with the exception of newly emergent cases that were not in the base year performance ("Zero to Dominant")
    B. A cell dominance approach, whereby in-state, inpatient cases are deemed highly specialized (referred to as "categorical exclusions") if the two academic medical centers comprise 95% or more of an ICD-10 procedure code.
        - Dominance will be assessed in four capacities:
            a) Dominant, i.e. greater than or equal to 95%, in the Base Period to Dominant in the Performance Period
            b) Zero in the Base Period to Dominant in the Performance Period
            c) Dominant in the Base Period to Non-Dominant in the Performance Period
            d) Dominant in the Base Period to Zero in the Performance Period
2. Prospectively fund a working capital advance in concert with the annual Update Factor that reflects historical annual growth rates for categorical exclusions cases and cumulative funding status.
    A. Funding associated with the working capital advance will be part of the annual guardrail tests.
    B. Non-Academic Medical Centers will be eligible for Complexity and Innovation funding but only retrospectively.
3. Remove categorical exclusions from various methodologies:
    A. Market Shift
    B. Transfers
    C. Demographic Adjustment
    D. Inter-Hospital Cost Comparison
    E. Potentially Avoidable Utilization Shared Savings Program
4. For FY 2021, remove high cost outpatient drugs from the current definition of categorical exclusions and use the same approach currently applied state-wide for high cost outpatient drug growth (the CDS-A adjustment) to regulate volume funding.

Maryland
Hospital Association

January 10, 2020

Katie Wunderlich
Executive Director
Health Services Cost Review Commission
4160 Patterson Avenue
Baltimore, MD 21215

Dear Ms. Wunderlich:

On behalf of Maryland's 60 member hospitals and health systems, the Maryland Hospital Association appreciates the opportunity to comment on the commission's proposed Intensity and Innovation Policy.

We have three recommendations on the proposed policy and its implementation:

1) Fund innovation at all hospitals where it happens
2) Report annually on innovation at a public Commission meeting
3) Validate the impact of innovation funding in the market shift adjustment

Fund innovation at all hospitals
Maryland's hospitals fully support funding innovative procedures and services outside of global budgets. One of the proposed criteria is that, to qualify, a service is provided by at least one of the state's two academic medical centers (AMC) as defined by HSCRC staff. If innovation emerges simultaneously among a handful of hospitals, HSCRC staff should fund innovation for that entire group of hospitals, including AMCs and non-AMCs. At a minimum, any hospital meeting the dominance criteria should receive innovation funding.

Outside of Maryland, hospitals receive full payment for volume growth in innovative services and only an intensity adjustment is required to adjust prices. Global budgets in Maryland effectively control both utilization and price. The Maryland model should offer relief for new procedures and services. The agreement with the Centers for Medicare and Medicaid Services requires 95% of regulated revenues to be in a population health or fixed revenue model. MHA fully supports this contractual incentive, and we believe it allows for innovation funding.

Annually report on innovation funding at a public meeting
Hospitals understand funding will be removed from the AMCs as more hospitals adopt innovations and the AMCs no longer meet the dominance test. MHA respectfully requests that HSCRC staff present the commission with a brief annual report on innovation funding—when it has been granted, to which hospitals, amounts distributed, volume of services rendered, etc. MHA also suggests HSCRC staff include a diagram in the final recommendation illustrating how dollars are infused and removed.

Validate the impact of innovation funding in the market shift adjustment (MSA)
As innovations are diffused, the MSA should facilitate a funding shift from the AMCs to other hospitals. MSA is a complex methodology, contingent on market limits before revenue shifts occur. As part of the requested annual innovation report—and as part of any MSA methodology review—we ask HSCRC staff to validate how diffusion of innovation affected the distribution of dollars in the MSA policy.

Thank you for your careful consideration of this matter. If you have any questions, please contact me.

Sincerely,

Brett McCone
Senior Vice President, Health Care Payment

cc: Nelson J. Sabatini, Chairman
Joseph Antos, Ph.D., Vice Chairman
Victoria W. Bayless
Stacia Cohen, RN
John M. Colmers
James N. Elliott, M.D.
Adam Kane
Allan Pack, Principal Deputy Director, Population Based Methodologies

Maria Harris Tildon
Executive Vice President
Marketing, Communications & External Affairs

CareFirst BlueCross BlueShield
1501 S. Clinton Street, Suite 700
Baltimore, MD 21224-5744
Tel. 410-605-2591
Fax 410-505-2855

January 10, 2020

Nelson J. Sabatini, Chairman
Health Services Cost Review Commission
4160 Patterson Avenue
Baltimore, Maryland 21215

Dear Mr. Sabatini:

I write to provide CareFirst's comments on the HSCRC Staff's "Draft Innovation Policy."

CareFirst supports the policy's intent to foster sustainable innovation in the healthcare system under Global Budget Revenue (GBR), but we believe there are many missing details that must be clarified and provided for in the Final Recommendation, as outlined below.

We appreciate the Staff's thoughtful approach to the development of a funding mechanism for intense and innovative procedures in the State. We recognize that for hospitals and health systems to continue providing advanced care, a fair policy is needed given some of the financial constraints placed upon hospitals via GBR. We also appreciate Staff's follow-through on its commitment to further assess the special needs at the academic medical centers (AMC) in response to comments regarding validation of the 1% "intensity" increase to rates at Johns Hopkins Hospital (JHH) and University of Maryland Medical Center (UMMC).

We support Staff's decision to measure dominance in three capacities – dominant base vs. dominant performance, zero base vs. dominant performance, and dominant base vs. non-dominant performance. We support the calculation of cost growth on these cases using cost plus markup for drugs, supplies, and organ acquisition and 50% for all other charges, which equates to approximately 70% variable.

Clarity on Calculation in Final Recommendation

There are important calculations that are not spelled out in the draft recommendation because, at this point, modelling has not been completed. We believe the final recommendation for the Innovation Policy that is ultimately voted on by Commissioners should provide clarity around which years will be included in the "average run-rate," whether the average will be weighted or simple, if the calculated average will directly match the up-front working capital advance, if both UMMC and JHH will have the same adjustment or will be calculated individually, and whether drugs will be included or excluded from the calculation. Without this clarity, the Innovation Policy remains broad and leaves many significant details open regarding topics that have had significant interest from the Commissioners. HSCRC Staff should be given time to complete modelling and return to the Commission with a policy that walks through the steps that will be taken to arrive at the appropriate working capital adjustment (if necessary) for each of the qualifying hospitals in this policy.

In addition to the requested clarifications above, CareFirst believes the following changes are needed to the Innovation Policy.

Revenue Neutrality

We recommend that the Commission build into the policy a revenue-neutral offset against the statewide inflation factor equivalent to any incremental innovation funding provided prospectively to the AMC as a result of the innovation policy. Assuming incremental innovation funding is needed in a given year, it is either driven by an increase in qualifying procedures under cell dominance logic or an increase in volume of qualifying procedures. In most cases, we believe these shifts in volume are likely representative of referrals from non-AMC to AMC, not use rate increases. Thus, under GBR, incremental innovation funding identified in a given year for AMC also simultaneously represents cost savings at non-AMC. Since this would not be identified as a corresponding increase in the Market Shift Adjustment, the non-AMC would not have its GBR adjusted down and the cost savings would accumulate in the hospital's bottom line rather than to the benefit of the consumer. As such, we strongly recommend that non-AMC share in the funding mechanism for incremental innovation funding through a revenue-neutral offset to the statewide base inflation factor.

Thorough Review of "Innovative" Procedures and Temporary Funding

While the 95% cell dominance logic appears sufficient for getting a policy started, we do not believe it can stand alone to accurately identify innovation or intensity. We would urge HSCRC and Staff to build in appropriate sampling and clinical input to validate that the qualifying procedures year over year are truly innovative and bringing incremental value to patients.

We recognize that Staff's recommendation indicates CMS' list of procedures from the New Technology Add-On Payments (NTAP) policy was incomplete, but a policy that identifies innovation based on market share of a procedure code alone could incentivize hospitals to create niche services or corner the market in order to obtain enhanced reimbursement. Thus, there is a need for an additional cross-reference of the procedures to identify true innovation. Medicare's NTAP policy requires proof that technologies are new, inadequately funded by current payment levels, and significantly improve patient outcomes. Even when these three criteria are met, the NTAP designation only lasts for three years. These criteria have considered important elements that are not present in the proposed 95% cell dominance logic, which is why we believe the logic alone is incomplete. Adding a clinical validation screening to the 95% cell dominance logic to ensure that these procedures are truly innovative and providing incremental value to patients would more accurately capture the innovation that HSCRC is aiming to support.

Account for Drug Discounts and Rebates

Another key complicating factor that has not been addressed by the Innovation Policy is the fact that hospital charges for drugs represent the hospital's invoice cost plus markup. This does not take into consideration the impact of discounts or rebates under the federal 340B program or other arrangements. By not accounting for these discounts that hospitals receive, we are overstating the innovation adjustments needed by these hospitals. This should be addressed in the final recommendation.

Broader Application

As written, the innovation policy restricts any funding eligibility to the state's two AMC as defined by Staff. We believe that innovation is an important part of the healthcare system and something we should support and encourage. Thus, as long as we are employing an approach that offsets any incremental funding against the base inflation factor, we feel that any hospital in the state that qualifies under the 95% cell dominance logic should be eligible for innovation funding adjustments based on their year-over-year trends.

Continued Monitoring of Hospital Efficiency

In Table 2 of the Staff's recommendation, relative rankings of Maryland hospitals' PAU % of Eligible Revenue are shown to demonstrate Staff's conclusion that the AMC do not have as much of an opportunity to reduce avoidable utilization enabling them to fund highly specialized care. This assertion supposes that relative PAU % ranking is the sole benchmark to determine a hospital's efficiency or improvement opportunity. Additionally, the policy makes no mention of an ongoing or annual check to ensure that this measure remains in good standing for hospitals to be eligible for innovation funding.

In the Staff's Final Recommendation on Integrated Efficiency Policy for RY 2020, Table 5 on pages 19-20 displays RY 2019 Volume Adjusted ICC Efficiency Rankings, showing both Johns Hopkins Hospital (-9.59%) and University of Maryland Medical Center (-13.70%) as relatively inefficient to the ICC Standard. We recognize that the innovation policy is intended to provide a backstop to these hospitals in the event they experience a significant increase in high cost cases, but the conclusion that they do not have cost opportunity because their relative PAU % was low is incomplete. In fact, in May 2018, HSCRC Staff referenced an independent Navigant Consulting study, which found that JHH had a "net" inpatient cost improvement opportunity of approximately $79 million per year when compared to a set of thirty-five AMC. We recommend that the Staff consider a more holistic efficiency measure, such as their Integrated Efficiency Policy, and that for these hospitals to continue to receive funding for innovation growth, they need to be demonstrating improvement on their efficiency performance.

Utilize State GDP Affordability Check

Finally, we want to focus specifically on the reference to annual guardrail tests in the recommendation. As we mentioned previously, we believe it is appropriate to offset incremental innovation funding against base inflation. When referencing the guardrail tests, though, it is critical to focus not only on the TCOC guardrail, but also the State Gross Domestic Product affordability check that was employed last year, comparing the compounded annual growth rate for three years of State GDP to the calendar year increase projected as part of the annual update. It is our understanding that the TCOC guardrail was built into the agreement as a reasonable standard that we would consistently track below, not a target up to which we would aim.

Thank you for this opportunity to comment on the Draft Innovation Policy. We support the goals of innovation and understand the need for a specific policy addressing funding for this volume. We also appreciate the opportunity to work with Staff and exchange thoughts and data during the development of policy.

Sincerely,

Maria Harris Tildon

Cc: Joseph Antos, Ph.D., Vice Chairman
Victoria Bayless
Stacia Cohen
John Colmers
James N. Elliott, M.D.
Adam Kane
Katie Wunderlich, Executive Director

January 6, 2020

Katie Wunderlich, Executive Director
Health Services Cost Review Commission
4160 Patterson Avenue
Baltimore, MD 21215

Dear Katie:

Thank you for the opportunity to comment on the staff's proposed Intensity and Innovation policy, discussed at the December 11, 2019 Commission meeting. This proposal delineates a methodology for evaluating and prospectively funding high intensity and innovative care at Maryland's Academic Medical Centers (AMCs) — the University of Maryland Medical Center and The Johns Hopkins Hospital. As we understand the proposed policy, the Commission would fund intensity and innovation needs for the AMCs through a prospective adjustment which would be supported by a cell dominance approach instead of a flat funding annual intensity adjustment. The staff has noted stakeholder interest in a predictable and formulaic methodology for funding intensity cases and innovative care. The AMCs concur that an objective, predictable methodology is desirable and necessary to fund innovative care under the Total Cost of Care All Payer Model.

An Innovation Policy Is Essential

A formal policy to recognize intensity and innovation is essential under the Global Budget Revenue (GBR) methodology. Global budgets were established to transform economic incentives from fee-for-service payments that encourage volume growth to a fixed revenue base aligned with incentives to improve population health. The GBR is established from a base period that, in effect, takes a snapshot of a hospital's service and technological mix for the base period. That revenue base is then updated for population growth and inflation. Over time, that service mix and technological intensity can change substantially, especially for the state's AMCs. By limiting AMC revenue growth to factor cost growth and population growth less required productivity reductions as the general approach for updates to the GBR, there is limited ability to undertake innovations and implement new clinical techniques and technology. The Commission has recognized that limitation and provided incremental funding to recognize those needs.

For AMCs, recognizing changes in intensity and technological innovation is central to the hospitals' missions. In addition to patient care, AMCs provide medical education, engage in cutting-edge research, and implement new technology, drugs, and clinical techniques to treat the most severely ill patients. These innovations add costs to AMC operations beyond the typical increases in input costs for labor, drugs and supplies, energy, malpractice insurance, etc. Rate updates must cover underlying cost drivers to keep pace with general inflation along with some recognition of the added costs for the generalized role of AMCs.

Despite these additional costs, the added expenses for AMC core mission activities do not necessarily result in higher costs of care relative to the cost of care provided in other settings. For example, Milliman analysis of commercial and Medicare claims data for 2009-2010 shows that AMCs yielded a lower cost of care per episode of care for lung cancer episodes of care. In the Milliman analysis, for patients receiving 80 percent or more of their care at an AMC, commercially insured patients had

episodes of care at 17 percent lower cost, even in the presence of higher commercial rates. For Medicare patients, cost per episode was 25 percent lower than for patients receiving care in the community.

The Proposed Methodology

The staff has proposed an approach to define categorically excluded inpatient cases based on ICD-10 procedure codes, where the categorical exclusions will be defined as procedures with 95 percent or more of the cases provided by the two AMCs. Under the policy, the HSCRC would prospectively fund expected costs associated with innovation and care intensity, using changes in categorical exclusions to calibrate funding levels over time.

This approach builds upon the categorical exclusion policy established for the charge per case methodology, recognizing the AMCs' unique role in providing specialized tertiary and quaternary care. The use of procedure codes, as opposed to APR-DRGs, offers a more precise approach to target care specifically offered by the AMCs. This policy also proposes to exclude these categorical cases from other methodologies, including market shift, transfers, the demographic adjustment, the Inter-Hospital Cost Comparison, and the Potentially Avoidable, Utilization Shared Savings Program.

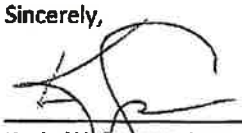
We support the staff proposal. A precise definition of the cases recognized as innovative procedures specific to the AMCs offers an objective approach for determining funding associated with our unique role for providing patient care in the state. Furthermore, prospectively funding these costs offers our institutions the ability to care for severely ill patients requiring intensive interventions and the ability to explore innovative approaches for our patients under the GBR policy and the Total Cost of Care Model. This proposed policy offers a thoughtful approach for quantifying and funding those costs.

We do have some concerns on the treatment of innovation and intensity in the outpatient setting. The current recommendation would have growth in outpatient drugs considered under the current CDS-A methodology. We believe that this could be problematic as that methodology only covers 50% of the actual drug cost and even with the enhanced inflation factor on high cost drugs, only 70% of costs would be covered. Since many innovative treatments are moving to the outpatient setting it will be important to monitor these cases to assure that AMCs are being adequately reimbursed for the outpatient care they are providing.

We are committed to continuing to work with the HSCRC staff to modify and enhance this methodology as needed moving forward to assure that we are able to continue to provide this much needed care to the citizens of Maryland. The concepts of this policy address the appropriate issues. The technical details of the methodology have not been fully resolved, but we continue to work with the staff to establish a definitive process for implementing the details of this proposal.

We appreciate the opportunity to comment on this proposal. If you have any questions, please contact us.

Sincerely,



1/9/20

Kevin W. Sowers, MSN, RN, FAAN
President, Johns Hopkins Health System
EVP, Johns Hopkins Medicine

Date

1/9/20

Mohan Suntha, MD, MBA
President & CEO
University of Maryland Medical System

Date

MedStar Health

10980 Grantchester Way
8th Floor
Columbia, MD 21044
410-772-6927 PHONE
410-772-6954 FAX
MedStarHealth.org

Susan K. Nelson
Executive Vice President and
Chief Financial Officer

January 10, 2020

Nelson J. Sabatini, Commissioner
Health Services Cost Review Commission
4160 Patterson Avenue
Baltimore, MD 21215

Dear Chairman Sabatini:

On behalf of MedStar Health System, representing 7 acute care hospitals and health care facilities in Maryland, we are submitting comments in response to the Health Services Cost Review Commission's (HSCRC) Draft Staff Recommendation for an Intensity and Innovation Policy. We recognize the importance of the Johns Hopkins Health System and the University of Maryland Health System in providing advanced medical care and appreciate the time spent by Commission Staff in developing a policy to support continued advancement to benefit the Citizens of Maryland.

We understand, as articulated in the Staff Recommendation, the HSCRC applied a formulaic approach as they do not have the clinical experts who can differentiate between regular acute care services and highly specialized services. Given our experience with large Academic Medical Centers (AMCs) in D.C., we would like to offer the following enhancements to the policy to ensure appropriate and reasonable funding is provided for new advancements and volume/charge growth.

(1) Expand the policy to allow other hospitals to apply for new technology and innovative add-on payments. Nationally and locally, there are multiple examples of non-academic hospitals providing advance technologies and creative innovations to treat diverse populations in their community. These hospitals should have the same opportunity to obtain special funding as the AMCs.
(2) Include in the policy national utilization and reimbursement/charge benchmarking to ensure growth in both are within a reasonable range; and
(3) Require the hospitals to provide written justification related to the change in charge and/or utilization growth to support the additional reimbursement based on a change threshold (for example, utilization or charge >20%)

We hope you will strongly consider these enhancements and we appreciate the opportunity to comment.

Sincerely,

Susan K. Nelson
Executive Vice President and Chief Financial Officer

cc: HSCRC Commissioners
Katie Wunderlich, HSCRC Executive Director
Allan Pack, HSCRC Principal Deputy Director
Kathy Talbot, Vice President of Rates and Reimbursement, MedStar Health

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Analytics Since 1979

6581 Belmont Woods Road **Elkridge, MD 21075-5202** **410-796-4554** **rockburn.org**

January 10, 2020

Katie Wunderlich
Executive Director
Health Services Cost Review Commission
4160 Patterson Avenue
Baltimore, MD 21215

Dear Katie:

Thank you for the opportunity to comment on the December 11, 2019 Draft Recommendation for an Intensity and Innovation Policy.

The Draft Intensity and Innovation Policy of 12-11-19 adeptly wrestles with the challenge of measuring the varying complexity or specialization among Maryland hospitals and their need to support funding of innovation.

"Stakeholders have thus expressed concern that there should be a predictable and formulaic methodology for specially funding high intensity cases and innovative care, one that still comports with the aims of the TCOC Model and requirements specified in the Contract that governs the TCOC Model, as well as the Commissioner's directive that funding, be provided only for verifiable differentiated cost growth."[1] Academic Medical Centers also expressed concern that in the absence of a formulaic methodology that allows for growth we could be faced with restricting access to tertiary and quaternary care.

The staff proposed a 95% concentration measure using a cell dominance method. My understanding is that staff is expanding the process by incorporating the case mix index for each of the procedures deemed to be 95% dominant and reduced the case mix index from 3.0 to 1.5.

Information Theory – A Formulaic Enhancement

For the record, early in the development of DRGs, the HSCRC prototyped DRG use, in the Guaranteed Inpatient Revenue hospital payment system. As a demonstration project, researchers explored measuring hospital complexity using information theory calculations.[2] Information theory and deriving hospital complexity is conceptually straightforward. (See Table)

In our 1977 exploratory analyses, we used a subset of the then 383 DRGs, to develop complexity scores for each hospital. We used abstract data from 45 Maryland hospitals and calculated complexity measures: two Academic medical centers were 1.37 and 1.21; Baltimore area community teaching hospitals ranged from 0.93 to 1.11; and rural hospitals ranged from 0.67 to 0.88.

[1] Health Services Cost Review Commission, 567th meeting of the health services cost review commission, State of Maryland department of Health, December 11, 2019.
[2] Horn SD, Schumacher DN. An analysis of case mix complexity using information theory and diagnostic related grouping. Medical Care, April 1979, 382-389.

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6581 Belmont Woods Road **Elkridge, MD 21075-5202** **410-796-4554** **rockburn.org**

Table: Conceptual Example 3 hospitals 3 Procedures and 33 discharges (n)

Scenario A - Evenly Distributed

	Procedure			
	P_1	P_2	P_3	Hospital Total
Hospital 1	2	5	4	11
Hospital 2	2	5	4	11
Hospital 3	2	5	4	11
Procedure Total	6	15	12	n=33

Scenario B - Procedure 3 concentrated at large Hospital #3

	Procedure			
	P_1	P_2	P_3	Hospital Total
Hospital 1	4	5	0	9
Hospital 2	1	6	0	7
Hospital 3	1	4	12	17
Procedure Total	6	15	12	n=33

Scenario A shows that all patients are equally distributed among the three hospitals. When this equal distribution does not occur, and the extent to which certain conditions or procedures concentrate in particular hospitals, there is information gain. Hospital 3 is the largest and all P_3 patients concentrate at hospital 3.

There are additional information theory advantages: [3, 4, 5]

- Information theory measures are scalar and provide options for different weighting schemes.
- The models can be developed using either diagnoses or procedures or identified new technology.
- Information complexity measures would be calculated directly from existing HSCRC databases.
- Information gain takes into account prior probability. Trends could be calculated for all hospitals.
- Salience - the essence of what we do is care for complex patients. Patient complexity has a salience accepted by providers.

Lastly, I suggest a policy title change from "Draft Recommendation for an INTENSITY and Innovation Policy" to "Draft Recommendation for a COMPLEXITY and Innovation Policy". Intensity is usually associated with the amount of effort or cost or quantity of services. Using cost and effort to define payment can lead to circular arguments. Complexity has salience and is associated with: medical factors; socio-economic and mental illness factors; and patient behaviors and traits.[6]

Thank you for the opportunity to provide these comments.

Sincerely,

Dale N. Schumacher, MD, MPH
President, Rockburn Institute

cc: Allan Pack, Principal Deputy Director

[3] Farley DE, Hogan C. Case-mix specialization in the market for hospital services. Health Serv Res. 1990 Dec;25(5):757-83.
[4] Kobel C, Theurl E. Hospital specialization within a DRG-framework: the Austrian Case. University of Innsbruck. 2013. Retrieved from: https://www2.uibk.ac.at/downloads/c4041030/wpaper/2013-06.pdf.
[5] Eastaugh SR. Hospital specialization: product-line planning during the market reformation. J Health Care Finance. 2011 Fall;38(1):71-82.
[6] Loeb DF, Binswanger IA, Candrian C, Bayliss EA. Primary care physician insights into a typology of the complex patient in primary care. Ann Fam Med. 2015 Sep;13(5):451-5. doi: 10.1370/afm.1840.

Final Recommendation for the Maryland Hospital Acquired Conditions Program for Rate Year 2022

February 12, 2020

Health Services Cost Review Commission

4160 Patterson Avenue
Baltimore, Maryland 21215
(410) 764-2605
FAX: (410) 358-6217

This document contains the final staff recommendations for the Maryland Hospital Acquired Conditions Program for RY 2022.

Table of Contents

List of Abbreviations

AHRQ	Agency for Healthcare Research and Quality
APR-DRG	All Patients Refined Diagnosis Related Groups
CMS	Centers for Medicare & Medicaid Services
CY	Calendar Year
DRG	Diagnosis-Related Group
FFY	Federal Fiscal Year
FY	State Fiscal Year
HAC	Hospital-Acquired Condition
HAI	Hospital Associated Infection
HSCRC	Health Services Cost Review Commission
ICD	International Statistical Classification of Diseases and Related Health Problems
MHAC	Maryland Hospital-Acquired Condition
NHSN	National Healthcare Safety Network
NQF	National Quality Forum
PMWG	Performance Measurement Work Group
POA	Present on Admission
PPC	Potentially Preventable Complication
PSI	Patient Safety Indicator
QBR	Quality-Based Reimbursement
RY	Rate Year
SIR	Standardized Infection Ratio
SOI	Severity of Illness
TCOC	Total Cost of Care
VBP	Value-Based Purchasing
YTD	Year to Date

Key Methodology Concepts and Definitions

Potentially preventable complications (PPCs): 3M originally developed 65 PPC measures, which are defined as harmful events that develop after the patient is admitted to the hospital and may result from processes of care and treatment rather than from the natural progression of the underlying illness. PPCs, like national claims-based hospital-acquired condition measures, rely on **present-on-admission codes** to identify these post-admission complications.

At-risk discharge: Discharge that is eligible for a PPC based on the measure specifications

Diagnosis-Related Group (DRG): A system to classify hospital cases into categories that are similar clinically and in expected resource use. DRGs are based on a patient's primary diagnosis and the presence of other conditions.

All Patients Refined Diagnosis Related Groups (APR-DRG): Specific type of DRG assigned using 3M software that groups all diagnosis and procedure codes into one of 328 All-Patient Refined-Diagnosis Related Groups.

Severity of Illness (SOI): 4-level classification of minor, moderate, major, and extreme that can be used with APR-DRGs to assess the acuity of a discharge.

APR-DRG SOI: Combination of Diagnosis Related Groups with Severity of Illness levels, such that each admission can be classified into an APR-DRG SOI "cell" along with other admissions that have the same Diagnosis Related Group and Severity of Illness level.

Case-Mix Adjustment: Statewide rate for each PPC (i.e., normative value or "norm") is calculated for each diagnosis and severity level. These **statewide norms** are applied to each hospital's case-mix to determine the expected number of PPCs, a process known as **indirect standardization**.

Observed/Expected Ratio: PPC rates are calculated by dividing the observed number of PPCs by the expected number of PPCs. Expected PPCs are determined through case-mix adjustment.

Diagnostic Group-PPC Pairings: Complications are measured at the diagnosis and Severity of Illness level, of which there are approximately 1,200 combinations before one accounts for clinical logic and PPC variation.

Zero norms: Instances where no PPCs are expected because none were observed in the base period at the Diagnosis Related Group and Severity of Illness level.

Recommendations

The MHAC policy was redesigned for RY 2021 to modernize the program for the new Total Cost of Care Model. This RY 2022 final recommendation provides updated performance data, methodology refinement considerations, and modeling of scores and revenue adjustments, but in general maintains the measures and methodology that were developed and approved for RY 2021[1].

These are the final recommendations for the Maryland Rate Year (RY) 2022 Hospital-Acquired Conditions (MHAC) policy:

A. Continue to use 3M Potentially Preventable Complications (PPCs) to assess hospital-acquired complications.
    1. Maintain focused list of PPCs in payment program that are clinically recommended and that generally have higher statewide rates and variation across hospitals.
    2. Monitor all PPCs and provide reports for hospitals and other stakeholders.
        a) Evaluate PPCs in "Monitoring" status that worsen and consider inclusion back into the MHAC program for RY 2023 or future policies.
B. Use two years of performance data for small hospitals (i.e., less than 20,000 at-risk discharges and/or 20 expected PPCs).
C. Continue to assess hospital performance on attainment only.
D. Continue to weight the PPCs in payment program by 3M cost weights as a proxy for patient harm.
E. Maintain a prospective revenue adjustment scale with a maximum penalty at 2 percent and maximum reward at 2 percent and continuous linear scaling with a hold harmless zone between 60 and 70 percent.

[1] See the RY 2021 policy for detailed discussion of the MHAC redesign, rationale for decisions, and approved recommendations

Introduction

Since 2014, Maryland hospitals have been funded under a Population-Based Revenue system, a fixed annual revenue cap that is adjusted for inflation, quality performance, reductions in potentially avoidable utilization, market shifts, and demographic growth. Under the Population-Based Revenue system, hospitals are incentivized to transition services to the most appropriate setting, and may keep savings that they achieve via improved health care delivery (e.g., reduced avoidable utilization, readmissions, hospital-acquired infections). It is important that the Commission ensure that any incentives to constrain hospital expenditures do not result in declining quality of care. Thus, the Maryland Health Services Cost Review Commission's (HSCRC's or Commission's) Quality programs reward quality improvements that reinforce the incentives of the Population-Based Revenue system, while guarding against unintended consequences and penalizing poor performance.

The Maryland Hospital Acquired Conditions (MHAC) program is one of several pay-for-performance initiatives that provide incentives for hospitals to improve patient care and value over time. The MHAC policy currently holds 2 percent of hospital revenue at-risk for complications that occur during a hospital stay as a result of treatment rather than the underlying progression of disease. Examples of the types of hospital acquired conditions included in the current payment program are respiratory failure, pulmonary embolisms, and surgical-site infections.

With the commencement of the Total Cost of Care (TCOC) Model Agreement with CMS on January 1, 2019, the performance standards and targets in HSCRC's portfolio of quality and value-based payment programs are being reviewed and updated. This is in response to stakeholder requests that these policies be reviewed to ensure they remain in line with the goals of the Model and that they maintain methodological validity. Additionally, because the State must also request annual exemptions from the CMS Hospital Acquired Conditions (HAC) program as well as the other quality programs in the State, another key aspect of these reviews is to demonstrate that Maryland's program results continue to be aggressive and progressive — that is, meeting or surpassing those of the nation. In CY 2018, staff focused on the MHAC program redesign and convened a Clinical Adverse Events Measure (CAEM) subgroup with clinical and measurement expertise who made recommendations that were then further evaluated by the Performance Measurement Workgroup (PMWG) and approved by the Commission.

The major accomplishments of the MHAC program redesign were focusing the payment incentives on a narrower list of clinically significant complications, moving to an attainment only system given Maryland's sustained improvement on complications, adjusting the scoring methodology to better differentiate hospital performance, and weighting complications by their associated cost weights as a proxy for patient harm. The redesign also assessed how hospital performance is converted to revenue adjustments, and ultimately recommended maintaining the use of a linear prospective revenue adjustment scale with a hold harmless zone. Given the large changes that were implemented for RY 2021, this RY 2022 MHAC policy does not propose major changes to the

program, although staff proposes a process for re-evaluating the PPCs included in the program for future years and a methodology to address small hospital concerns.

Background

Exemption from Federal Hospital-Acquired Condition Programs

The Federal Government operates two hospital complications payment programs, the Deficit Reduction Act Hospital Acquired Condition program (DRA-HAC), which reduces reimbursement for hospitalizations with inpatient complications, and the HAC Reduction Program (HACRP), which penalizes hospitals with high rates of complications. Detailed information, including HACRP complication measures, may be found in Appendix I.

Because of the State's unique all-payer hospital model and its population based revenue system, Maryland does not directly participate in the federal pay-for-performance programs. Instead, the State administers the Maryland Hospital Acquired Conditions (MHAC) program, which relies on quality indicators validated for use with an all-payer inpatient population. However, the State must submit an annual report to CMS demonstrating that Maryland's MHAC program targets and results meet or surpass the nation. Specifically, the State must ensure that the improvement in complication rates observed under the All-Payer Model is maintained. CMS granted Maryland exemption from the federal pay-for-performance programs (including the HAC Reduction Program) for Federal Fiscal Year 2020 on Aug 29, 2019.

Overview of the Maryland MHAC Policy

The MHAC program, which was first implemented for RY 2011, is based on a system developed by 3M Health Information Systems (3M) to identify potentially preventable complications (PPCs) using present-on-admission codes available in claims data. 3M originally developed specifications for 65 PPCs[2], which are defined as harmful events that develop after the patient is admitted to the hospital and may result from processes of care and treatment rather than from the natural progression of the underlying illness. For example, the program holds hospitals accountable for pulmonary embolisms and surgical-site infections that occur during inpatient stays. These complications can lead to 1) poor patient outcomes, including longer hospital stays, permanent harm, and death; and 2) increased costs. Thus, the MHAC program is designed to provide incentives to improve patient care by adjusting hospital budgets based on PPC performance.

MHAC Redesign

As mentioned previously, the MHAC policy was substantially changed for RY 2021. With the exception of maintaining the linear scaling with a hold harmless zone to determine hospital

[2] For RY 2020 there were 45 PPCs or PPC combinations included in the program as 3M had discontinued some PPCs and others were deemed not suitable for a pay-for-performance program.

rewards and penalties, the MHAC policy was substantially overhauled for RY 2021. The policy updates included:

- Selecting a narrowed list of 14 PPC complication measures to focus on the most clinically meaningful and significant measures for use in the payment program.
- Using two years of data for establishing normative values to address case-mix concerns.
- Moving to an attainment only approach for assessing hospital performance.
- Modifying the scoring methodology to better differentiate hospital performance.
- Weighting complications using 3M cost weights as proxies for patient harm.

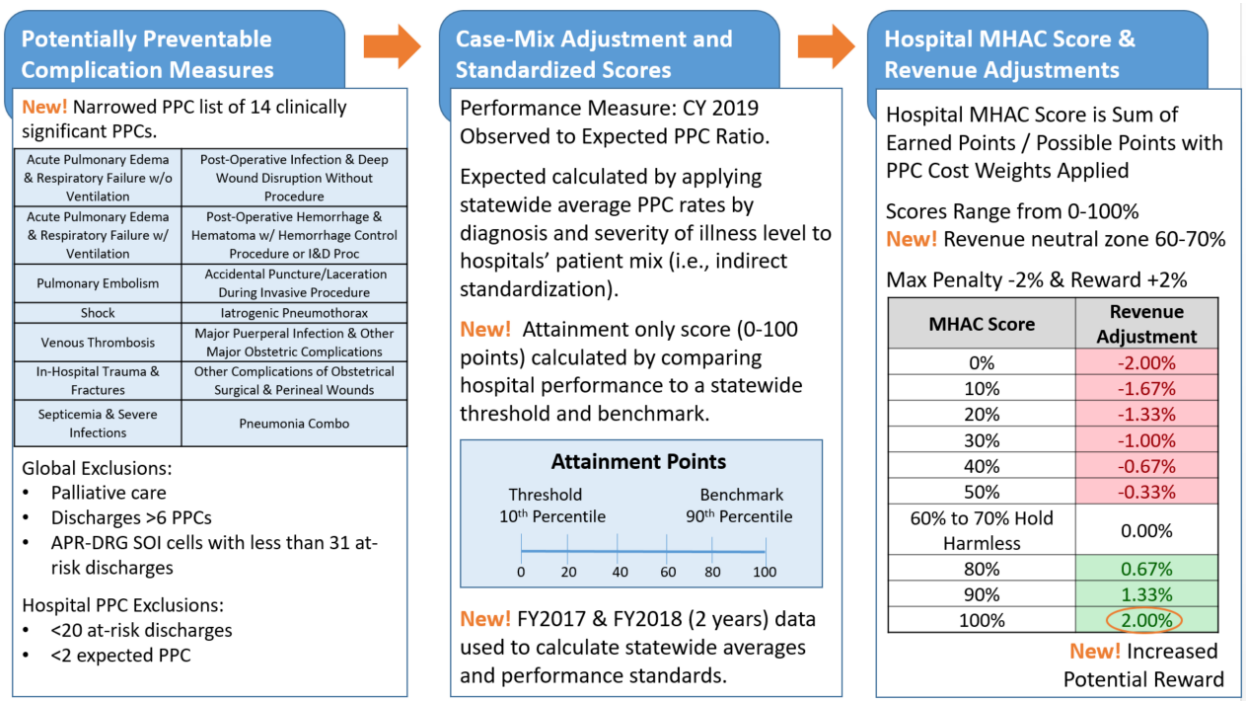
MHAC Methodology

Figure 1 provides an overview of the three steps in the RY 2021 MHAC methodology that convert hospital performance to standardized scores, and then payment adjustments, as outlined below:

> **Step 1.** For the PPCs identified for payment, global and hospital-level exclusions are determined.
>
> **Step 2.** Case-mix adjustment is used to calculate observed to expected ratios that are then converted to a standardized point based score (0-100 points) based on each hospital's attainment levels using the same scoring methodology that is used for CMS Value-Based Purchasing and Maryland QBR program.
>
> **Step 3.** Overall hospital scores are then calculated by taking the points for each PPC and multiplying by the 3M PPC cost weights, then summing numerator (points scored) and denominator (possible points) across the PPCs to calculate a percent score. A linear point scale set prospectively is then used to calculate the revenue adjustment percent. This prospective scaling approach differs from national programs that relatively rank hospitals after the performance period.

Additional information on the MHAC redesign and methodology can be found in Appendix II and in the RY 2021 policy. However, the major changes to the RY 2021 MHAC program are marked as "new" within the diagram.

Figure 1. Overview Rate Year 2021 MHAC Methodology



Assessment

In order to develop the RY 2022 MHAC policy, staff solicited input from the PMWG and other stakeholders. In general, stakeholders supported the staff's recommendation to not make major changes to the RY 2022 MHAC program. This section of the report provides an overview of the data and issues discussed by the PMWG, including analysis of statewide PPC trends, estimated hospital scores, and revenue adjustment modelling.

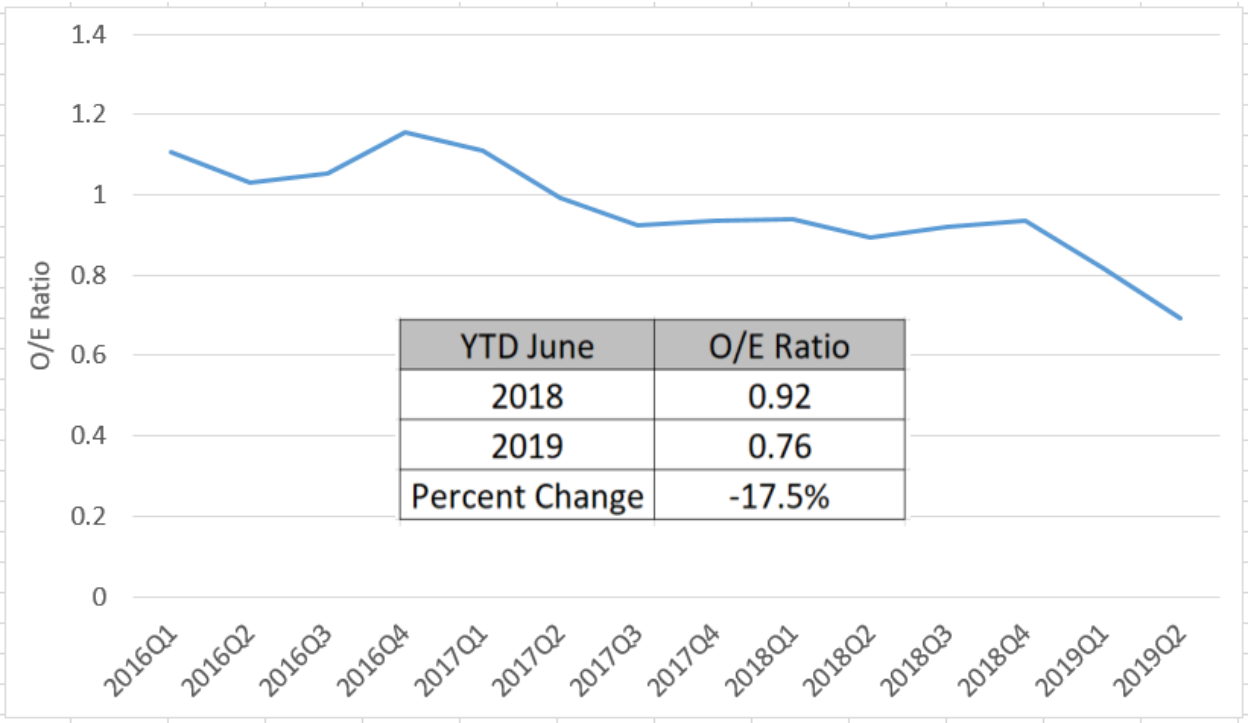
Statewide PPC Performance Trends

Complications Included in Payment Program

Under the All-Payer Model, Maryland hospitals saw a dramatic decline in complications and, as a State, exceeded the requirement of a 30 percent reduction by the end of CY 2018. These reductions were achieved through clinical quality improvement, as well as improvements in documentation and coding. As mentioned previously, the MHAC redesign assessed which PPCs should be included in the pay-for-performance program based on criteria developed by the CAEM subgroup. The criteria included clinical significance, opportunity for improvement, sample size considerations, and variation across hospitals.

Under the TCOC Model, Maryland must maintain these improvements by not exceeding the CY 2018 PPC rates. Figure 2 below shows the statewide observed to expected (O/E) ratio from 2016 through June of CY 2019 (most recently available final data). The O/E ratio presents the count of observed PPCs divided by the calculated number of expected PPCs (which is generated using normative values applied to the case-mix of discharges a hospital experiences). An O/E Ratio of greater than 1 indicates that a hospital experienced more PPCs than expected, and conversely, an O/E Ratio less than one indicates that a hospital experienced fewer PPCs than expected. The figure below also indicates how Maryland is performing relative to CY 2018, which is the time period that will be used to assess any backsliding on performance. Specifically, the CY 2019 YTD performance data for payment program PPCs shows that there has been about a 17.5 percent reduction in the observed to expected ratio (CY 2018 YTD O/E ratio = 0.92 and CY 2019 YTD O/E ratio = 0.76).

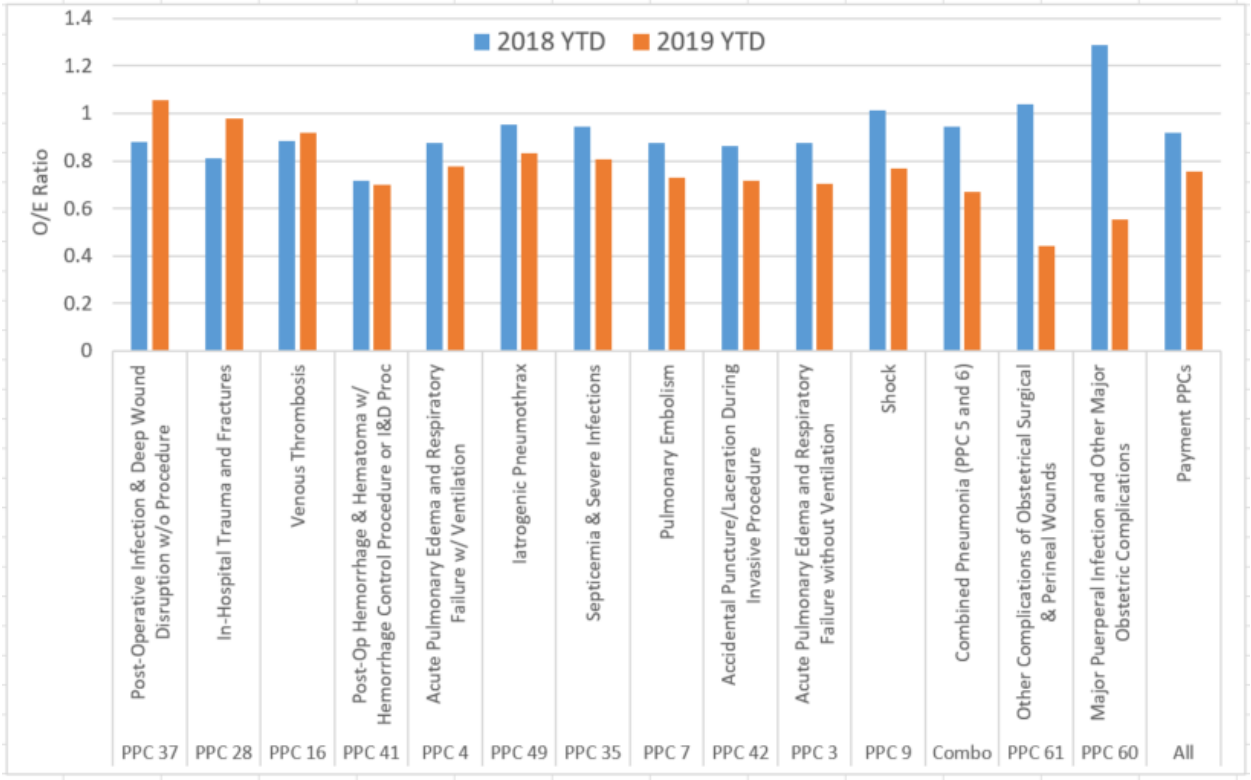
Figure 2. Payment Program PPCs Observed to Expected Ratios CY 2016 to CY 2019 YTD through June



YTD June	O/E Ratio
2018	0.92
2019	0.76
Percent Change	-17.5%

In terms of specific improvements among the 14 payment PPCs, Figure 3 shows the O/E ratios for CY 2018 and CY 2019 YTD through June, sorted from greatest percent increase (on the left) to greatest decrease (on the right). The three PPCs that have had an increased O/E ratio include PPC 37 Post-Operative Infection & Deep Wound Disruption Without Procedure, PPC 28 In-Hospital Trauma and Fractures, and PPC 16 Venous Thrombosis. The three PPCs with the greatest decreases include PPC 60 Major Puerperal Infection and Other Major Obstetric Complications, PPC 61 Other Complications of Obstetrical Surgical & Perineal Wounds, and the combined Pneumonia PPC.

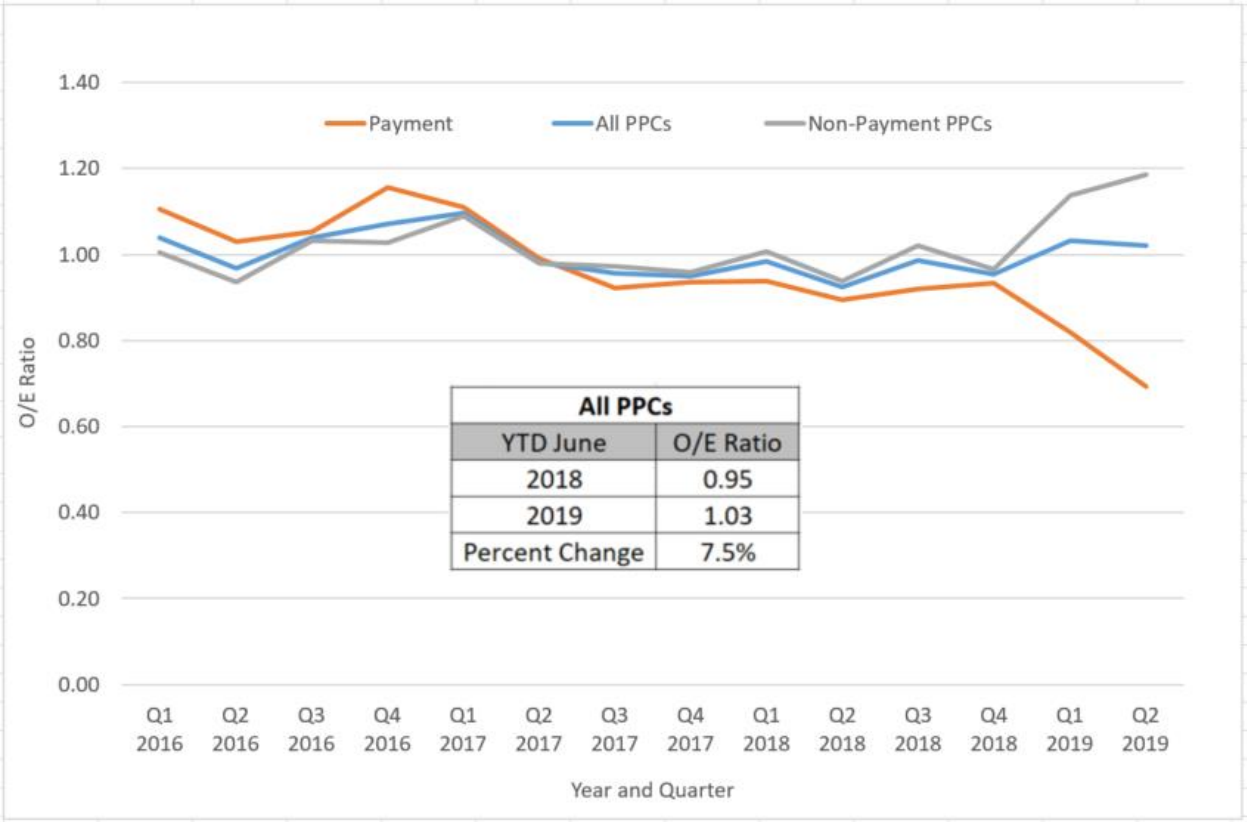
Figure 3. Payment Program PPC Observed to Expected Ratios CY 2018 and CY 2019 YTD through June



Monitored Complications

In addition to focusing on a narrowed list of PPCs for payment, the RY 2021 MHAC Policy included a recommendation to monitor the remaining PPCs. Staff fulfills this recommendation by monitoring all PPCs that are still considered clinically valid by 3M, and distinguishing between "Monitoring" and "Payment" PPCs, as in the analysis below. The overall PPC trend across all 56 PPCs shows that there has been an increase in the overall statewide O/E ratio from 0.95 in the first six months of CY 2018 to 1.03 in the first 6 months of CY 2019; the slight worsening in performance is driven primarily by increases in PPCs under monitoring, and not increases in the payment program PPCs, as illustrated in Figure 4.

Figure 4. PPC O/E Ratio Trends 2016 Through Qtr 2 CY 2019



In response to the increase in PPCs overall, staff has reached out to select hospitals and requested that they provide a response, including any insight into underlying factors leading to these trends for the first 6 months of 2019 compared with 2018. Early hospital feedback regarding the trends include:

- **Clinicians' interpretations of clinic documentation that triggers the PPC vary, and many of the occurrences are not clinically significant events**—e.g., for PPC 40 Post-operative Hemorrhage without Procedure, this is subjectively evaluated by clinicians as to whether there was an occurrence of a hemorrhage or hematoma; also, even when a hematoma or bruising after a procedure is expected in the normal course of a particular surgical treatment, acknowledging this occurrence in the coding still causes these PPCs to be triggered.
- **The events are low volume and highly volatile**—e.g., for PPC 31 Decubitus Ulcer, for some hospitals with no occurrences in the base period, one or two occurrences in the performance period represents a large increase for that PPC, even when evaluated in the context of an O/E ratio.
- **The events were triggered and may not be the fault of the hospital**—e.g., for PPC 29 Poisonings Except from Anesthesia, one hospital indicated that there were cases assigned

this PPC that were triggered when the patients used opiates not prescribed but brought to them from outside the hospital during the patients' hospital stay.

- **Changes in Documentation and Coding Practices not associated with change in quality of care**—hospitals may focus on payment program PPCs when coding cases, especially given some of the clinical and definitional concerns documented for some of the PPCs removed from the MHAC program.

Additionally staff notes that some of the PPCs were removed from the payment program prior to the RY 2021 redesign due to clinical concerns or small cells, but they are included in the analysis, which may also contribute to the volatility of the monitoring only PPC evaluation.

Based upon all the feedback received to date, staff believes the criteria set up by the CAEM to select the PPCs for payment were set up to overcome the weaknesses in the broader list of PPCs; staff therefore supports ongoing monitoring and dialogue with hospitals, but not moving these PPCs back to payment, or using the PPCs to measure success on statewide complications. For RY 2022, staff proposes maintaining the same 14 PPCs for continuity over a two year period, however staff will continue to monitor all PPCs and may recommend non-payment PPCs with clinical significance and statistical reliability be reintroduced into the RY 2023 or future policies.

Small Hospital Methodology

Since the MHAC program moved to the observed to expected ratios to assess performance at the start of the All-Payer Model, minimum cell size exclusions have been applied at the hospital level for each complication. These requirements were maintained in RY 2021 but were doubled to reflect the use of two years of data to determine performance standards and to prospectively determine which PPCs a hospital was being held accountable. Specifically, hospitals are required to have at least 20 at-risk discharges and 2 expected PPCs in order for that PPC to be included in the payment program. Staff does not propose changes to these requirements for RY 2022.

In the draft policy staff expressed concerns that there were a handful of smaller hospitals eligible to be scored on less than half of the PPC measure types, resulting in scores that tended towards the extremes of 0 or 100 percent since the numbers are low. Thus, staff proposed that those hospitals should be excluded from the MHAC program given the volatility in their scores. However, based on Commissioner and stakeholder input, staff re-evaluated the performance data and have amended this final policy to recommend the following:

1. Establish small hospital criteria for assessing performance under the MHAC policy based on the number of at-risk discharges and expected PPCs (i.e., small hospitals are those with less than 20,000 at-risk discharges and/or 20 expected PPCs across all payment program PPCs) as opposed to the number of PPC measure types, and;
2. for hospitals that meet small hospital criteria, increase reliability of score by using two years of performance data to assess hospital performance (i.e., for RY 2022 use CY 2019 and 2020).

The rationales for not excluding these smaller hospitals are that the National HAC program has no hospital exclusions, and stakeholders expressed concern that the policy should hold small hospitals accountable for their performance under the GBR model, especially if small hospitals have more

observed PPCs relative to State peers despite their small size. Conversely, if a small hospital has significantly fewer PPCs relative to its expected value, staff believes averted complications should be rewarded. Based on this revised policy recommendation, five small hospitals would be scored using two years of performance data. The small hospital criteria are applied to the base period in order to maintain the prospective nature of the MHAC program (i.e., for RY 2022, FY 18 and FY19 are used to flag hospitals with less than 20,000 at-risk and/or 20 expected). Figure 5 shows the scores for these small hospitals using one versus two years of data.[3]

Figure 5. Modeled Scores with One versus Two Years Performance Data

HOSPITAL ID	HOSPITAL NAME	At-Risk (FY18 and FY19)	Observed (FY18 and FY19)	Expected (FY18 and FY19)	TOTAL NUMBER OF PPCs (max 14)	Scores with 1 Year Performance Data (FY19)	Scores with 2 Years Performance Data (FY18 and FY19)
210010	UM-Dorchester	6733	5	6.84	3	100%	86%
210064	Levindale	8709	31	11.86	4	0%	7%
210017	Garrett	10889	4	13.97	5	100%	95%
210060	Ft. Washington	11594	1	14.25	5	100%	100%
210013	Bon Secours	22139	43	17.75	5	3%	0%

Palliative Care Exclusion

In prior years, the Performance Measurement Work Group had expressed interest to understand the assignment of PPCs for patients with a palliative care diagnosis (Z515), which the MHAC policy had explicitly excluded. This was in part because in October 2016 coding guidelines changed such that the palliative care diagnosis code was no longer exempt from POA and as such there had been indications from 3M that the PPCs would count if a patient had palliative care diagnosis not present on admission. However, most recently, 3M has indicated that the current PPC Grouper will not assign a PPC to a patient with a palliative care diagnosis regardless of present on admission except in the case of PPC 45, Post-Procedure Foreign Body. In light of 3M's direction on this matter, including palliative care cases back into the MHAC program will not have a material impact on the MHAC program. Therefore, the post-grouper exclusion of discharges with a palliative care diagnosis will be removed and instead the 3M clinical logic will be used for this exclusion.

Modeling of Scores and Revenue Adjustments

For RY 2022, staff implemented PPC Grouper Version 37 and calculated normative values and attainment standards using SFYs 2018 and 2019 (moved forward one year from the RY 2021 policy). Figure 6 provides the attainment standards for RY 2022 that were used for the modeling presented in this policy.

[3] Modeling (v37) is for the performance period of FY19 (one year) vs. FY18 and FY19 (two years) with base period of FY18 and 19. The score changes for these small hospitals are not significant, and thus all remaining modeling in this policy does not reflect this change (i.e., only one year of performance data is used).

Figure 6. RY 2020 Attainment Standards: PPC Benchmarks (10th Percentile) and Thresholds (90th Percentile)

PPC Number	PPC Description	Threshold	Benchmark
3	Acute Pulmonary Edema and Respiratory Failure without Ventilation	1.8882	0.3348
4	Acute Pulmonary Edema and Respiratory Failure with Ventilation	1.4274	0.4933
7	Pulmonary Embolism	1.5660	0.3091
9	Shock	1.6965	0.3727
16	Venous Thrombosis	1.7715	0.1242
28	In-Hospital Trauma and Fractures	1.5749	0.4468
35	Septicemia & Severe Infections	1.5732	0.3891
37	Post-Operative Infection & Deep Wound Disruption Without Procedure	1.9911	0.4162
41	Post-Operative Hemorrhage & Hematoma with Hemorrhage Control Procedure or I&D Proc	2.4933	0.4362
42	Accidental Puncture/Laceration During Invasive Procedure	2.1677	0.3735
49	Iatrogenic Pneumothrax	1.6971	0.3351
60	Major Puerperal Infection and Other Major Obstetric Complications	1.6266	0
61	Other Complications of Obstetrical Surgical & Perineal Wounds	1.8975	0
67	Combined Pneumonia (PPC 5 and 6)	1.6422	0.3986

Score Modeling

For the RY 2021 policy, the policy evolved to an attainment-only system with wider performance standards (i.e., 10th and 90th percentiles) to better differentiate hospital performance. For this final policy, two models are provided that both use v37 data and CY 2019 performance data through June. Staff are comfortable using the CY 2019 YTD through June data, as opposed to the 12-month FY 19 data, because analyses indicate a high correlation between the MHAC scores when using 6 or 12 months of data. Thus, the two models listed differ only in the time period used to calculate normative values and the attainment standards. Both are presented to show that given the historical trend of continued PPC improvements the scores tend to be higher if there is an overlap between the attainment standards and the performance period.

Two sets of scores are presented below:

- Model 1: CY 2019 June YTD performance scores using RY 2022 (FY 18 and FY19) performance standards
- Model 2: CY 2019 June YTD performance scores using RY 2021 (FY 17 and FY18) performance standards (i.e., RY 2021 time periods)

Figure 7 provides descriptive statistics for the total hospital scores. As discussed the Model 1 scores are lower than Model 2, most likely due to the overlap in the time period used for determining the attainment standards. This is consistent with the RY 2021 modeling provided in last year's final policy, which showed less favorable performance than the actual RY 2021 YTD scores.

Figure 7. Hospital Score Models

Hospital Scores CY 2019 YTD through June	Model 1: FY 18 & 19 Attainment Standards	Model 2: FY 17 & 18 Attainment Standards
Median	60%	69%
Average	57%	68%
Min	0%	11%
Max	100%	100%
25th percentile	41%	56%
75th percentile	73%	83%

Revenue Adjustment Scale Modeling

Using scores presented above, staff modeled revenue adjustments using the RY 2021 preset scale, which is proposed by staff to remain the same for RY 2022. Figure 8 provides the count of hospitals in the penalty, hold harmless or zero adjustment, and reward zones. Also provided are the statewide net revenue adjustments. Appendix III contains the by hospital scores and revenue adjustments. These scores and revenue adjustments do not include the recommended change to use two years of data for small hospitals since this change will have a minimal impact on statewide adjustments. Overall the results show that under Model 1 the estimated penalties are around $15.3 million and the rewards are $20.7 million. However these estimates likely underestimate rewards and overestimate penalties. This is because the performance period overlaps with the time period for determining the normative values and benchmark/thresholds. While Model 2 shows $9.0 million in penalties and $30.0 million in rewards, this is because the median score is 69 percent and 20 hospitals are rewarded. Given that hospitals are generally performing well on complications, staff feels it is reasonable that almost half the hospitals are rewarded, although the Commission could consider whether the cut point should be raised now or in future years.

Figure 8: Revenue Modeling

Statewide Revenue Adjustments Updated Modeling all Under v37 PPC Grouper	Model 1: RY2022 Modeling		Model 2: RY2021 YTD Results	
	$	%	$	%
Net	$5,436,695	0.06%	$20,961,586	0.22%
Penalties	-$15,261,760	-0.16%	-$9,000,698	-0.09%
Rewards	$20,698,455	0.21%	$29,962,284	0.31%
Median Score	63%		69%	
# Hospitals Penalized	19		14	
# Hospitals Revenue Neutral	10		11	
# Hospitals Rewarded	16		20	

Additional Future Considerations

For future years it will be important to continue to try and find a national comparison for PPCs, or to move to measures such as the AHRQ Patient Safety Indicators (PSIs). Staff believes that the upcoming review of the QBR program in 2020 will provide an opportunity to reevaluate complication measures and the respective roles of the QBR safety domain and MHAC program. Specifically, staff believes that the QBR program redesign should include adoption of the all-payer ICD-10 compatible version of the PSI 90 composite measure. This PSI measure includes some complications that are similar to PPCs in payment program but with ability to do national comparison (e.g., respiratory failure) and some PPCs that are not in payment program, assessing different facets of complications as well (e.g., pressure ulcers). In addition, staff should continue to monitor other safety measures in use or under consideration nationally for reporting or payment; these measures will be considered for possible inclusion in the MHAC program for FY 2023 or beyond.

Stakeholder Feedback and Staff Responses

Comment letters on the draft MHAC recommendations were submitted by the Maryland Hospital Association (MHA), Garrett Regional Medical Center (GRMC), the Johns Hopkins Health System (JHHS), and CareFirst BlueCross BlueShield (CF). All four commenters generally support the RY 2022 MHAC policy and continued use of the revised MHAC methodology.

However, some targeted concerns were raised and suggestions provided for modifying specific aspects of the draft recommendations. These comments and suggestions are summarized below along with staff's responses.

Hospital-Specific Requirement of Six or More PPC Measures for Inclusion in Payment Program

While the MHA and JHHS did not raise any concerns on this new exclusion, CF specifically supported the newly proposed draft recommendation for a hospital to be scored on at least six of the fourteen PPC measures to be eligible for rewards or penalties under the program. However, GRMC, who would be excluded under this new policy since they are only eligible for five PPC measures, requested that the Commission reconsider this change to the MHAC policy. GRMC argues that they have been in good standing under the program over the last several years as a result of their efforts focused on preventing complications for vulnerable patients and working with their physicians on appropriate documentation. In addition to the comment letters, Commissioner Colmers recommended at the December Commission meeting that staff consider alternatives such as the use of two years of data for small hospitals.

> **Staff Response**: Staff have revised the RY 2022 MHAC recommendations to suggest that small hospitals remain in the MHAC program, but that two years of performance data be used to assess their performance. Specifics of this change are discussed above in the assessment section of this final policy. Staff believes that the modification will increase the validity and reliability of small hospital scores, and thus acknowledge the favorable performance of hospitals such as GRMC. Staff will monitor this change and continue to

assess options for improving the validity and reliability of the scores for small hospitals experiencing low numbers of events.

Underestimated Expected Values

JHHS' comment letter continues to raise concerns on the mathematical methodology for calculating expected PPC counts. JHHS believes that the current methodology of indirect standardization to calculate statewide normative values results in a hospital's expected values being underestimated. In previous letters, JHHS has specifically stated that they support implementation of a Bayesian adjustment that adjusts for or smooths small volume events, making them more statistically stable. The other stakeholder comment letters did not raise the underestimate of expected values as a concern.

Staff Response: As stated last year, staff again notes that the zero norm issue has been minimized by narrowing down the list to the fourteen clinically significant PPCs, increasing the statewide at risk number from 2 to 31 for each diagnosis and severity of illness level, and using a two year period to establish the normative values. Staff would also note that in the policy last year, staff presented various analyses that supported the continued use of the indirect standardization methodology. Furthermore, other stakeholders have previously expressed support of this methodology because of its simplicity and transparency. Thus, for the RY 2022 policy, staff does not recommend any changes; however, staff will continue to monitor the small cell size issue in the MHAC program.

Concerns over 3M PPC Logic and PPC Appeals

Consistent with their input last year, JHHS raises concerns with the PPC logic and suggests that an appeals process be established for the MHAC program where HSCRC convenes clinicians to review individual PPC cases in dispute.

Staff Response: Staff does not support a process for individual PPC cases to be disputed by clinicians. Staff notes the MHAC program is rate-based (i.e., observed PPCs to expected PPCs) and acknowledges that not all PPCs are completely preventable. Staff further notes that we undertake with MHA, hospital clinicians and 3M an annual process to review the PPC clinical assignment and exclusion logic, which results in annual changes to the PPC methodology. Therefore, staff believes the current process for clinical vetting with the industry and 3M is adequate. Finally, staff notes that we accept hospital feedback and input throughout the year regarding specific issues related to coding assignment and exclusion logic and work with 3M to resolve the issues as they occur.

Linear Scale Hold Harmless Zone

CF supports a continuous linear scaling approach, but maintains their position that a hold harmless zone from 60 to 70 percent is unnecessary.

Staff Response: Staff is in agreement regarding the continued use of a linear scale for calculating revenue adjustments. However, staff does not support removal of the hold

harmless zone at this time. Lacking national benchmarks of performance on the PPC measures, the hold harmless zone helps mitigate uncertainty around where the cut point should be established**.** As also noted in the RY 2021 MHAC policy, the hold harmless zone of 10 percent is important because it reduces the penalty/reward cliff effect between a score of below and above the cut point, i.e., 59 and 61 percent. And while some stakeholders have suggested that the hold harmless zone reduces incentives to improve for those with performance in this range, staff believes that the RY 2021 change to increase rewards to 2 percent should be a strong incentive to perform better than 70 percent. It should also be noted that the CMS HACRP program, which only penalizes the lowest quartile of hospitals, has ostensibly a very large hold harmless zone.

Recommendations

These are the final recommendations for the Maryland Rate Year (RY) 2022 Hospital-Acquired Conditions (MHAC) policy:

A. Continue to use 3M Potentially Preventable Complications (PPCs) to assess hospital-acquired complications.
    1. Maintain focused list of PPCs in payment program that are clinically recommended and that generally have higher statewide rates and variation across hospitals.
    2. Monitor all PPCs and provide reports for hospitals and other stakeholders.
        a) Evaluate PPCs in "Monitoring" status that worsen and consider inclusion back into the MHAC program for RY 2023 or beyond.

B. Use two years of performance data for small hospitals (i.e., less than 20,000 at-risk discharges and/or 20 expected PPCs).

C. Continue to assess hospital performance on attainment only.

D. Continue to weight the PPCs in payment program by 3M cost weights as a proxy for patient harm.

E. Maintain a prospective revenue adjustment scale with a maximum penalty at 2 percent and maximum reward at 2 percent and continuous linear scaling with a hold harmless zone between 60 and 70 percent.

Appendix I. Background on Federal Complication Programs

The Federal Government operates two hospital complications payment programs, the Deficit Reduction Act Hospital Acquired Condition program (DRA-HAC) and the HAC Reduction Program (HACRP), both of which are designed to penalize hospitals for post-admission complications.

Federal Deficit Reduction Act, the Hospital-Acquired Condition Present on Admission Program

Beginning in Federal Fiscal Year 2009 (FFY 2009), per the provisions of the Federal Deficit Reduction Act, the Hospital-Acquired Condition Present on Admission Program was implemented. Under the program, patients were no longer assigned to higher-paying Diagnosis Related Groups if certain conditions were acquired in the hospital and could have reasonably been prevented through the application of evidence-based guidelines.

Hospital-Acquired Condition Reduction Program

CMS expanded the use of hospital-acquired conditions in payment adjustments in FFY 2015 with a new program, entitled the Hospital-Acquired Condition Reduction Program, under the authority of the Affordable Care Act. That program focuses on a narrower list of complications and penalizes hospitals in the bottom quartile of performance. Of note, as detailed in Figure 1 below, all the measures in the Hospital-Acquired Condition Reduction Program are used in the CMS Value Based Purchasing program, and the National Healthcare Safety Network (NHSN) Healthcare-Associated Infection (HAI) measures are also used in the Maryland Quality Based Reimbursement (QBR) program.

Figure 1. CMS Hospital-Acquired Condition Reduction Program (HACRP) FFY 2020 Measures

Recalibrated Patient Safety Indicator (PSI) measure:^ • PSI 03 – Pressure Ulcer Rate • PSI 06 – Iatrogenic Pneumothorax Rate • PSI 08 – In-Hospital Fall with Hip Fracture Rate • PSI 09 – Perioperative Hemorrhage or Hematoma Rate • PSI 10 – Postoperative Acute Kidney Injury Requiring Dialysis Rate • PSI 11 – Postoperative Respiratory Failure Rate • PSI 12 – Perioperative Pulmonary Embolism or Deep Vein Thrombosis Rate • PSI 13 – Postoperative Sepsis Rate • PSI 14 – Postoperative Wound Dehiscence Rate • PSI 15 – Unrecognized Abdominopelvic Accidental Puncture/Laceration Rate
Central Line-Associated Bloodstream Infection (CLABSI)^*
Catheter-Associated Urinary Tract Infection (CAUTI)^*

Surgical Site Infection (SSI) – colon and hysterectomy^*
Methicillin-resistant Staphylococcus aureus (MRSA) Bacteremia^*
Clostridium Difficile Infection (CDI)^*

^Recalibrated PSI Composite Measures included in the CMS VBP Program beginning FFY 2023.
* National Healthcare Safety Network (NHSN) Healthcare-Associated Infection (HAI) measures included in both the CMS VBP and Maryland QBR Programs.

For more information on the DRA HAC program POA Indicator, please refer to:
https://www.cms.gov/Medicare/Medicare-Fee-for-Service-Payment/HospitalAcqCond/index

For more information on the DRA HAC program, please refer to:
https://www.cms.gov/Medicare/Medicare-Fee-for-Service-Payment/HospitalAcqCond/Downloads/FAQ-DRA-HAC-PSI.pdf

For more information on the HAC Reduction program, please refer to:
https://www.cms.gov/Medicare/Medicare-Fee-for-Service-Payment/AcuteInpatientPPS/HAC-Reduction-Program

Appendix II: Redesigned RY 2021 MHAC Program Methodology

The MHAC policy was redesigned for RY 2021 to modernize the program for the new Total Cost of Care model. To accomplish this work, staff convened a Clinical Adverse Events Measure (CAEM) subgroup with clinical and measurement expertise who made recommendations that were then further evaluated by the Performance Measurement Workgroup (PMWG) and approved by the Commission.

The major accomplishments of the MHAC program redesign included: focusing the payment incentives on a narrower list of clinically significant complications, moving to an attainment only system given Maryland's sustained improvement on complications, adjusting the scoring methodology to better differentiate hospital performance, and weighting complications by their associated cost weights as a proxy for patient harm. The redesign also assessed how hospital performance is converted to revenue adjustments, and ultimately recommended maintaining the use of a linear prospective revenue adjustment scale with a hold harmless zone. Below are additional details on the MHAC redesign and approved methodology.

Overview of MHAC Redesign

As part of the RY 2021 MHAC redesign, with stakeholder and staff support, the Commission approved the continued use of the 3M Potentially Preventable Complication (PPC) measures. In order to assess which PPCs should be included in a pay-for-performance program, the CAEM and PMWG members developed criteria for PPC inclusion, as shown in Figure 1. Based on these criteria, a focused list of 14 PPCs was selected for inclusion in the RY 2021 payment program, with all non-payment PPCs to be monitored.

Figure 1. Criteria for PPC Inclusion

Clinical Criteria	● All-payer focus ● Clinically significant complication ● Area of national focus ● Evidence-based prevention protocols/opportunity for improvement
Statistical Criteria	● At least half of hospitals eligible for PPC ● Higher statewide rate ● Variation across hospitals in performance

MHAC Performance Scoring

In redesigning the MHAC program the CAEM subgroup and PMWG considered many issues on how to assess hospital performance including the performance metric and its case-mix adjustment, the relative weighting of individual PPCs, the scoring of PPC rates via improvement and attainment or attainment-only, and the methodology to convert measure rates to standardized scores. Based on these discussions, the Commission approved the following RY 2021 recommendations:

- Continue to use the observed-to-expected ratio with indirect standardization based on two years of data to calculate normative values
- Move to an attainment only program
- Weight PPCs by 3M cost weights as proxy for harm
- Continue to use a points system that is based on historical performance standards but make the system more continuous and better able to distinguish gradations in performance

Performance Metric

The MHAC program assesses performance using an observed to expected ratio for each PPC.[4] The expected number of PPCs at a hospital is calculated through indirect standardization, in which a statewide rate for each PPC (i.e., normative value or "norm") is calculated for each diagnosis and severity of illness level. The advantage of this method is that it is conceptually simple to understand and can be implemented easily in a prospective system. However, hospitals have raised concerns that the gradually lower statewide rates and increasingly granular indirect standardization at the diagnosis and severity level have led to what has been termed a "zero-norm" issue, i.e., hospitals are potentially penalized for a singular random event as opposed to materially poor clinical performance.[5] In the RY 2021 policy, this issue was addressed by selecting complications with higher statewide rates, using two years of data to calculate the normative values, and continuing to require at least 31 discharges per diagnosis and severity of illness cell.

Attainment Only Prospective System

The CAEM subgroup and PMWG considered recommendations from Commissioners that performance should be assessed based on attainment only, using a scoring methodology that recognizes improvement for poor performers through reduced attainment penalties. This aligns with the CMS HACRP program that is also attainment only. Furthermore, given the large improvements in PPCs over the past several years, future rewards will focus on optimal performance and not provide additional positive revenue adjustments for improvement.

However, stakeholders continue to desire a system that sets prospective targets and allows hospitals to track performance during the performance period. Thus, the normative values and performance standards under an attainment only prospective system need to be set on a historical time period, which differs from the National attainment only program.

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[4] The CAEM subgroup also evaluated alternatives to the observed to expected ratio, such as an excess PPC rate that takes into account the number of discharges. However, staff believes that the current performance metric takes into account the number of discharges through its calculation of the expected rate, and that further adjustment for number of discharges is not warranted. Additionally, the use of an observed to expected ratio aligns with other measures such as the NHSN standardized infection ratios.

[5] In RY 2020 there were 328 diagnosis groups and 45 PPC/PPC combinations proposed, which resulted in over 56,000 cells for which a statewide average PPC rate is calculated, the majority of which have a normative value of zero.

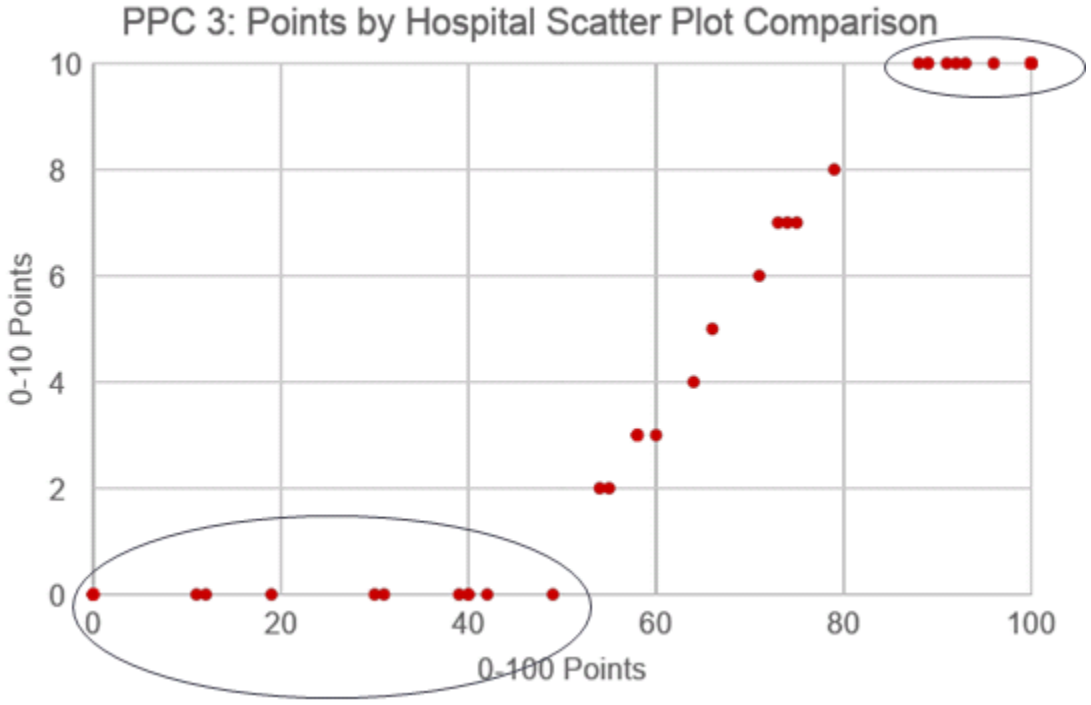
Standardized Scoring Methodology

Commissioners and other stakeholders who have expressed a preference for an attainment only system believe that such a system could incentivize poor performers to improve through reduced penalties for improvement. However, the previous scoring methodology for attainment assigned all hospitals that were worse than the statewide median a score of zero points, and thus did not differentiate hospital performance below the statewide median. This methodology, if maintained in an attainment only scoring methodology, may have generated adverse incentives for poor performers, especially outliers, as improvement toward but not surpassing the statewide median would have resulted in the same zero score. Therefore, CAEM and PMWG members collaborated with staff to develop a wider and more continuous scoring approach.

Specifically, staff adapted the MHAC point system to allow for greater performance differentiation by moving the threshold to the value of the observed to expected ratio at the 10th percentile of hospital performance, moving the benchmark to the value of the observed to expected ratio at the 90th percentile of hospital performance, and assigning 0 to 100 points for each PPC between these two percentile values.

As shown in Figure 2, the wider range in the performance standards differentiates hospital performance at the lower and upper ends and provides more continuous incentives for improvement. However, because hospitals can begin to earn points for relatively poor performance at the value of the 10th percentile, hospital scores are higher under this modified scoring methodology, and the preset revenue adjustment scale is adapted so that hospitals do not receive financial rewards for lackluster performance, as discussed in the next section.

Figure 2. Expanded Scoring Example



3M Cost Weights and Hospital Scores

Previously, the MHAC methodology placed PPCs into two tiers to emphasize the more significant PPCs. Under the revised methodology, the Commission approved weighting the 14 PPCs differentially using 3M cost weights as a proxy for degree of patient harm. Overall hospital scores are then calculated by taking the points for each PPC and multiplying by the 3M PPC cost weights (100 per PPC * 3M cost weight), then summing numerator (points scored) and denominator (possible points) across the PPCs to calculate a percent score. The percent score (e.g., 85 points earned /100 possible points = 85%) should not be interpreted as the percentile of hospital performance.

Prospective Revenue Adjustment Scale

Since RY 2019, the revenue adjustment scale has been based on the mathematical distribution of possible scores (0 to 100 percent) with a hold harmless zone. This approach is referred to as a prospective revenue adjustment scale, as opposed to a retrospective revenue adjustment scale that determines the scale *after* the performance period. For the RY 2021 policy, the Commission approved continued use of a prospective scale based on the range of possible scores, because using a prospective scale provides greater transparency and predictability for hospitals, which are already assuming risk under a population-based revenue system.

During the MHAC redesign for RY 2021, staff and stakeholders considered several issues related to the revenue adjustment scale including whether the scale should be linear or non-linear, the use of a hold harmless zone, and the appropriate cut point for penalties and rewards. The Commission approved the staff recommendation to continue to use a linear scale that ranges from 0 to 100 with a hold harmless zone between 60 and 70 percent to account for higher scores under the revised attainment only scoring methodology. In addition, the scale was modified to increase potential rewards from 1 to 2 percent.

Appendix III: By Hospital Score and Revenue Adjustment Modeling

RY 2022 Policy Modeling			Model 1: FY1819 Attainment Standards			Model 2: FY1718 Attainment Standards		
HOSP ID	**HOSPITAL**	**RY19 Estimated Permanent Inpatient Revenue**	**Score**	**% Revenue Adjustment**	**Estimated Revenue Adjustment**	**Score**	**% Revenue Adjustment**	**Estimated Revenue Adjustment**
210001	MERITUS	$219,551,750	50%	-0.33%	-$731,839	56%	-0.13%	-$292,736
210002	UNIVERSITY OF MARYLAND	$1,203,673,856	81%	0.73%	$8,826,942	82%	0.80%	$9,629,391
210003	PRINCE GEORGE	$282,929,188	61%	0.00%	$0	67%	0.00%	$0
210004	HOLY CROSS	$355,608,692	63%	0.00%	$0	72%	0.13%	$474,145
210005	FREDERICK MEMORIAL	$232,665,827	42%	-0.60%	-$1,395,995	52%	-0.27%	-$620,442
210006	HARFORD	$54,181,186	64%	0.00%	$0	64%	0.00%	$0
210008	MERCY	$226,492,002	64%	0.00%	$0	68%	0.00%	$0
210009	JOHNS HOPKINS	$1,456,687,424	65%	0.00%	$0	72%	0.13%	$1,942,250
210010	DORCHESTER	$22,653,845	100%	2.00%	$453,077	100%	2.00%	$453,077
210011	ST. AGNES	$238,757,730	62%	0.00%	$0	72%	0.13%	$318,344
210012	SINAI	$399,817,673	55%	-0.17%	-$666,363	64%	0.00%	$0
210013	BON SECOURS	$64,363,349	10%	-1.67%	-$1,072,722	11%	-1.63%	-$1,051,268
210015	FRANKLIN SQUARE	$306,898,504	38%	-0.73%	-$2,250,589	47%	-0.43%	-$1,329,894
210016	WASHINGTON ADVENTIST	$164,197,283	67%	0.00%	$0	69%	0.00%	$0
210017	GARRETT COUNTY	$23,714,400	100%	2.00%	$474,288	100%	2.00%	$474,288
210018	MONTGOMERY GENERAL	$84,721,645	24%	-1.20%	-$1,016,660	30%	-1.00%	-$847,216
210019	PENINSULA REGIONAL	$249,228,264	83%	0.87%	$2,159,978	86%	1.07%	$2,658,435
210022	SUBURBAN	$208,954,270	58%	-0.07%	-$139,303	66%	0.00%	$0
210023	ANNE ARUNDEL	$294,544,506	73%	0.20%	$589,089	79%	0.60%	$1,767,267
210024	UNION MEMORIAL	$243,156,679	46%	-0.47%	-$1,134,731	50%	-0.33%	-$810,522

RY 2022 Policy Modeling			Model 1: FY1819 Attainment Standards			Model 2: FY1718 Attainment Standards		
HOSP ID	**HOSPITAL**	**RY19 Estimated Permanent Inpatient Revenue**	**Score**	**% Revenue Adjustment**	**Estimated Revenue Adjustment**	**Score**	**% Revenue Adjustment**	**Estimated Revenue Adjustment**
210027	WESTERN MARYLAND HEALTH SYSTEM	$169,462,000	52%	-0.27%	-$451,899	57%	-0.10%	-$169,462
210028	ST. MARY	$79,141,046	76%	0.40%	$316,564	84%	0.93%	$738,650
210029	HOPKINS BAYVIEW MED CTR	$366,607,627	62%	0.00%	$0	69%	0.00%	$0
210032	UNION HOSPITAL OF CECIL COUNT	$65,426,887	40%	-0.67%	-$436,179	55%	-0.17%	-$109,045
210033	CARROLL COUNTY	$140,291,849	59%	-0.03%	-$46,764	66%	0.00%	$0
210034	HARBOR	$110,392,040	28%	-1.07%	-$1,177,515	34%	-0.87%	-$956,731
210035	CHARLES REGIONAL	$76,930,098	70%	0.00%	$0	65%	0.00%	$0
210037	EASTON	$103,481,053	71%	0.07%	$68,987	78%	0.53%	$551,899
210038	UMMC MIDTOWN	$111,141,002	71%	0.07%	$74,094	75%	0.33%	$370,470
210039	CALVERT	$67,111,996	25%	-1.17%	-$782,973	32%	-0.93%	-$626,379
210040	NORTHWEST	$138,719,920	89%	1.27%	$1,757,119	91%	1.40%	$1,942,079
210043	BALTIMORE WASHINGTON MEDICAL CENTER	$250,217,336	67%	0.00%	$0	71%	0.07%	$166,812
210044	G.B.M.C.	$237,787,317	49%	-0.37%	-$871,887	58%	-0.07%	-$158,525
210048	HOWARD COUNTY	$182,870,977	59%	-0.03%	-$60,957	63%	0.00%	$0
210049	UPPER CHESAPEAKE HEALTH	$128,686,091	78%	0.53%	$686,326	82%	0.80%	$1,029,489
210051	DOCTORS COMMUNITY	$141,094,311	84%	0.93%	$1,316,880	90%	1.33%	$1,881,257
210056	GOOD SAMARITAN	$146,901,579	59%	-0.03%	-$48,967	69%	0.00%	$0
210057	SHADY GROVE	$251,748,234	48%	-0.40%	-$1,006,993	54%	-0.20%	-$503,496
210058	REHAB & ORTHO	$72,350,285	78%	0.53%	$385,868	90%	1.33%	$964,670

RY 2022 Policy Modeling			Model 1: FY1819 Attainment Standards			Model 2: FY1718 Attainment Standards		
HOSP ID	**HOSPITAL**	**RY19 Estimated Permanent Inpatient Revenue**	**Score**	**% Revenue Adjustment**	**Estimated Revenue Adjustment**	**Score**	**% Revenue Adjustment**	**Estimated Revenue Adjustment**
210060	FT. WASHINGTON	$19,890,383	100%	2.00%	$397,808	100%	2.00%	$397,808
210061	ATLANTIC GENERAL	$36,931,910	89%	1.27%	$467,804	95%	1.67%	$615,532
210062	SOUTHERN MARYLAND	$162,087,856	31%	-0.97%	-$1,566,849	41%	-0.63%	-$1,026,556
210063	UM ST. JOSEPH	$223,399,907	83%	0.87%	$1,936,133	88%	1.20%	$2,680,799
210064	LEVINDALE	$57,510,719	39%	-0.70%	-$402,575	34%	-0.87%	-$498,426
210065	HC-Germantown	$59,062,315	90%	1.33%	$787,498	93%	1.53%	$905,622
	State Total	**$9,732,042,811**		**State Total**	**$5,436,695**		**State Total**	**$20,961,586**
				% Inpatient	**0.06%**		% Inpatient	**0.22%**
				Penalty	**-$15,261,760**		Penalty	**-$9,000,698**
				% Inpatient	**-0.16%**		% Inpatient	**-0.09%**
				Reward	**$20,698,455**		Reward	**$29,962,284**
				% Inpatient	**0.21%**		% Inpatient	**0.31%**

Maryland
Hospital Association

January 6, 2020

Dr. Alyson Schuster
Deputy Director, Quality Methodologies
Health Services Cost Review Commission
4160 Patterson Avenue
Baltimore, Maryland 21215

Dear Dr. Schuster:

On behalf of the Maryland Hospital Association's 61 member hospitals and health systems, we appreciate the opportunity to comment on the Health Services Cost Review Commission's (HSCRC) *Draft Recommendations for the Maryland Hospital Acquired Conditions Program for Rate Year 2022*. We appreciate the collaborative process to engage with staff and offer input to shape the policy in the best interest of high-quality care for all Marylanders.

We support the staff's recommendations which have remained largely unchanged from the existing policy.

We look forward to continuing to work with the commission on future policies.

Sincerely,

Traci La Valle

Traci La Valle
Senior Vice President, Quality & Health Improvement

cc: Nelson J. Sabatini, Chairman
Joseph Antos, Ph.D., Vice Chairman
Victoria W. Bayless
Stacia Cohen, RN
John M. Colmers
James N. Elliott, M.D.
Adam Kane

Maria Harris Tildon
Executive Vice President
Marketing, Communications & External Affairs

CareFirst BlueCross BlueShield
1501 S. Clinton Street, Suite 700
Baltimore, MD 21224-5744
Tel. 410-605-2591
Fax 410-505-2855

January 6, 2020

Nelson J. Sabatini, Chairman
Health Services Cost Review Commission
4160 Patterson Avenue
Baltimore, Maryland 21215

Dear Mr. Sabatini:

I write to provide CareFirst's comments on the HSCRC Staff's "Draft Recommendation on Maryland Hospital Acquired Conditions (MHAC) Policy for RY 2022."

We continue to support the MHAC policy and Staff's minor recommended updates for RY 2022. We support the focused list of Potentially Preventable Complications (PPC) in the payment program that have higher statewide rates and variation across hospitals. Further, we support the requirement for hospitals to be scored on a minimum of six of the fourteen PPCs to be included in the payment program.

Recognizing the importance of evaluating monitored PPCs that worsen during the year, we also support continued monitoring on all PPCs and we recommend periodic reporting on these at HSCRC public meetings. We support continued use of the attainment-only approach, which ensures that hospitals with lower PPC rates fare better than hospitals with higher PPC rates. Finally, while we support a continuous linear scaling approach, we maintain our position that a hold harmless zone from 60 to 70 percent is unnecessary.

Thank you for this opportunity to comment on the Maryland Hospital Acquired Conditions Policy for RY 2022. We support the goals of this program and hope the HSCRC can continue to foster reductions in complications moving forward.

Sincerely,

Maria Harris Tildon

Cc: Joseph Antos, Ph.D., Vice Chairman
Victoria Bayless
Stacia Cohen
John Colmers
James N. Elliott, M.D.
Adam Kane
Katie Wunderlich, Executive Director

GARRETT REGIONAL MEDICAL CENTER

A PROUD AFFILIATE OF WVU Medicine

January 6, 2020

Alyson Schuster
Deputy Director of Quality Methodologies
Health Services Cost Review Commission
4160 Patterson Avenue
Baltimore, Maryland 21215

RE: Draft Recommendation for the Maryland Hospital Acquired Conditions Program for Rate Year 2022

Dear Ms. Schuster,

Please accept this letter as Garrett Regional Medical Center's (Garrett) opposition to the draft recommendation for the Maryland Hospital Acquired Conditions (MHAC) Program for Rate Year 2022. Garrett is opposed to the recommendation of a hospital must be scored on a minimum of six Potentially Preventable Complications (PPCs) out of the 14 total PPCs to be included in the payment program. Based on the information provided, Garrett would be scored on five PPCs, and therefore, excluded from this program.

Not being included in the MHAC Program would be a financial disadvantage to Garrett's Global Budget Revenue as it relates to participation in rewards or penalties associated with the MHAC program. While I realize the program is evolving, and the PPC categories to which we are eligible are declining, I also want to recognize that Garrett has been in good standing with this program as a result of its efforts to focus on preventing complications with vulnerable patients, and working with our physicians on appropriate clinical documentation.

Looking at our current CYTD 2019 standing, Garrett is at 100% scoring on MHAC, which anticipating its continuation at this same level will make us eligible for the full 2% reward in the program. Looking at the last three years impact on Garrett's MHAC adjustment, we have seen rewards in FY2020 of $189,715, and FY2018 of $179,828. FY2019's MHAC adjustment was zero, no reward or penalty.

Garrett would like to see the minimum number of PPC categories exclusion criteria reconsidered. If you need anything further from us, please let me know.

Regards,

Tracy Lipscomb

Tracy Lipscomb
Vice President of Financial Services & CFO

CC: Mark Boucot

Renee J. Demski, MSW, MBA
Vice President of Quality
The Johns Hopkins Hospital and Johns Hopkins Health System
Armstrong Institute for Patient Safety and Quality
Office (410) 955-4313
Email: rdemski@jhmi.edu

JOHNS HOPKINS
MEDICINE

January 6, 2020

Nelson Sabatini
Chairman
Health Services Cost Review Commission
4160 Patterson Avenue
Baltimore, Maryland 21215

Dear Chairman,

On behalf of the Johns Hopkins Health System (JHHS), we appreciate the opportunity to provide further input on the Maryland Hospital Acquired Conditions (MHAC) Program. We thank HSCRC commissioners and staff for the collaborative approach that fosters ongoing engagement. The science of quality improvement highlights the importance of intrinsic versus extrinsic motivation as a critical component to drive results. Aligning incentives with the dedication of front-line staff to provide the highest quality and safest care will best achieve our mutual objectives.

JHHS supports the staff recommendation for the RY2022 MHAC Program. We recognize the value of the MHAC Program, particularly in light of recent improvements in methodology. These improvements include a reduced number of 14 Potentially Preventable Complications (PPCs) included in the payment methodology beginning in RY 2021. This focused list of PPCs facilitates the ability of a hospital to direct resources to those PPCs determined to provide the highest clinical relevance and reliability for improvement opportunities.

While there are minimal changes proposed for RY2022, we would like to share our thoughts about ongoing improvement opportunities for the program. We believe this perspective is particularly relevant as HSCRC staff currently reviews an apparent statewide increase in some of the 42 "monitored" PPCs that are beyond the 14 PPCs in the MHAC payment program. We recently reviewed 183 "monitored" cases to inform our comments. This letter summarizes a more detailed assessment of monitored cases emailed to HSCRC staff on January 3, 2020 and provides a reminder of some ongoing concerns and opportunities for improvement expressed in previous rate year comment letters.

Documentation and Coding

PPCs are resource intensive to validate. Accurate PPC assignment by the PPC software is not necessarily a byproduct of routine clinical documentation and accurate coding. This is due to the complexity of the PPC model, identification of Present on Admission (POA), complexities of the inclusion and exclusion diagnosis codes, procedure codes, Admit DRG inclusion and exclusion criteria, etc. The resources required to validate numerous PPC types are more beneficially applied to the most clinically relevant and reliable quality measures. Within the sample of 183 "monitored" PPCs, clinical quality validators determined 38% would have been determined invalid as a result of resource intensive review.

Complications Not Potentially Preventable

Within the sample of 183 "monitored" PPCs, 114 were determined to be potentially valid based on the PPC grouper software algorithms. Upon further clinical assessment, 83 (73%) of the 114 were determined to be "not potentially preventable" complications. In these cases, it appears that the patient received the standard of care and the "complication" was appropriately coded. The PPC inclusion and exclusion criteria cannot anticipate every clinical profile and clinical relevance is critical to clinician engagement. For example, there were instances of self-inflicted opioid or other substance abuse that triggered PPC-29, Poisonings Other Than Anesthesia, even when the patient was successfully revived and discharged. Additional case examples were provided in the January 3, 2020 email to HSCRC staff.

Recommendation: We continue to recommend the creation of an appeal process for review of exception cases to foster engagement of front-line clinical staff when they believe a PPC has been inappropriately assigned by imperfect algorithms.

Complications Potentially Preventable

Approximately 17% (31 out of the 183) of the sampled cases could be considered "potentially preventable." This is where the value is found within the MHAC program. These validated, focused list PPCs are very useful to inform clinical quality improvement efforts to eliminate potentially preventable harm and improve outcomes. Hospitals need to carefully review and take appropriate action on signals of potentially preventable harm. For example, the MHAC program has helped focus JHHS quality improvement efforts including intensive, multidisciplinary teams to address septicemia (PPC-35) and venous thromboembolism (PPC-16).

Recommendation: Maximize the impact of available resources to focus on the most valid indicators among the Maryland, National, and other programs.

Methodology

In previous comment letters, we expressed our ongoing concern with features inherent in the mathematical methodology to determine normative rates and project expected values. Our email to staff highlights additional clinical specification concerns as well. These factors cause observed values to be overcalculated and expected values to be underestimated, which can exaggerate the observed/expected ratios used for comparative analysis and revenue adjustment. We believe that these factors have the most significant impact on the higher levels of care found in academic medical centers. These features affect the calculation of PPCs included in the payment program as well as the "monitored" PPCs. The year to year changes in various facets of the program methodology also complicate year to year performance comparisons and trending.

In summary, we are very appreciative of the opportunity to collaborate in the continual improvement of the MHAC Program. JHHS remains fully committed to maximizing the potential of the program to guide the statewide elimination of potentially preventable harm. As previously stated, we recognize and appreciate the model improvements that have been implemented in previous years. Below are the JHHS recommendations for RY2022 MHAC program:

- We recommend HSCRC continue to work with Maryland hospitals to focus improvement on the 14 most valid and clinically reliable PPCs.
- We support the existing proposal to only monitor all other PPCs using same methodology from previous year for benchmarking purposes.

- We request modifications to the methodology to address the mathematical issues that cause expected values to be underestimated.
- We recommend the creation of an appeal process to remove the most clinically significant of inappropriately assigned complications from the numerator. These can be demoralizing to providers, especially when the highest level of care was provided, and the cost of one PPC can be excessive (over $1 million). An appeal process would enhance clinician engagement in our goal to eliminate preventable harm. Provider engagement is critical to the success of not only the MHAC program, but the Total Cost of Care Model as well.

Thank you for the opportunity to provide our comments. We look forward to our ongoing collaboration related to quality improvement.

Sincerely,

Renee Demski

cc: Joseph Antos, Ph.D., Vice Chairman
Victoria W. Bayless
Stacia Cohen, RN, MBA
John M. Colmers
James Elliott, MD
Adam Kane
Jack C. Keane
Katie Wunderlich

Draft Recommendation for the Readmission Reduction Incentive Program for Rate Year 2022

February 12, 2020

Health Services Cost Review Commission

4160 Patterson Avenue
Baltimore, Maryland 21215
(410) 764-2605
FAX: (410) 358-6217

This document contains the draft staff recommendations for the Readmission reduction Incentive Program for RY 2022. Comments on the draft policy may be submitted by email to hscrc.quality@maryland.gov and are due by February 19, 2020.

Table of Contents

List of Abbreviations

ADI	Area Deprivation Index
AMA	Against Medical Advice
APR-DRG	All-patient refined diagnosis-related group
CMS	Centers for Medicare & Medicaid Services
CMMI	Center for Medicare and Medicaid Innovation
CRISP	Chesapeake Regional Information System for Our Patients
CY	Calendar year
eCQM	Electronic Clinical Quality Measure
EDAC	Excess Days in Acute Care
FFS	Fee-for-service
HCC	Hierarchical Condition Category
HRRP	Hospital Readmissions Reduction Program
HSCRC	Health Services Cost Review Commission
HWR	Hospital-Wide Readmission Measure
MCDB	Medical Claims Database
MPR	Mathematica Policy Research
MSA	Metropolitan Statistical Area
NQF	National Quality Forum
PAI	Patient Adversity Index
PMWG	Performance Measurement Workgroup
PQI	Prevention Quality Indicators
RRIP	Readmissions Reduction Incentive Program
RY	Rate Year
SIHIS	Statewide Integrated Healthcare Improvement Strategy
SOI	Severity of illness
TCOC	Total Cost of Care
YTD	Year-to-date

Key Methodology Concepts and Definitions

Diagnosis-Related Group (DRG): A system to classify hospital cases into categories that are similar in clinical characteristics and in expected resource use. DRGs are based on a patient's primary diagnosis and the presence of other conditions.

All Patients Refined Diagnosis Related Groups (APR-DRG): Specific type of DRG assigned using 3M software that groups all diagnosis and procedure codes into one of 328 All-Patient Refined-Diagnosis Related Groups.

Severity of Illness (SOI): 4-level classification of minor, moderate, major, and extreme that can be used with APR-DRGs to assess the acuity of a discharge.

APR-DRG SOI: Combination of diagnosis-related groups with severity of illness levels, such that each admission can be classified into an APR-DRG SOI "cell" along with other admissions that have the same diagnosis-related group and severity of illness level.

Observed/Expected Ratio: Readmission rates are calculated by dividing the observed number of readmissions by the expected number of readmissions. Expected readmissions are determined through case-mix adjustment.

Case-Mix Adjustment: Statewide rate for readmissions (i.e., normative value or "norm") is calculated for each diagnosis and severity level. These statewide norms are applied to each hospital's case-mix to determine the expected number of readmissions, a process known as indirect standardization.

Prevention Quality Indicator (PQI): a set of measures that can be used with hospital inpatient discharge data to identify quality of care for "ambulatory care sensitive conditions." These are conditions for which good outpatient care can potentially prevent the need for hospitalization or for which early intervention can prevent complications or more severe disease.

Area Deprivation Index (ADI): A measure of neighborhood deprivation that is based on the American Community Survey and includes factors for the theoretical domains of income, education, employment, and housing quality.

Patient Adversity Index (PAI): HSCRC developed composite measure of social risk incorporating information on patient race, Medicaid status, and the Area Deprivation Index.

Excess Days in Acute Care (EDAC): Capture excess days that a hospital's patients spent in acute care within 30 days after discharge. The measures incorporate the full range of post-discharge use of care (emergency department visits, observation stays, and unplanned readmissions).

Recommendations

These are the draft recommendation for the Maryland Rate Year (RY) 2022 Readmission Reduction Incentives Program (RRIP):

1. Update 30-day, all-cause readmission measure with the following changes:
    a. Exclude all discharges with discharge disposition “left against medical advice”
    b. Include oncology discharges based on logic adapted from NQF 3188 - 30-day unplanned readmissions for cancer patients
2. Establish statewide 5-year Improvement target of -7.5 percent from 2018 base period, which would reduce Maryland Readmissions to approximately ~75th percentile of like geographies
3. Attainment Target - maintain attainment target methodology as currently exists, whereby hospitals at or better than the 65th percentile statewide receive scaled rewards for maintaining low readmission rates
4. For improvement and attainment, set the maximum reward hospitals can receive at 1 percent of inpatient revenue and the maximum penalty at 2 percent of inpatient revenue.
5. Establish additional payment incentive (up to 0.50 percent of inpatient revenue) for reductions in within-hospital readmission disparities
    a. Provide reward of 0.25 percent of IP revenue for hospitals on pace for 25 percent reduction in disparity gap measure over 8 years (>=6.94 percent reduction in disparity gap measure 2018 to 2020)
    b. Provide reward of 0.50 percent of IP revenue for hospitals on pace for 50 percent reduction in disparity gap measure over 8 years (>=15.91 percent reduction in disparity gap measure 2018 to 2020)
6. Explore development of an all-payer Excess Days in Acute Care measure in order to account for severity of readmission and emergency department and observation revisits

Introduction

Since 2014, Maryland hospitals have been funded under a global budget system, which is a fixed annual revenue cap that is adjusted for inflation, quality performance, reductions in potentially avoidable utilization, market shifts, and demographic growth. Under the global budget system, hospitals are incentivized to transition services to the most appropriate setting and may keep savings that they achieve via improved health care delivery (e.g., reduced avoidable utilization, readmissions, hospital-acquired infections). It is important that the Commission ensure that any incentives to constrain hospital expenditures do not result in declining quality of care. Thus, the Maryland Health Services Cost Review Commission's (HSCRC's or Commission's) Quality programs reward quality improvements that reinforce the incentives of the global budget system, while penalizing poor performance and guarding against unintended consequences.

The Readmissions Reduction Incentive Program (RRIP) is one of several pay-for-performance initiatives that provide incentives for hospitals to improve patient care and value over time. The RRIP currently holds up to 2 percent of hospital revenue at-risk in penalties and up to 1 percent at risk in rewards based on improvement and attainment in case-mix adjusted readmission rates.

With the commencement of the Total Cost of Care (TCOC) Model Agreement with CMS on January 1, 2019, the performance standards and targets in HSCRC's portfolio of quality and value-based payment programs are being reviewed and updated. In CY 2019, staff focused on the RRIP program and convened a subgroup with clinical and measurement experts who made recommendations that were then further evaluated by the Performance Measurement Workgroup (PMWG). The RRIP subgroup and PMWG considered updated approaches for reducing readmissions in Maryland to support the goals of the TCOC Model. Specifically, the workgroup evaluated Maryland hospital performance relative to various opportunity analyses, including external national benchmarks, and staff developed a within-hospital disparities metric for readmissions in consultation with the workgroup. The details of the subgroup work and their recommendations are outlined in the sections below.

Background

Brief History of RRIP program

Maryland made incremental progress each year throughout the All-Payer Model (2014-2018), ultimately achieving the Model goal for the Maryland Medicare FFS readmission rate to be at or below the unadjusted national Medicare readmission rate by the end of Calendar Year (CY) 2018. Maryland had historically performed poorly compared to the nation on readmissions; it ranked 50th among all states in a study examining Medicare data from 2003-2004.[1] In order to

[1] Jencks, S. F. et al., "Hospitalizations among Patients in the Medicare Fee-for-Service Program," *New England Journal of Medicine* Vol. 360, No. 14: 1418-1428, 2009.

meet the All-Payer Model requirements, the Commission approved the RRIP program in April 2014 to further bolster the incentives to reduce unnecessary readmissions.

As recommended by the Performance Measurement Work Group, the RRIP is more comprehensive than its federal counterpart, the Medicare Hospital Readmission Reduction Program (HRRP), as it is an all-cause measure that includes all patients and all payers.[2]

In Maryland, the RRIP methodology evaluates all-payer, all-cause inpatient readmissions using the CRISP unique patient identifier to track patients across Maryland hospitals. The readmission measure excludes certain types of discharges (such as planned readmissions) from consideration, due to data issues and clinical concerns. Readmission rates are adjusted for case-mix using all-patient refined diagnosis-related group (APR-DRG) severity of illness (SOI), and the policy determines a hospital's score and revenue adjustment by the better of improvement or attainment, with scaled rewards of up to 1 percent of inpatient revenue and scaled penalties of up to 2 percent.[3]

RRIP Subgroup

As part of the ongoing evolution of the All-Payer Model's pay-for-performance programs to further bring them into alignment under the Total Cost of Care Model, HSCRC convened a work group to evaluate the Readmission Reduction Incentive Program (RRIP). The work group consisted of stakeholders, subject matter experts, and consumers, and met six times between February and September 2019. The work group focused on the following six topics, with the general conclusions summarized below:

1. Analysis of Case-mix Adjustment and trends in Eligible Discharges over time to address concern of limited room for additional improvement;
    - Case-mix adjustment acknowledges increased severity of illness over time
    - Standard Deviation analysis of Eligible Discharges suggests that further reduction in readmission rates is possible
2. National Benchmarking of similar geographies using Medicare and Commercial data;
    - Maryland Medicare and Commercial readmission rates and readmissions per capita are on par with the nation
3. Updates to the existing All-Cause Readmission Measure;
    - Remove Eligible Discharges that left against medical advice (~7,500 discharges)
    - Include Oncology Discharges with more nuanced exclusion logic
    - Analyze out-of-state ratios for other payers as data become available
4. Statewide Improvement and Attainment Targets under the TCOC Model;
    - 7.5 percent Improvement over 5 years (2018-2023)
    - Ongoing evaluation of the attainment threshold at 65th percentile
5. Social Determinants of Health and Readmission Rates; and
    - Methodology developed to assess within-hospital readmission disparities

[2] For more information on the HRRP, please see: https://www.cms.gov/Medicare/Medicare-Fee-for-Service-Payment/AcuteInpatientPPS/Readmissions-Reduction-Program

[3] See Appendix I for further details of the current RRIP methodology.

6. Alternative Measures of Readmissions
    - Further analysis of per capita readmissions as broader trend; not germane to the RRIP policy because focus of evaluation is clinical performance and care management post-discharge
    - Observation trends under the All-Payer Model to better understand performance given variations in hospital observation use; future development will focus on incorporation of Excess Days in Acute Care (EDAC) measure in lieu of including observations in RRIP policy
    - Electronic Clinical Quality Measure (eCQM) may be considered in future to improve risk adjustment

Literature review from MPR

As part of the initial work to establish the Readmission work group, staff contracted with Mathematica Policy Research (MPR) to conduct a literature review covering the following topics: optimal readmission rates, alternative readmission measures, and early evaluations of the federal Hospital Readmission Reduction Program (HRRP). The literature review is provided in Appendix II. Ultimately, MPR's literature review was used to inform the RRIP policy but highlighted the lack of consensus around these issues.

Optimal readmission rate: MPR found that there was no agreed upon optimal readmissions rate in the literature. Target readmission rates vary based on study specifics, conditions studied, and interventions analyzed. Using algorithms and chart review, the literature suggested that avoidable readmissions constituted between 5 to 79 percent of experienced readmissions. However, the definition of "avoidable" varied between studies, as did the patient-mix and conditions evaluated. Based on this, as discussed in the assessment section, staff relied on other types of opportunity analyses to suggest an optimal readmission rate.

Alternative readmission metrics: MPR examined other metrics of readmissions outside of 30-day inpatient readmissions, including outpatient revisits, readmissions within a different time window, and population-based readmissions. MPR identified a difference in short-term and long-term readmissions, where short-term readmissions are more closely tied to hospital care quality and discharge planning, while longer-term readmissions are more representative of population and community health. In addition, MPR found that population-based measures of readmissions, such as per capita readmissions or excess days in acute care (EDAC), may provide additional information linked to community and population health. Based on this review, it may be worthwhile for HSCRC to examine performance on multiple readmission metrics that capture different information. However, staff did not revise the RRIP methodology to incorporate long term readmissions or per capita readmissions at this time, because the focus of the policy remains evaluating clinical performance outcomes and care management post discharge.

Impact of Federal HRRP: Finally, MPR analyzed the literature published on the federal HRRP. The federal HRRP has been in place since FFY2013, and MPR concluded that the

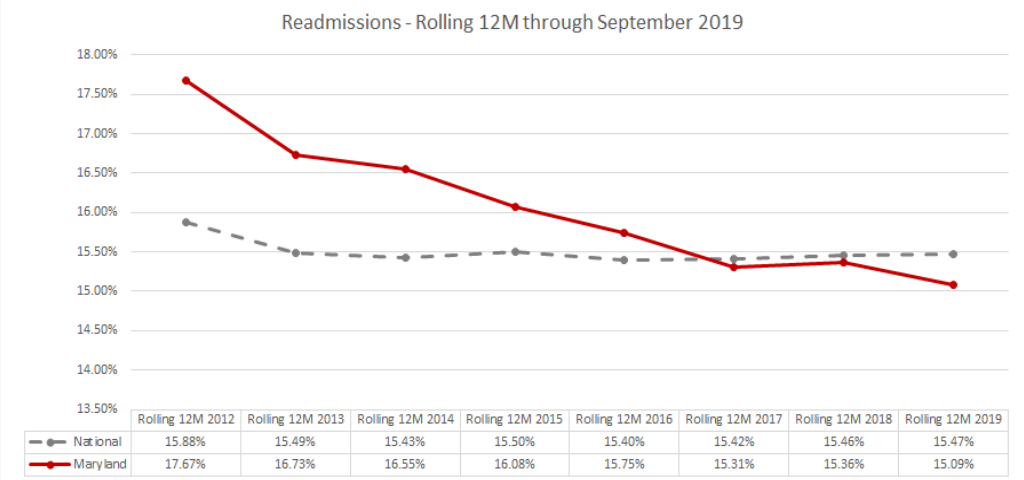
preponderance of the evidence suggests HRRP has contributed to a reduction in readmissions nationally. While some studies identified a negative impact of HRRP on mortality, other studies have found a beneficial relationship between HRRP and mortality. Based on this mixed evidence for such an important issue, HSCRC will continue to follow and monitor studies between HRRP and mortality. Additionally, the literature appears to show an increase in ED revisits and observation stays in concert with HRRP; however, this may be due to a concurrent Medicare payment change resulting in fewer short inpatient stays. Overall, MedPAC found that increases in spending due to ED and observation stays were smaller than the cost of readmissions they may have replaced.[4]

Assessment

Current Statewide Year To Date Performance

At the end of 2018, Maryland had a Medicare readmission rate of 15.40 percent, which was below the national rate of 15.45 percent. The most recent readmission data show Maryland has continued its improvement on Medicare FFS readmissions relative to the nation; with the most recent 12 months of data (through September 2019), Maryland's Medicare readmission rate was 15.09 percent compared to the national Medicare readmission rate of 15.47 percent (Figure 1). This is the measure that CMMI will use to assess Maryland's performance on readmissions under the TCOC Model.

Figure 1. Maryland and National Medicare FFS Unadjusted Readmission Rates



	Rolling 12M 2012	Rolling 12M 2013	Rolling 12M 2014	Rolling 12M 2015	Rolling 12M 2016	Rolling 12M 2017	Rolling 12M 2018	Rolling 12M 2019
National	15.88%	15.49%	15.43%	15.50%	15.40%	15.42%	15.46%	15.47%
Maryland	17.67%	16.73%	16.55%	16.08%	15.75%	15.31%	15.36%	15.09%

Maryland hospitals have also performed well on the RY 2021 RRIP performance standards as shown in Figure 2, with 33 of 47 hospitals on target to achieve the -3.90 percent improvement

[4] See: MedPAC June 2018 Report Chapter 1, "Mandated Report: The Effects of the Hospital Readmission Reduction Program", http://www.medpac.gov/docs/default-source/reports/jun18_ch1_medpacreport_rev_nov2019_v2_note_sec.pdf?sfvrsn=0

required in 2019 relative to a 2016 base, and 21 of 47 hospitals on target to be at or below the 11.12 percent attainment threshold.

Figure 2. RY 2021 By Hospital Improvement in Case-Mix Adjusted Readmission Rates

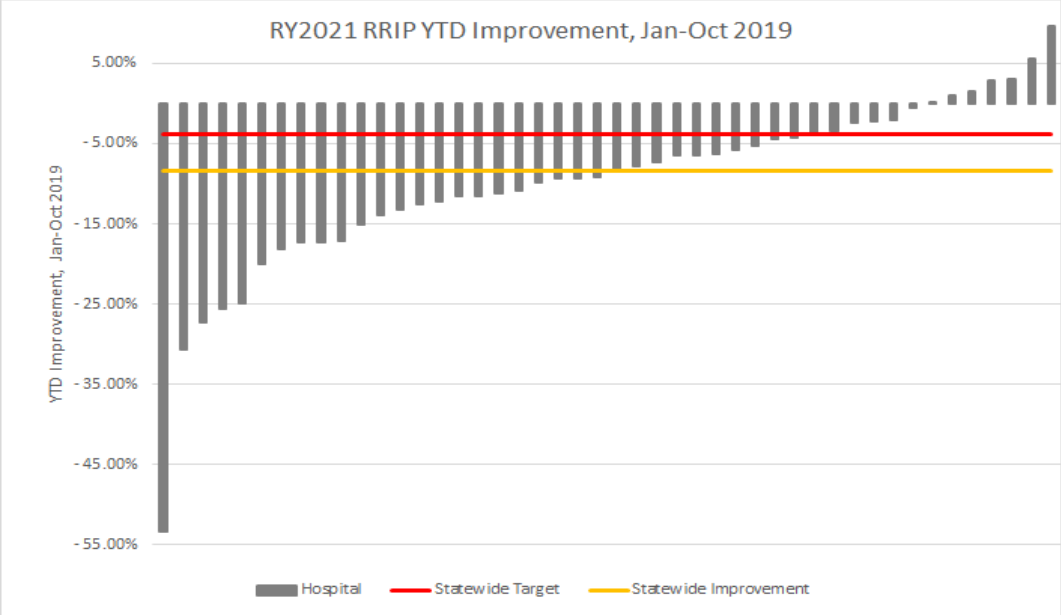
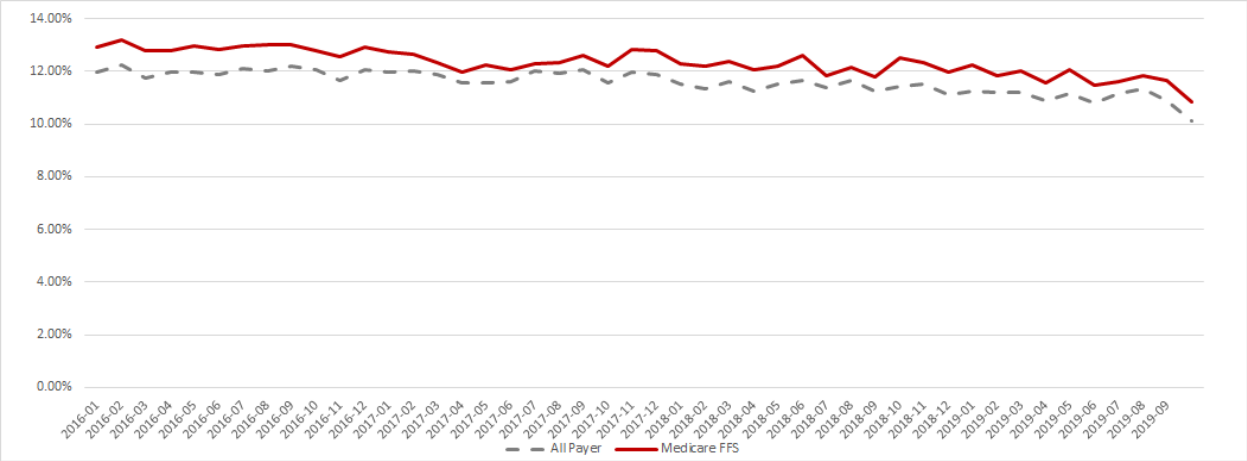


Figure 3 shows that since 2016 Maryland has maintained statewide improvements in case-mix adjusted readmissions for both All-Payer and Medicare FFS populations. Compared to CY 2016 YTD, the all-payer and Medicare FFS case-mix adjusted readmission rate have declined by 8.38 percent and 9.29 percent, respectively.

Figure 3. Maryland All-Payer and Medicare FFS Case-Mix-Adjusted Readmission Rates



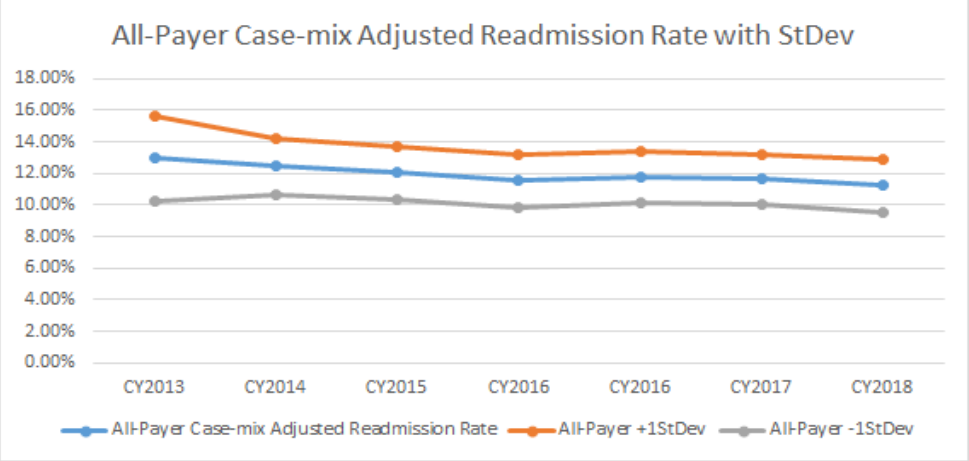
For further information on Maryland hospital current (RY 2021 YTD) performance, please see Appendix III.

Shrinking Denominator of Eligible Discharges

To update the RRIP program, one of the initial areas that the subgroup wished to explore was the impact of the dramatic reduction in inpatient hospital utilization during the All-Payer Model, from over 685,000 annual admissions in 2013 to just over 610,000 annual admissions in 2018. Expressed in terms of admissions that are discharges eligible for a readmission, the decrease is 538,603 to 472,385, with a 4.37 percent decrease from 2016 to 2018. At the same time, the severity of illness (SOI) of admitted patients increased. Stakeholders were concerned that, having removed potentially preventable readmissions from the system, the remaining readmissions were less preventable. However, the concurrent 2016-2018 decrease in the number of expected readmissions was just 0.2 percent (compared to 4.37 percent decrease of eligible discharges) suggesting that the increased severity of illness/complexity of remaining eligible discharges is acknowledged in the normative values used to generate the case-mix adjusted readmission rate.

Additionally, staff trended the case-mix adjusted readmissions across the All-Payer Model, both All-Payer and by-payer, and calculated the standard deviation from the state average. If Maryland hospitals were approaching an asymptote of preventable readmissions—that is, a finite point by which readmissions could not be reduced further—the standard deviation would similarly converge around the state average rate. However, staff analysis showed that the standard deviation remained at a steady distance from the state average rate, as seen in Figure 4, suggesting continued variations in performance and room for additional improvement.

Figure 4: All-Payer Case-Mix Adjusted Readmission Rate and Standard Deviation



Finally, staff analyzed the relationship between a hospital's decrease in eligible discharges and their readmission rate in a given year and found that there was no correlation, suggesting that as discharges have been reduced due to the incentives of the model it is not associated with worse RRIP performance.

Staff and stakeholders were initially concerned that the reduction of eligible discharges achieved during the All-Payer Model was inadvertently making it challenging for hospitals to further reduce their readmission rates; however, staff believes these analyses suggest that Maryland maintains the capacity to further reduce readmissions.

Benchmarking of Similar Geographies using Medicare and Commercial Data

The Commission and stakeholders wish to understand Maryland's performance on readmissions relative to National benchmarks beyond the Medicare FFS national rate. Previously, the Commission did not have data for benchmarking commercial readmission rates. Furthermore, stakeholders requested that Maryland be compared to peers, in addition to the aggregate national trends.

Thus, HSCRC staff worked throughout 2019 to generate a peer geographic group to compare Maryland charges and quality metrics to comparable non-Maryland geographies. The MEDA center acquired a detailed dataset for Medicare FFS beneficiaries and a separate dataset for Commercial beneficiaries. Commercial beneficiaries were compared using Milliman's Consolidated Health Cost Guidelines Score Database (CHSD), as well as MHCC's Medical Claims Database (MCDB).[5] Data availability necessitated that comparable entities be at the county-level for Medicare and at the Metropolitan Statistical Area (MSA) for Commercial, as zip code or hospital primary service area was too granular to be feasible.

Maryland geographies were first compared to potential peer geographies with a similar level of urbanization. After an extensive process comparing multiple factors, Maryland geographies were then further compared to non-Maryland geographies based on the following four main characteristics: median income, deep poverty, regional price parity, and risk score (Hierarchical Condition Category (HCC) for Medicare and HHS Platinum Risk Score for Commercial). For Medicare, each urban county in Maryland was compared to 20 urban counties nationwide, and each non-urban county in Maryland was compared to 50 non-urban counties nationwide.[6] All Commercial MSAs were compared to 20 peer MSAs. Maps of selected peer geographies are included in Appendix IV.

Figure 5 below shows the results from the Medicare FFS and Commercial benchmarking to like geographies. Using the peer counties, the MEDA center analyzed 2018 Medicare FFS readmissions for Maryland and Peer Counties using the unadjusted readmission rate logic used in the All-Payer Model Waiver Test. In 2018, Maryland Medicare FFS readmission rates were on par with (slightly better than) national peer counties at 15.47 percent and 15.57 percent, respectively. Two top performing benchmarks are also provided: 1. the readmission rate at the

[5] The MCDB was previously known as the All-Payer Claims Database (APCD).

[6] In the Commercial dataset, non-Maryland entities were designated at the metropolitan statistical area (MSA) level, the HHS Platinum Risk score was substituted for the Medicare HCC, and Maryland was matched to 20 non-Maryland MSAs due to the smaller number of total MSAs.

75h percentile of peer counties, and 2. the statewide readmission rate if all counties in MD were at or below the 75th percentile of peer counties. These two benchmarks provide an estimate of the opportunity for Maryland under the TCOC model.

Separately, the MEDA center compared 2017 Maryland MCDB Commercial beneficiary readmission rates to Peer MSAs using the Milliman data. The Commercial readmission rates were analyzed on both an unadjusted and case-mix adjusted basis, but the unadjusted rates are included below. In 2017, Maryland Commercial beneficiary readmission rates were on par with (slightly better than) national peer MSAs, at 6.84 percent and 6.98 percent respectively. The two top performing benchmarks are also provided for the Commercial data. This commercial benchmarking analysis is the first analysis completed for non-Medicare data, and it is reassuring that the Commercial results also show favorable performance that is consistent with Medicare FFS analyses

Figure 5. Unadjusted Readmissions Rates and Top Performing Benchmarks, MEDA Center Benchmarking

Payer (year)	Maryland	Peer Geographies	Top Performing Benchmark: 75th Percentile of Peer Geographies	Top Performing Benchmark: All MD Counties at or below the 75th Percentile of Peer Geographies
Medicare FFS (2018)	15.47%	15.57%	14.72%	14.53%
Commercial (2017)	6.84%	6.98%	6.53%	6.44%

This analysis further solidifies Maryland's understanding that, at the conclusion of the All-Payer Model, Maryland achieved the All-Payer Model Waiver Test to be at or below the National Medicare FFS Readmission Rate. Staff also analyzed the peer group readmission trends to calculate readmission rates at the 75th percentile (25th percentile lowest readmission rate) to approximate an improvement opportunity, as well as analyzed per capita readmission rates, which will be discussed further below. Further information from the Benchmarking Results can be found in Appendix IV.

Measure Updates

Removal of Patients who Leave Against Medical Advice (AMA)

Stakeholders, including Commissioners, requested that the HSCRC consider removing patients whose discharge disposition is "left against medical advice", reasoning that this patient population is unlikely to receive hospital interventions to reduce readmissions—and these patients are excluded from the national readmission measures. To make the decision on whether to exclude these patients from RRIP, the subgroup reviewed literature and data on the

impact and types of patients who leave AMA. One Maryland study involving focus group interviews of patients and providers at an academic medical center suggested the following reasons that patients may leave AMA: pain management, other family or work obligations, wait time, doctor's bedside manner, teaching-hospital status, and communication.[7] The subgroup also reviewed analyses of the distribution of patients who leave AMA by hospital, as well as the data showing that the majority of patients who leave AMA have a primary or secondary behavioral health diagnosis (72 percent) and have Medicaid as their payer (52 percent). Removing patients who leave against medical advice would result in a statewide reduction of approximately 7,500 eligible discharges. Given the complexity of patients who leave AMA and the fact that they may do so regardless of hospitals' quality of care, albeit unknown in terms of the total share of why patients leave AMA, staff concurs with stakeholder recommendations to remove them from the RRIP program.

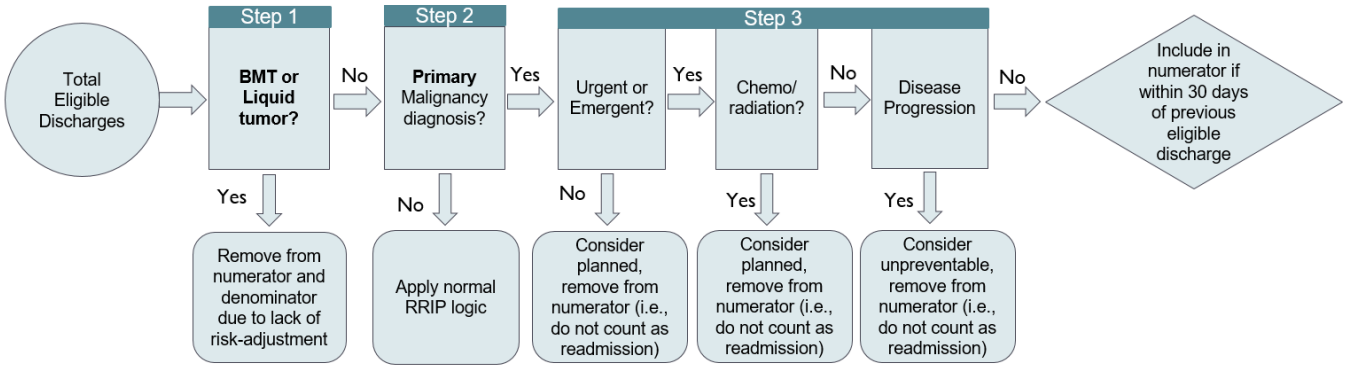
Inclusion of Oncology Patients

The current RRIP readmission measure excludes oncology patients due to industry concerns that the planned admission logic did not appropriately identify planned admissions for oncology patients. When staff agreed to this exclusion, it was intended to be temporary pending development of planned admission logic that better accounted for planned oncology admissions. Thus, as part of the RRIP redesign, staff and stakeholders developed an approach for including oncology patients in the RRIP program. This work was based on an NQF-endorsed readmission measure for cancer hospitals that staff brought to the subgroup and other stakeholders for consideration.[8] The developers of this measure state in their measure rationale that "for many cancer patients, readmission following hospitalization may be preventable and should be addressed to potentially lower costs and improve patient outcomes" and that "using this measure, hospitals can better identify and address preventable readmissions for cancer patients."[9]

Staff made minor changes to the measure to integrate it into the RRIP program and render it suitable for measuring quality at acute care hospitals, as opposed to cancer hospitals. Figure 6 shows a flow chart for the denominator and the numerator as adapted by the HSCRC.

[7] Onukwugha. E., et. al. Reasons for discharges against medical advice: a qualitative study. Qual Saf Health Care. 2010 October
[8] Additional information on this measure can be found here: https://cmit.cms.gov/CMIT_public/ReportMeasure?measureRevisionId=2296
[9] Ibid.

Figure 6: Flow Chart for Revised Oncology Logic



*Items that are **bolded** are adaptations from NQF measure

Appendix I provides in greater detail the measure logic steps for the inclusion of oncology patients with notations of the changes and rationale from the original NQF cancer hospital measure.

The overall impact of the oncology change results in only a small increase in the readmission rate statewide for CY 2018 (Case-mix Adjusted Readmission Rate: 12.06 percent under old logic and 12.09 percent under new logic). In total, nine acute care hospitals had decreases in their readmission rates (median decrease of 0.05 percent; largest decrease was for Johns Hopkins at 0.14 percent) and 38 hospitals had increases (median increase of 0.05; largest increase 0.22 percent). These changes will be reflected in the improvement and attainment targets, and thus staff feels that inclusion of oncology patients is not detrimental to hospital performance. In fact, including oncology patients may provide hospitals the opportunity to receive credit for readmission improvements that they achieve for cancer patients.

Out-of-State Ratio Assessment

Since the advent of including credit for attainment in the RRIP policy, HSCRC has adjusted case-mix adjusted readmission rates to account for readmissions occurring outside of Maryland. These readmissions will not appear in the Maryland Case-mix data, and to date have been approximated using cross-border readmissions provided by CMS using Medicare FFS data. The ratio of "Total Medicare FFS Readmissions : In-State Medicare FFS Readmissions" (100 percent or greater) is then used to increase the Case-mix Adjusted Readmission rate to approximate cross-border readmissions. While ideally Maryland would have more data to corroborate the cross-border ratios, the Medicare FFS is the data that is readily available, and staff notes that the majority of readmissions (over 52 percent) are Medicare FFS, meaning that out-of-state ratios based on Medicare FFS remain the most relevant to approximating an accurate readmission rate for attainment.

Throughout 2019, staff worked with the MEDA Center and Medicaid partners to generate out-of-state ratios for Commercial and Medicaid beneficiaries as well. Given that there are fewer

Commercial and Medicaid readmissions, these data needed to be aggregated across multiple years for analysis. Staff will continue to analyze these data to understand the accuracy of Medicare ratios applied to the all-payer readmission rate and, if warranted, will work with stakeholders to see if there is a way to incorporate this data into the generation of out-of-state ratios moving forward.

Updating the Performance Targets under the TCOC Model

Improvement

Maryland hospitals achieved the All-Payer Model Waiver test for Medicare readmissions, to be at or below the nation by 2018. Analysis suggests that Maryland can further improve, and the TCOC Model contract states that Maryland must maintain a readmission rate below the National average.

Subgroup members agreed that further reductions in readmissions were possible, but recommended they be at a more modest improvement target, acknowledging sustained and substantial improvement under the All-Payer Model. As the literature has not generated an asymptote of acceptable readmissions, HSCRC generated a range of potential improvement scenarios, yielding readmission rate reductions of approximately 5-15 percent from existing CY 2018 levels (see Figure 7 below). As discussed in the Literature Review, it is challenging to ascertain an acceptable level of readmission rates given different methodologies and patient populations in different studies. Two of the scenarios use past trends to forecast future improvement, two use benchmarks based on recent performance, and two posit potential improvement in readmissions based on reductions in PQIs and disparities.

Figure 7. Improvement Target Estimates

Estimating Method	Percent Improvement	Resulting Readmission Rate (2023)*
1 Actual Compounded Improvement, 2013-2018	-14.94%	9.73%
2 Actual Improvement 2016-2018, Annualized to 5 Years	-11.48%	10.13%
3 All Hospitals to 2018 Median	-6.5%	10.70%
4 Benchmarking - Peer County/MSA to 75th Percentile	-4.63% to -6.20%	10.73% to 10.91%
5 Reduction in Readmission-PQIs	-9.36%	10.19%
6 Reduction in Disparities	-4.2%	10.96%

* Assuming a constant CY 2018 readmission rate of 11.44 percent (under RY 2021 logic with specialty hospitals included)

For the first estimating method (Row 1), staff analyzed the improvement achieved under the All-Payer Model and assumed that that improvement could be repeated under the TCOC Model. This ~15 percent reduction represents the higher end of the improvement estimates. The

second method (Row 2) uses the (slightly slower) improvement achieved in the final two years of the model and annualizes this two-year improvement to five years, resulting in a slightly less aggressive improvement target of ~11.5 percent.

The third and fourth estimating methods derive targets by assuming that hospitals currently performing worse than the statewide median or other peer geographies could improve to these rates. The third method (Row 3) calculates the statewide improvement if all hospitals reduced to the CY 2018 median readmission rate. The fourth estimating method (Row 4) uses the national benchmarks of like geographies previously presented to generate improvement targets for Maryland hospitals to reduce to the 75th percentile of similar geographies. Based on 2018 data, Maryland Medicare FFS readmission rates would need to improve by 5.11 percent to reach the Peer county 75th best percentile (15.47 percent to 14.72 percent), or 6.07 percent to ensure that all Maryland counties were at or below the 75th percentile (15.47 percent to 14.53 percent).[10] Based on 2017 data, Maryland Commercial readmission rates would need to improve 4.63 percent to reach the Peer MSA 75th best percentile (6.84 percent to 6.53 percent), or 6.20 percent to ensure that all Maryland MSAs were at or below the 75th percentile (6.84 percent to 6.44 percent). The improvement targets presented in the figure are the upper and lower estimates across Medicare FFS and Commercial from the geographical benchmarking analysis.

The fifth method estimated what the readmission rate would be if 50 percent of readmissions that are also PQIs (i.e., avoidable admissions for conditions such a diabetes, COPD, and hypertension) are prevented. The last method on the chart estimated what the readmission rate would be if hospitals in the state with higher than average disparities reduced their readmission disparity gap to the statewide average, which will be discussed in greater detail in the next section.

These scenarios identify a range of reasonable targets but do not determine a specific readmission goal. Staff and stakeholders agree generally with the range of potential improvement targets and support the generation of a five-year target rather than annual targets based on previously used methods. Stakeholders also support including both improvement and attainment in building a revenue adjustment. Reviewing the range of potential targets, the improvement from CY 2018 experienced to-date in CY 2019, and the additional information from the benchmarking, staff feels comfortable to recommend an improvement target of 7.5 percent reduction from 2018 levels across five years, but reserves the right to revisit and revise should this target prove too aggressive or too lenient such that the state creates unintended consequences or risks not meeting the continued goal of remaining at or below that national Medicare rate.

[10] The second scenario is lower as there are Maryland counties already better than the 75th percentile.

Attainment

Historically, the HSCRC has used the 75th percentile of best performers as the threshold to begin receiving rewards for attainment. In RY 2021, this was amended to the 65th percentile to allow hospitals in the top-third of Maryland performance to earn financial rewards for attainment, which acknowledged that Maryland (historically a poor performer on readmissions) had accomplished substantial improvement during the All-Payer Model. Staff analyzed the historical policy of the 65th percentile and compared this to the improvement targets suggested by the MEDA Center Peer Group national benchmarking analysis and the various opportunity analyses discussed above in the *Improvement Section*. Ultimately, staff calculated the statewide CY 2018 casemix-adjusted rate inclusive of 7.5% improvement, as recommended above, and compared individual hospital CY 2018 readmission rates to this figure. Staff determined that at the 65th percentile of current performance, hospitals have rates equivalent to the targeted statewide readmission rate. Therefore, staff will start rewarding hospitals at the 65th percentile in line with the recommended improvement target. Staff reserves the right to revisit the percentile cutoff for attainment rewards in future years, especially if hospital performance generally exceeds overall improvement goals.

Please see Appendix V for additional modeling of improvement and attainment under the proposed measure updates. This modeling will be updated for the final policy as data availability allows.

Reducing Disparities in Readmissions

Racial and socioeconomic differences in readmission rates are well documented[11,12] and have been a source of significant concern among healthcare providers and regulators for years. In Maryland, the 2018 readmission rate for blacks was 2.6 percentage points higher than for whites, and the rate for Medicaid enrollees was 3.4 points higher than for other patients. A recent Annals of Internal Medicine paper co-authored by HSCRC staff[13] reported a 1.6 percent higher readmission rate for patients living in neighborhoods with increased deprivation. Many Maryland hospitals, as well as the Maryland Hospital Association, identify reduction in readmission disparities as a key priority over the near term. Thus, staff vetted with the subgroup and PMWG an approach for measuring and incentivizing reduction in disparities for readmissions.

[11] Tsai TC, Orav EJ, Joynt KE. Disparities in surgical 30-day readmission rates for Medicare beneficiaries by race and site of care. *Ann Surg*. 2014;259(6):1086–1090. doi:10.1097/SLA.0000000000000326;
[12] Calvillo–King, Linda, et al. "Impact of social factors on risk of readmission or mortality in pneumonia and heart failure: systematic review." *Journal of general internal medicine* 28.2 (2013): 269-282.
[13] Jencks, Stephen F., et al. "Safety-Net hospitals, neighborhood disadvantage, and readmissions under Maryland's all-payer program: an observational study." Annals of internal medicine 171.2 (2019): 91-98.

Readmissions within Statewide Integrated Healthcare Improvement Strategy (SIHIS)

The newly signed memorandum between the HSCRC and the Center for Medicare and Medicaid Innovation calls for the State to identify one or more targets for improvement in hospital quality, referred to as the Statewide Integrated Health Improvement Strategy (SIHIS). This agreement is intended to spur improvement in areas related to population health that are not currently addressed by the agency's hospital quality programs. The longstanding racial and socioeconomic disparity in readmissions represents a barrier to continued progress in reducing Maryland's hospital readmission rate. If each Maryland hospital with an above average gap in readmission rates based on social factors (race, Medicaid status and Area Deprivation Index) improved to the state average, the State would experience a drop in the readmission rate of 4.2 percent. Accordingly, staff identified readmission disparities as an area of focus under the SIHIS and will likely recommend an improvement of 50 percent in readmission disparities over the eight-year term of the Total Cost of Care model. To assist in meeting this goal, staff has developed a methodology for incorporating improvement in disparities into payment policy.

Staff is not aware of other programs in the United States that provide hospitals with financial incentives for progress on disparities. Because the program breaks new ground, staff sought to minimize unintended consequences during the rollout of the policy by focusing initially on rewards for disparity improvement, rather than on penalties or on attainment.

Development of Disparity Metric

Making progress on readmission disparities requires staff to develop a methodology for: 1) identifying socioeconomic risk among patients; 2) measuring hospital-level disparities in readmission rates based on those risks; and 3) determining how disparities, or change in disparities, will be incorporated into hospital payment.

There are several options for measuring disparities that were considered by stakeholders. One approach would involve estimating differences in readmission rates across categories of race, Medicaid status, and potentially other variables. While straightforward, this process would provide hospitals with multiple estimates of disparities, which could lead to conflicting messages regarding performance, and would also add to the complexity of incorporating disparities into payment methodology.

To address those issues, staff developed the Patient Adversity Index (PAI), a composite social risk index incorporating information on patient race, Medicaid status, and the Area Deprivation Index (ADI) for the area surrounding the patient's address (as recorded in claims). Staff chose, and vetted with stakeholders, these three variables because they are among the few available in claims that capture social determinants of health. Medicaid status is often used as a proxy for income. Race is included, not to reflect biological differences across races, but rather as a proxy

for exposure to structural racism.[14] The ADI reflects exposure to diminished access to neighborhood resources, such as health care providers, pharmacies, transportation, and gainful employment, which may impact health outcomes. Staff evaluated methods to measure disparities among the Hispanic patient population, but determined this was not feasible for the first year of the program due to data quality and risk-adjustment issues.
The PAI for each patient and discharge is calculated by regressing readmission status (yes or no) against Medicaid status, race (black vs. other), and ADI percentile, along with terms for interactions between each of these three variables. The result is a value reflecting the patient's social exposures, weighted by the degree to which each of them is associated with readmissions (See Appendix VI). The PAI value is then converted to a standardized score, which sets the statewide mean at zero and the scale such that a one-unit change is equal to a change of one standard deviation. While stakeholders initially expressed concerns about the distribution of PAI scores at each hospital, staff presented to them analyses that showed that despite the distribution of PAI varying from hospital to hospital, all hospitals serve patients at or very close to the smallest and largest values of PAI. Because of this, all hospitals have an opportunity to reduce readmissions for patients with higher PAI scores.

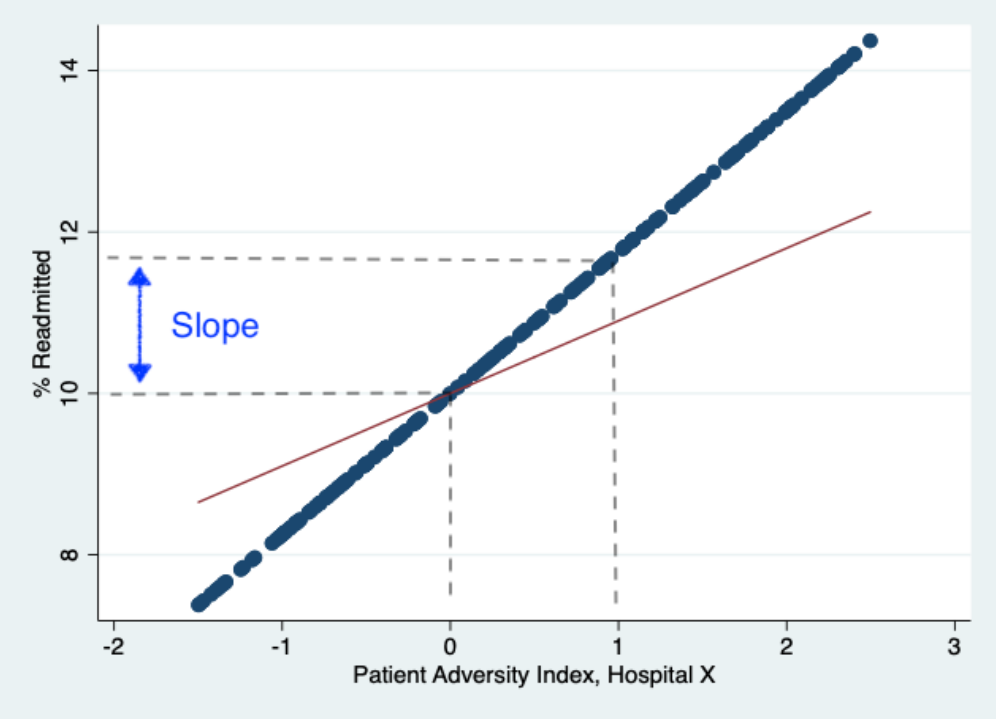
The goal of the disparity program is to reduce the effect that PAI has on hospital readmission rates. In other words, if a hospital's readmission rate was identical across all values of PAI, it would have a disparity of zero, as social determinants would no longer impact readmission rates.

To measure the effect of PAI, staff developed a regression model that estimates the slope of PAI at each hospital, after controlling for patient age, gender, and APR-DRG readmission risk. Additionally, staff controlled for the average PAI value for patients at the hospital, as hospitals serving higher proportions of disadvantaged patients may face heightened challenges in reducing readmission rates. The PAI slope, or disparity gap measure, is interpreted as the difference in readmission rates at a given hospital between patients at a base (lower) level of PAI, and patients with PAI one unit higher than the base. The change in disparity gap measure from the base year to a given performance year is the performance metric.

Figure 8 shows the relationship between PAI and readmission rate for a hypothetical hospital in two years: Base (blue dots) and Performance (red line). The disparity gap for the base year is the slope of the line, calculated as rise over run, or difference between readmission rates at two levels of PAI separated by a distance of one unit. Here, we see that the rate for patients with a PAI value of 1 is ~11.75%, while the rate for patients with PAI=0 is 10%, so the disparity is 1.75%. In the performance year, the hospital has succeeded in improving on disparities, which is reflected in a line with a flatter slope.

[14] Structural racism is defined as the macrolevel systems, social forces, institutions, ideologies, and processes that interact with one another to generate and reinforce inequities among racial and ethnic groups (Powell JA. Structural Racism: Building upon the Insights of John Calmore. North Carolina Law Review. 2008;86:791–816.)

Figure 8. Hypothetical Example of Relationship between PAI and Readmission Rates



Appendix VI provides additional details on the statistical methods used to generate the PAI score and disparity gap measure. Appendix VII additionally provides hospital distribution of PAI scores and the by hospital disparity gap measure for 2018. These data are preliminary and will be updated with the latest readmission measure and grouper version.

Financial Incentive for Disparity Improvement

As the intent of the program is to encourage a reduction in disparities over the life of the TCOC model, 2018 serves as the base year. Improvement will be assessed annually beginning with RY2022 performance period (i.e., CY 2020). The PAI weighting coefficients generated from the 2018 model will be applied to patient demographic information in each performance year to calculate patient PAI score.

Staff recommends restricting rewards under the disparities component of RRIP to hospitals with an overall improvement in their readmission rates from the base period, in order to avoid the possibility that a hospital with an unchanged readmission rate for high-PAI patients and a worsening rate for low-PAI patients would qualify for a reward. The financial incentive for reducing disparities is above the incentives under the existing RRIP model. While stakeholders were generally supportive of addressing disparities within the RRIP policy, and indicated that they considered the proposed methodology to be sound, there was some concern among

hospitals that the HSCRC would move quickly to institute penalties for hospitals that do not improve on the disparities metric.
For RY2022, the proposed reward structure is:

- 0.25 percent of IP revenue for hospitals on pace for 25 percent reduction in 8 years, >=6.94 percent reduction in disparity gap measure
- 0.50 percent of IP revenue for hospitals on pace for 50 percent reduction in 8 years, >=15.91 percent reduction in disparity gap measure

Staff considered scaling the reward available to hospitals between 6.94 percent and 15.91 percent reduction. However, given that this is a new policy and we have no historical data on which to base estimates of potential change, staff concluded that a two-level policy minimized potential for unintended consequences and created clear incentives for hospitals. Staff may revisit this aspect of the policy with stakeholders in subsequent rate years. Staff will also work with stakeholders in coming months to develop hospital reporting on the disparity gap measure that allows hospitals to gauge their progress toward the improvement reward and allocate resources accordingly.

Alternative Readmission Measures

The subgroup also considered alternative readmission measures that could supplement RRIP in the future. Below is a discussion of per capita readmission, excess days in acute care, and the electronic clinical quality measure for readmissions. While other readmission measures exist, stakeholders were concerned about the use of proprietary measures (e.g., 3M Potentially Preventable Readmissions) and measures that varied significantly from the CMMI readmission measure.

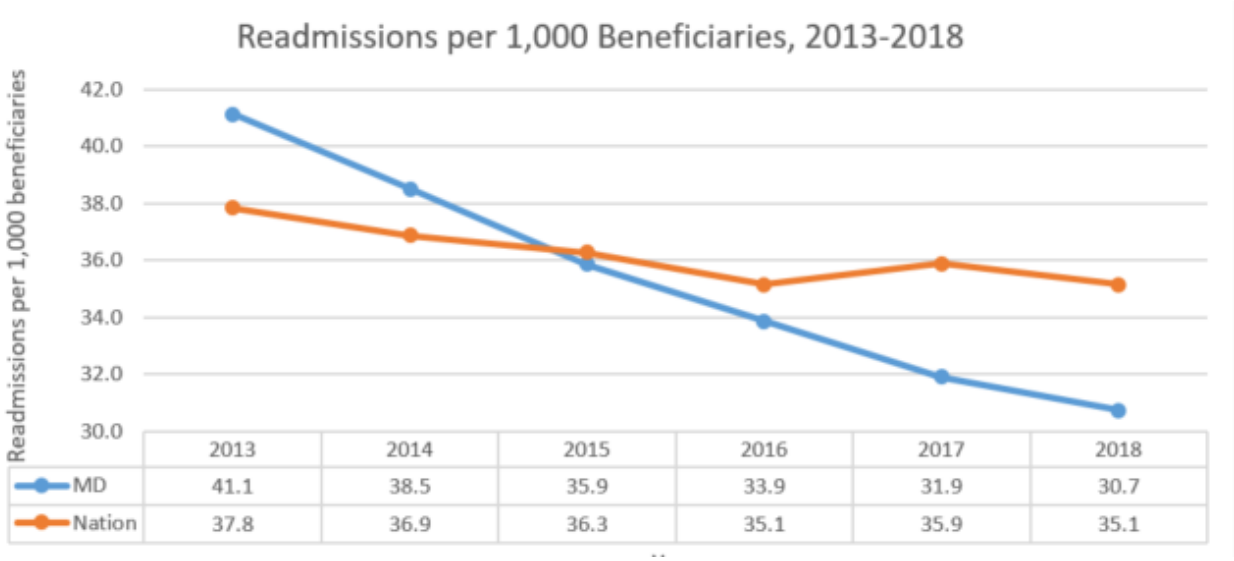
Per Capita Readmission

To date, the RRIP measures readmissions out of total eligible hospital discharges; however, staff has also explored the use of per capita readmissions to understand Maryland's performance overall. Ultimately, staff kept RRIP measurement focused on readmissions from hospital discharges to keep the measure focused on the quality of hospital care and follow-up that could precipitate or prevent a readmission. A per capita measure might obscure the rates by including the impact of admission information. As an example, a low per capita readmission rate might be reflective of a low per capita admission rate, while the per discharge readmission rate may still be high for the smaller number of admitted patients. However, staff also recognize that per capita readmissions can be a valuable source of population health information and are often used across disparate datasets.

While not used to evaluate hospitals under the RRIP, per capita readmission rates are analyzed by staff and have been used to comment on utilization trends more generally. Most recently,

both the Maryland Hospital Association and the HSCRC have presented per capita readmission rates during the All-Payer Model, comparing Maryland and the Nation. As shown in Figure 9, Maryland performs favorably compared to the nation.

Figure 9. Maryland and National Medicare FFS Per Capita Readmissions



The MEDA Center also evaluated per capita readmissions (readmissions per 1000 beneficiaries) in the benchmarking exercise detailed earlier in the policy. These analyses similarly conclude that Maryland performs on par with (slightly better than) per capita readmission rates of peer counties and peer MSAs (see Figure 10).

Figure 10. Readmissions per 1000 Beneficiaries, MEDA Center Benchmarking

Readmissions per 1000	Maryland	Peer County/MSA	Peer County/MSA 75th Percentile
Medicare FFS (2018)	38.2	39.8	34.1
Commercial (2017)	2.48	3.17	2.14

Nevertheless, looking at the distribution of peer county/MSA per capita readmissions per 1,000 suggests that Maryland's overall performance, while commendable, has not reached the optimal readmission rate, as comparable peer groups are experiencing lower per capita readmissions per 1,000. This statement is in further support of staff recommendation to include an improvement factor in the overall RRIP policy.

Excess Days in Acute Care (EDAC)

Stakeholders remain concerned about emergency department and observation revisits, especially given the global budget incentives to avoid admissions. Thus, staff analyzed the impact of observation stays on readmission rates and found that while readmission rates

increased when observation stays were included, the correlation between the readmission rates with and without observation stays was 0.986 in 2018. This analysis, and the fact that the national program does not include observation stays, led the staff to recommend that the RRIP readmission measure remain an inpatient only measure. However, staff did recommend that the Commission consider adapting the Medicare Excess Days in Acute Care (EDAC) three condition-specific measures to a measure addressing an all-payer population, and if possible all conditions, for potential program adoption in future years. The EDAC measures capture the number of days that a patient spends in the hospital within 30 days of discharge, and include emergency department and observation stays by assigning ED visits a half-day length of stay and assigning observation hours rounded up to half-day units.[15] The subgroup reviewed Medicare data for the EDAC measures, which indicated that Maryland performs worse than the nation on all three measures, with variation in performance across hospitals. Staff believes an adapted measure would be a valuable addition to the RRIP policy, since the condition-specific measures as currently specified assess severity of readmission and examine multiple types of revisits that are important to patients. Currently staff is working with MPR to determine:

- The feasibility of adapting the EDAC measures to all-payers; and,
- Whether the EDAC measurement methodology has validity beyond the three conditions that Medicare currently specifies (Acute Myocardial Infarction, Heart Failure, Pneumonia) when extended to all conditions within a single measure.

Electronic Clinical Quality Measure (eCQM)

As alluded to earlier, CMS requires reporting of a Hospital Wide Readmission (HWR) measure, NQF #1789, currently derived from claims data. CMS has piloted a Hybrid HWR measure during CY 2018 that incorporates data elements from the encounter claim as well as laboratory and vital sign data from the electronic health record (EHR). CMS findings from the measure pilot include:

- Electronic Health Record (EHR) data elements add significant power to existing methods of risk standardization and risk adjustment in claims-based outcome measures.
- Core clinical data elements are feasible for extraction from existing EHRs and reporting for quality measures.

CMS is proposing to remove the claims-based HWR measure with the July, 1 2023-June 30, 2024 mandatory reporting for FFY 2026 payment year, and to replace this measure with the Hybrid HWR measure. HSCRC staff will track progress on further development of the Hybrid measure and will consider options for augmenting the RRIP all-payer measure with EHR data elements in the future.

[15] Additional information on the EDAC measures and methodology can be found here: https://www.qualitynet.org/inpatient/measures/edac/methodology

Future Considerations

The RRIP redesign sets TCOC Model improvement and attainment targets for readmissions based on new benchmarks, and proposes a methodology to measure and incentivize reductions in disparities in readmissions. Staff would like to thank the subgroup, PMWG, and other stakeholders for their time and input on this redesign. Over the coming years, the Commission will need to continue to monitor performance on readmissions to ensure that Maryland continues to perform better on Medicare readmissions than the national average, monitor for unintended consequences of the current improvement target, and adjust the attainment target as there are statewide improvements. In terms of disparities, the state must finalize a SIHIS goal on reducing disparities in readmissions (current goal is set at 50 percent over 8 years) and adjust annual targets if a different goal is established. This work will be accomplished through collaboration with the Office of Minority Health and Health Disparities and other stakeholders. Furthermore, staff will work with hospitals and other stakeholders to monitor the impact of the disparity gap methodology and adjust the measurement and incentives as warranted. Lastly, as mentioned previously, staff may recommend to supplement the RRIP with additional measures in future years such as excess days in acute care or the electronic quality measure for readmissions.

Recommendations

1. Update 30-day, all-cause readmission measure with the following changes:
    a. Exclude all discharges with discharge disposition “left against medical advice”
    b. Include oncology discharges based on logic adapted from NQF 3188 - 30-day unplanned readmissions for cancer patients
2. Establish statewide 5-year Improvement target of -7.5 percent from 2018 base period, which would reduce Maryland Readmissions to approximately ~75th percentile of like geographies
3. Attainment Target - maintain attainment target methodology as currently exists, whereby hospitals at or better than the 65th percentile statewide receive scaled rewards for maintaining low readmission rates
4. For improvement and attainment, set the maximum reward hospitals can receive at 1 percent of inpatient revenue and the maximum penalty at 2 percent of inpatient revenue.
5. Establish additional payment incentive (up to 0.50 percent of inpatient revenue) for reductions in within-hospital readmission disparities
    a. Provide reward of 0.25 percent of IP revenue for hospitals on pace for 25 percent reduction in disparity gap measure over 8 years (>=6.94 percent reduction in disparity gap measure 2018 to 2020)
    b. Provide reward of 0.50 percent of IP revenue for hospitals on pace for 50 percent reduction in disparity gap measure over 8 years (>=15.91 percent reduction in disparity gap measure 2018 to 2020)
6. Explore development of an all-payer Excess Days in Acute Care measure in order to account for severity of readmission and emergency department and observation revisits

Appendix I. RRIP Readmission Measure and Revenue Adjustment Methodology

1) Performance Metric

The methodology for the Readmissions Reduction Incentive Program (RRIP) measures performance using the 30-day all-payer all hospital (both intra- and inter-hospital) readmission rate with adjustments for patient severity (based upon discharge all-patient refined diagnosis-related group severity of illness [APR-DRG SOI]) and planned admissions.[16] Unique patient identifiers from CRISP are used to be able to track patients across hospitals for readmissions.

The measure is similar to the readmission rate that is calculated by CMMI to track Maryland performance versus the nation, with some exceptions. The most notable exceptions are that the HSCRC measure includes psychiatric patients in acute care hospitals, and readmissions that occur at specialty hospitals. In comparing Maryland's Medicare readmission rate to the national readmission rate, the Centers for Medicare & Medicaid Services (CMS) will calculate an unadjusted readmission rate for Medicare beneficiaries. Since the Health Services Cost Review Commission (HSCRC) measure is for hospital-specific payment purposes, an additional adjustment is made to account for differences in case-mix. See below for details on the readmission calculation for the RRIP program.

2) Inclusions and Exclusions in Readmission Measurement

- Planned readmissions are excluded from the numerator based upon the CMS Planned Readmission Algorithm V. 4.0. The HSCRC has also added all vaginal and C-section deliveries and rehabilitation as planned using the APR-DRGs, rather than principal diagnosis.[17] Planned admissions are counted as eligible discharges in the denominator, because they could have an unplanned readmission.
- Discharges for newborn APR-DRG are removed.[18]
- Proposed for RY 2022: Remove DRG oncology exclusion but continue to exclude bone marrow transplants and liquid tumor patients by making these discharges not eligible to have an unplanned readmission or count as an unplanned readmission.[19]
- Proposed for RY 2022: Exclude patients with a discharge disposition of Left Against Medical Advice (PAT_DISP = 71, 72, or 73 through FY 2018; 07 FY 2019 onward)
- Rehabilitation cases as identified by APR-860 (which are coded under ICD-10 based on type of daily service) are marked as planned admissions and made ineligible for readmission after readmission logic is run.
- Admissions with ungroupable APR-DRGs (955, 956) are not eligible for a

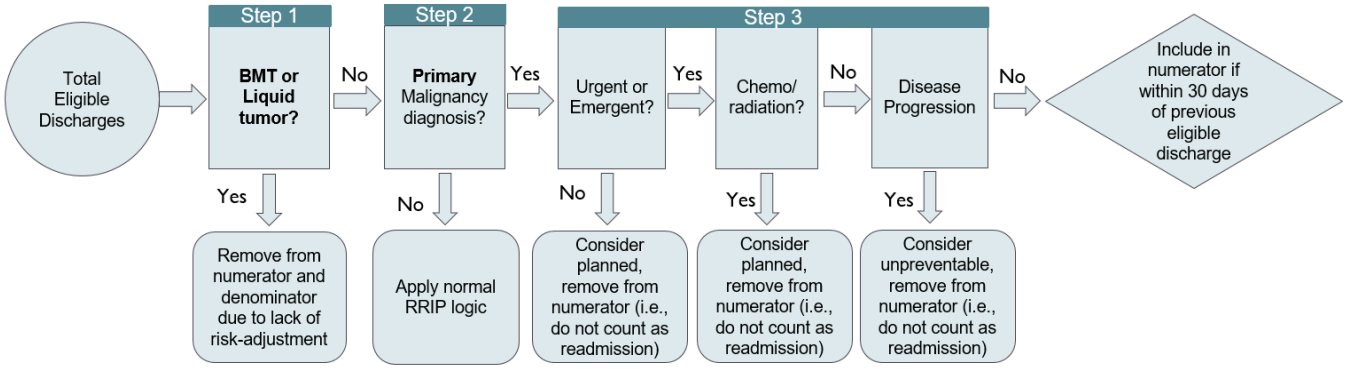
16 Planned admissions defined under [CMS Planned Admission Logic version 4 – updated March 2018].
17 **Rehab** DRGs: 540, 541, 542, 560, and 860; **OB Deliveries and Associated DRGs**: 580, 581, 583, 588, 589, 591, 593, 602, 603, 607, 608, 609, 611, 612, 613, 614, 621, 622, 623, 625, 626, 630, 631, 633, 634, 636, 639, 640, and 863.
18 **Newborn APR-DRGs:** 580, 581, 583, 588, 589, 591, 593, 602, 603, 607, 608, 609, 611, 612, 613, 614, 621, 622, 623, 625, 626, 630, 631, 633, 634, 636, 639, 640, and 863.
19 **Bone Marrow Transplant:** Diagnosis code Z94.81 or CCS Procedure code 64; **Liquid Tumor:** Diagnosis codes C81.00-C96.0. See section below for additional details on the oncology logic.

readmission, but can be a readmission for a previous admission.

- APR-DRG-SOI categories with less than two discharges statewide are removed.
- Hospitalizations within 30 days of a hospital discharge where a patient dies is counted as a readmission; however, the readmission is removed from the denominator because the case is not eligible for a subsequent readmission.
- Admissions that result in transfers, defined as cases where the discharge date of the admission is on the same or next day as the admission date of the subsequent admission, are removed from the denominator. Thus, only one admission is counted in the denominator, and that is the admission to the transfer hospital (unless otherwise ineligible, i.e., died). It is the second discharge date from the admission to the transfer hospital that is used to calculate the 30-day readmission window.
- Beginning in RY 2019, HSCRC started discharges from chronic beds within acute care hospitals.
- In addition, the following data cleaning edits are applied:
    - Cases with null or missing CRISP unique patient identifiers (EIDs) are removed.
    - Duplicates are removed.
    - Negative interval days are removed.
      HSCRC staff is revising case-mix data edits to prevent submission of duplicates and negative intervals, which are very rare. In addition, CRISP EID matching benchmarks are closely monitored. Currently, hospitals are required to make sure 99.5 percent of inpatient discharges have a CRISP EID.

Additional Details on Oncology Logic:

Flow Chart for Revised Oncology Logic



*Items that are **bolded** are adaptations from NQF measure

This updated logic replaces the RY 2021 measure logic that removes all oncology DRGs from the dataset, such that an admission with an oncology DRG cannot count as a readmission or be eligible to have a readmission.

Step 1: Exclude discharges where patients have a bone marrow transplant procedure, bone marrow transplant related diagnosis code, or liquid tumor diagnosis. This logic varies from the NQF cancer hospital measure that risk-adjusts for bone marrow transplant and liquid tumors. HSCRC staff recommended removing these discharges

(similar to current DRG exclusion) because the current indirect standardization approach did not allow for additional risk-adjustment but based on conversations with clinicians staff agreed these cases were significantly more complicated and at-risk for an unpreventable readmission.

Step 2: Flag discharges with a primary malignancy diagnosis to apply cancer specific logic for determining readmissions. This varies from the NQF cancer hospital measure that flags patients with primary or secondary malignancy diagnosis being treated in a cancer specific hospital. Staff think we should only flag those with a primary diagnosis since in a general acute care hospital there may be differences in the types of patients with a secondary malignancy diagnosis. Further, we remove the bone marrow and liquid tumor discharges regardless of malignancy diagnosis, thus ensuring the most severe cases are removed. Last, our initial analyses did not show a large impact on overall hospital rates when primary vs primary and secondary malignancies were flagged. It should be noted however that the current modeling in this policy uses readmission rates where both primary and secondary are flagged.

Step 3: Flag planned admissions using additional criteria beyond the CMS planned admission logic:

a) Nature of admission of urgent or emergent considered unplanned, all other nature of admission statuses are planned
b) Any admission with primary diagnosis of chemotherapy or radiation is considered planned
c) Any admission with primary diagnosis of metastatic cancer is not considered preventable, and thus gets excluded from being a readmission

In step 3, admissions are deemed not eligible to be a readmission but they are eligible to have a subsequent unplanned readmission.

3) Details on the Calculation of Case-Mix Adjusted Readmission Rate

Data Source:

To calculate readmission rates for RRIP, inpatient abstract/case-mix data with CRISP EIDs (so that patients can be tracked across hospitals) are used for the measurement period, with an additional 30 day runout. To calculate the case-mix adjusted readmission rate for CY 2018 base period and CY 2020 performance period, data from January 1 through December 31, plus 30 days in January of the next year are used. The base period data are used to calculate the normative values, which are used to determine a hospital's expected readmissions, as detailed below, as well as the estimated CY 2018 readmission rates.

Please note that, the base year readmission rates are not "locked in", and may change if there are CRISP EID or other data updates. The HSCRC does not anticipate changing the base period data, and does not anticipate that any EID updates will change the base period data significantly; however, the HSCRC has decided the most up-to-date data should be used to

measure improvement. For the performance period, the CRISP EIDs are updated throughout the year, and thus, month-to-month results may change based on changes in EIDs.

SOFTWARE: APR-DRG Version 37 for CY 2018-CY 2020.

Calculation:

$$\text{Case-Mix Adjusted Readmission Rate} = \frac{\text{(Observed Readmissions)}}{\text{(Expected Readmissions)}} * \text{Statewide Base Year Readmission Rate}$$

Numerator: Number of observed hospital-specific unplanned readmissions.

Denominator: Number of expected hospital specific unplanned readmissions based upon discharge APR-DRG and Severity of Illness. See below for how to calculate expected readmissions, adjusted for APR-DRG SOI.

Risk Adjustment Calculation:

Calculate the Statewide Readmission Rate without Planned Readmissions.

- Statewide Readmission Rate = Total number of readmissions with exclusions removed / Total number of hospital discharges with exclusions removed.

For each hospital, enumerate the number of observed, unplanned readmissions.

For each hospital, calculate the number of expected unplanned readmissions at the APR-DRG SOI level (see Expected Values for description). For each hospital, cases are removed if the discharge APR-DRG and SOI cells have less than two total cases in the base period data.

Calculate at the hospital level the ratio of observed (O) readmissions over expected (E) readmissions. A ratio of > 1 means that there were more observed readmissions than expected, based upon a hospital's case-mix. A ratio of < 1 means that there were fewer observed readmissions than expected based upon a hospital's case-mix.

Multiply the O/E ratio by the base year statewide rate, which is used to get the case-mix adjusted readmission rate by hospital. Multiplying the O/E ratio by the base year state rate converts it into a readmission rate that can be compared to unadjusted rates and case-mix adjusted rates over time.

Expected Values:

The expected value of readmissions is the number of readmissions a hospital would have experienced had its rate of readmissions been identical to that experienced by a reference or normative set of hospitals, given its mix of patients as defined by discharge APR-DRG category and SOI level. Currently, HSCRC is using state average rates as the benchmark.

The technique by which the expected number of readmissions is calculated is called indirect standardization. For illustrative purposes, assume that every discharge can meet the criteria for having a readmission, a condition called being “eligible” for a readmission. All discharges will either have zero readmissions or will have one readmission. The readmission rate is the proportion or percentage of admissions that have a readmission.

The rates of readmissions in the normative database are calculated for each APR-DRG category and its SOI levels by dividing the observed number of readmissions by the total number of eligible discharges. The readmission norm for a single APR-DRG SOI level is calculated as follows:
Let:

N = norm
P = Number of discharges with a readmission
D = Number of eligible discharges
i = An APR DRG category and a single SOI level

$$N_i = \frac{P_i}{D_i}$$

For this example, the expected rate is displayed as readmissions per discharge to facilitate the calculations in the example. Most reports will display the expected rate as a rate per one thousand.

Once a set of norms has been calculated, the norms are applied to each hospital’s DRG and SOI distribution. In the example below, the computation presents expected readmission rates for a single diagnosis category and its four severity levels. This computation could be expanded to include multiple diagnosis categories, by simply expanding the summations.

Consider the following example for a single diagnosis category.

Expected Value Computation Example – Individual APR-DRG

A Severity of Illness Level	B Eligible Discharges	C Discharges with Readmission	D Readmissions per Discharge (C/B)	E Normative Readmissions per Discharge	F Expected # of Readmissions (A*E)
1	200	10	.05	.07	14.0
2	150	15	.10	.10	15.0
3	100	10	.10	.15	15.0
4	50	10	.20	.25	12.5
Total	**500**	**45**	**.09**		**56.5**

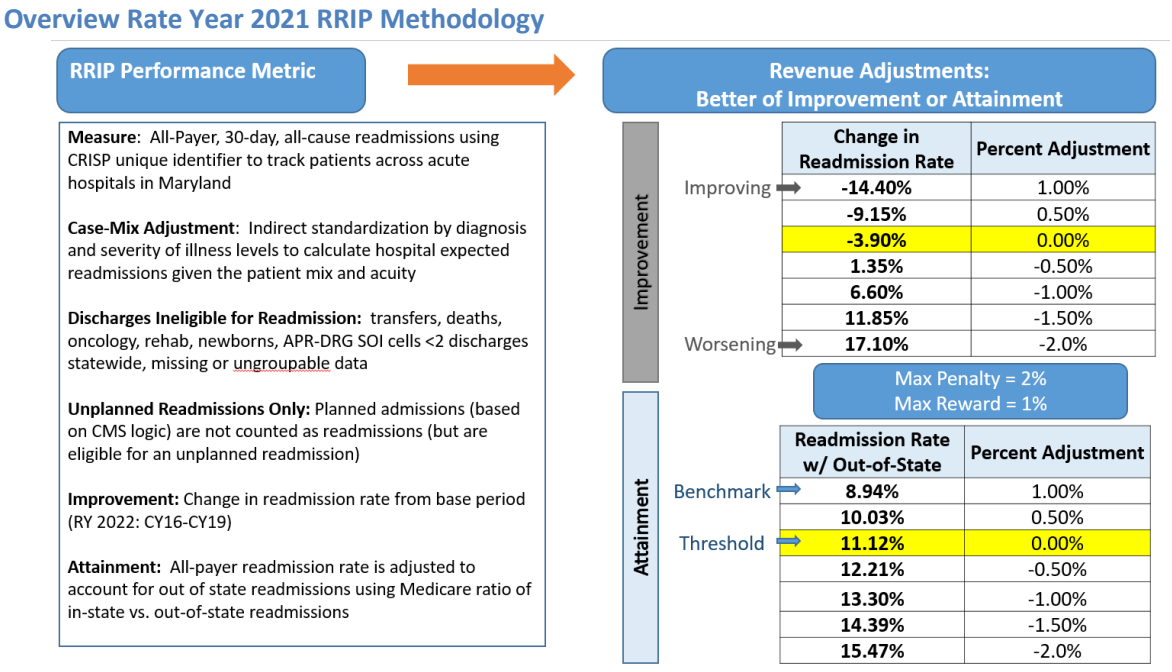
For the diagnosis category, the number of discharges with a readmission is 45, which is the sum of discharges with readmissions (column C). The overall rate of readmissions per discharge,

0.09, is calculated by dividing the total number of eligible discharges with a readmission (sum of column C) by the total number of discharges at risk for readmission (sum of column B), i.e., 0.09 = 45/500. From the normative population, the proportion of discharges with readmissions for each severity level for that diagnosis category is displayed in column E. The expected number of readmissions for each severity level shown in column F is calculated by multiplying the number of eligible discharges (column B) by the normative readmissions per discharge rate (column E) The total number of readmissions expected for this diagnosis category is the sum of the expected numbers of readmissions for the 4 severity levels.

In this example, the expected number of readmissions for this diagnosis category is 56.5, compared to the actual number of discharges with readmissions of 45. Thus, the hospital had 11.5 fewer actual discharges with readmissions than were expected for this diagnosis category. This difference can also be expressed as a percentage or the O/E ratio.

4) Revenue Adjustment Methodology

The RRIP assesses improvement in readmission rates from base period, and attainment rates for the performance period with an adjustment for out-of-state readmissions. The policy then determines a hospital's revenue adjustment for improvement and attainment and takes the better of the two revenue adjustments, with scaled rewards of up to 1 percent of inpatient revenue and scaled penalties of up to 2 percent of inpatient revenue. The figure below provides a high level overview of the RY 2021 RRIP methodology for reference and will be updated for RY 2022 once the policy is approved.



Appendix II. MPR Literature Review

MATHEMATICA Policy Research

1100 1st Street, NE, 12th Floor
Washington, DC 20002-4221
Telephone (202) 484-9220
Fax (202) 863-1763
www.mathematica-mpr.com

MEMORANDUM

TO: Alyson Schuster, Andrea Zumbrum, and Geoff Dougherty

FROM: Kristin Maurer and Eric Schone **DATE:** 2/28/2019

SUBJECT: Readmission Literature Survey Findings

To help the Maryland Health Services Cost Review Commission plan the evolution of its performance-based payments programs, Mathematica surveyed recent scholarly publications and gray literature related to readmission. In particular, we reviewed literature on the following subjects:

- Per capita or population-based readmission measures
- The relation of readmissions to emergency department (ED) use or observation stays
- The significance of different follow-up periods for readmission
- Alternative measures of post-discharge health care use
- Identifying a target readmission rate
- The impact of declining readmission rates
- The impact of CMS's Hospital Readmission Reduction Program (HRRP)

This memo describes the current state of our literature search and summarizes findings for each of these areas.

Methods

Our search contained two parts. One part was a systematic MEDLINE search of original articles, review articles, and technical reports. We screened articles identified by the keywords for relevance and then reviewed them. We describe keywords and search results in Table 1 below. For the topic of declining admissions, a keyword search did not yield any useful results. However, we attempted to address that topic by reviewing publications identified in the course of reviewing publications identified in our reviews of other topics. The second part was a non-

systematic review of articles and reports on the subject of the HRRP. This review includes articles cited in the Medicare Payment Advisory Commission's (MedPAC's) report on the HRRP and recent articles on the effects of the program.

Table 1. Search strategy summary

Search engines	MEDLINE
Years	2010–present
Article types	Original article, report, review article, journal article, meta-analysis, systematic review, technical report
Mesh	Patient readmission or hospitalization and United States
RQ1	**"Redefining" readmission measures**
Question	Is there evidence to support changes to readmission measures or measures in use or under development that consider the following: 1. Per capita readmissions (or other population-health based measures) 2. Time spent at home versus in hospital or skilled nursing facility (quality of life functional status post-discharge) 3. Window for readmissions 4. Emergency department, observation visits, and other unplanned care
Keywords	1. readmission* and hospital* and (rate* or measure*) and (population or community or "referral region") 2. (rate* or measure*) and (time home or home time)[1] 3. readmission* and hospital* and (rate* or measure*) and (window* or interval*) 4. readmission* and hospital* and (rate* or measure*) and (ED or "emergency department" or "emergency room" or observation)
Examples	<u>Per capita readmissions (or other population-health based measures)</u> 1. Herrin, Jeph, Justin St Andre, Kevin Kenward, Maulik S. Joshi, Anne-Marie J. Audet, and Stephen C. Hines. "Community Factors and Hospital Readmission Rates." *Health Services Research,* vol. 50, no. 1, 2015, pp. 20–39. <u>Quality of life after discharge</u> 1. Greene, S.J., E.C. O'Brien, R.J. Mentz, N. Luo, N.C. Hardy, W.K. Laskey, P.A. Heidenreich, C.L. Chang, S.J. Turner, C.W. Yancy, A.F. Hernandez, L.H. Curtis, P.N. Peterson, G.C. Fonarow, and B.G. Hammill. "Home-Time After Discharge

[1] We did not apply the MeSH restrictions to this search.

	Among Patients Hospitalized With Heart Failure." *Journal of the American College of Cardiology*, vol. 71, no. 23, 2018, pp. 2643–2652. 2. Greysen, S.R., I.S. Cenzer, A.D. Auerbach, and K.E. Covinsky. "Functional Impairment and Hospital Readmission in Medicare Seniors." *JAMA Internal Medicine*, vol. 175, no. 4, 2015, pp. 559–565. 3. Welsh, R.L., J.E. Graham, A.M. Karmarkar, N.E. Leland, J.G. Baillargeon, D.L. Wild, and K.J. Ottenbacher. "Effects of Postacute Settings on Readmission Rates and Reasons for Readmission Following Total Knee Arthroplasty." *Journal of the American Medical Directors Association*, vol. 18, no. 4, 2017, pp. 367.e1–367.e10. <u>Window for readmissions</u> 1. Chin, David L., Heejung Bang, Raj N. Manickam, and Patrick S. Romano. "Rethinking Thirty-Day Hospital Readmissions: Shorter Intervals might be Better Indicators of Quality of Care." *Health Affairs,* vol. 35, no. 10, 2016, pp. 1867–1875. <u>Emergency department/observation visits</u> 1. Zuckerman, R.B., S.H. Sheingold, E.J. Orav, J. Ruhter, and A.M. Epstein. "Readmissions, Observation, and the Hospital Readmissions Reduction Program." *New England Journal of Medicine,* vol. 374, no. 16, 2016, pp. 1543–1551. 2. Gerhardt, Geoffrey, Alshadye Yemane, Keri Apostle, Allison Oelschlaeger, Eric Rollins, and Niall Brennan. "Evaluating Whether Changes in Utilization of Hospital Outpatient Services Contributed to Lower Medicare Readmission Rate." *Medicare & Medicaid Research Review,* vol. 4, no. 1, 2014.
Number of hits	1. 156; post screening = 8 2. 68; post-screening=6 3. 184; post screening = 21 4. 93; post screening = 11
RQ2	**Benchmarks**
Question	What is an "acceptable level" of readmissions or the "optimal" readmission rate? Are there initiatives that define benchmarks or thresholds at the payer level?

	Title, abstract, keywords	"readmission" AND ("preventable" OR "avoidable" OR "optimal level" OR "acceptable level") AND "quality"
	Examples	1. van Walraven, Carl, Carol Bennett, Alison Jennings, Peter C. Austin, and Alan J. Forster. "Proportion of Hospital Readmissions Deemed Avoidable: A Systematic Review." *Canadian Medical Association Journal,* vol. 183, no. 7, 2011, pp. E391–E402. 2. Donzé, J., D. Aujesky, D. Williams, and J.L. Schnipper. (2013). "Potentially Avoidable 30-day Hospital Readmissions in Medical Patients: Derivation and Validation of a Prediction Model." *JAMA Internal Medicine*, vol. 173, no. 8, 2013, pp. 632–638.
	Number of hits	222 (in MedLINE) Post screening = 29
RQ3		**Decline in admissions**
	Question	What is the impact of the decline of admission rates on readmission measures (that is, shrinking denominator), particularly with regard to HRRP?
	Keywords	NA
	Examples	1. Cram, P., X. Lu, S.L. Kates, J.A. Singh, Y. Li, and B.R. Wolf. "Total Knee Arthroplasty Volume, Utilization, and Outcomes Among Medicare Beneficiaries, 1991-2010." *JAMA,* vol. 308, no. 12, 2012, pp. 1227–1236. 2. Kulkarni, V.T., S.J. Shah, S.M. Bernheim, Y. Wang, S.L.T. Normand, L.F. Han, M.T. Rapp, E.E. Drye, and H.M. Krumholz. (2012). Regional Associations Between Medicare Advantage Penetration and Administrative Claims-Based Measures of Hospital Outcome." *Medical Care*, vol. 50, no. 5, 2012, pp. 406.

HRRP = Hospital Readmissions Reduction Program; RQ = research question.

Findings

Population-based readmission measures

One definition of the denominator of the readmission rate is the number of index admissions at a given hospital. An alternative denominator definition is the size of the population over which readmissions are identified. Readmissions might be defined across the admissions of all hospitals serving a particular population with a denominator of their combined index discharges; the denominator might also be defined as the total population of the geographic area served by a hospital or hospitals. Thus, the per capita readmission rate would be defined as the product of the admission rate and of the readmission rate conditional on admission. However, readmission rates in population-based measures are generally part of a more broadly defined measure, such as an admission rate. Population-based measures can be used to assess quality across different populations, such as a health plan, accountable care organization, hospital market, or hospital referral region.

Epstein et al. (2011) found that all-cause admission rates were a strong predictor of regional variations in readmission rates, suggesting that the factors leading to high hospital utilization rates in a community might weaken the impact on readmission rates of transitional care and care coordination. Herrin et al. (2015) found that 58 percent of the national variation in readmission rates could be explained by the county in which a hospital was located, with the strongest association for measures related to access, such as the supply of general practitioners and specialists in the county. These studies indicate that a per capita approach might be the best way to identify variation in the factors most responsible for affecting readmissions.

MedPAC recommended in its June 2018 Report to Congress that Medicare incorporate population-based measures for Medicare Advantage plans, accountable care organizations, and fee-for-services (FFS) beneficiaries in defined market areas when assessing quality in incentive programs (MedPAC 2018a). A potentially preventable admission (PPA) measure treats the readmission as one type of PPA. MedPAC recommended implementing a PPA measure to assess hospitalizations that could be preventable if ambulatory care occurs in a timely and effective manner. It thus favors community investments that promote efficient use and high quality care without discriminating between patients who have previously been hospitalized and those who have not. MedPAC describes 3-M's PPAs, Agency for Healthcare Research and Quality Prevention Quality Indicators (PQIs), and Healthcare Effectiveness Data and Information Set (HEDIS) PPA measures as examples of PPA measures, but without recommending one in particular. They assessed market-level variation in the HEDIS measure and concluded that about 8 percent of admissions of FFS beneficiaries older than 67 were preventable by this definition and that market-level variation was sufficient to make the measure analytically useful.

MedPAC also tested a home and community day (HCD) measure to assess how well health care markets and service areas keep people out of health care institutions. MedPAC assessed market-level variation in the ratio of days not spent in a short- or long-term rehabilitation hospital, psychiatric facility, nursing home, observation status, ED, or death to days in the year.

When it evaluated market-level variation in this measure for FFS beneficiaries older than 65, MedPAC found that it differed by only 1 percent between the 90th percentile and 10th percentile. It concluded that variations in the measure were too small to identify market-level variation in performance.

Although neither PPA nor HCD is focused on readmissions, both measures take a population-based approach to assessing avoidable hospital use, which includes readmission. Blue Cross Blue Shield of Minnesota and the Wisconsin Medicaid Hospital Quality Program use measures related to potentially preventable readmissions to assess readmissions at the commercial and Medicare Advantage plan level and for Medicaid managed care plans.

ED use and observation stays

The literature on ED and observation stays assesses the relationship of ED visits and observation stays to readmissions. This literature recognizes that inpatient stays are part of a continuum of care that patients can receive when returning to the hospital following an index stay. Because of incentives to avoid admissions, deficiencies in hospitals' care, or in care provided within the community that result in a return to the hospital, might become less likely to result in an inpatient admission. Consequently, the readmission rate would fall but the share of ED and observation stays without an inpatient admission would rise. The literature assesses whether reductions in readmissions are associated with increases in other acute care contacts not followed by inpatient admission.

Most studies have found that the reduction in readmission rates occurring in recent years has been accompanied by increases in ED and observation stays not resulting in admission. The reduction in readmissions has also been accompanied by reductions in inpatient admission rates. MedPAC's review found that reductions in readmissions that it attributed to the HRRP were accompanied by increases in ED visits and observation stays not resulting in admissions that may also be due to HRRP. However, several other studies have found that the implementation of the HRRP was not associated with an increase in either observation visits or ED use post-discharge (Gerhardt et al 2014; Horwitz et al. 2018; Zuckerman et al. 2016; Ibrahim et al. 2017). Factors other than the HRRP could explain the reduction in inpatient admissions. For example, the increase in observation stays and ED visits and decreases in admissions might be explained by changes in the Medicare recovery audit contractor (RAC) review of the medical necessity of short stays. Because of the increased likelihood they would not be reimbursed, hospitals might have responded by decreasing the number of short stay admissions that could be subject to recovery audit contractor review. Doing so would therefore have reduced readmissions and increased ED and observation stays that do not result in admission.

Different follow-up periods

Evaluating follow-up periods over which readmissions are calculated has two foci: (1) identifying the periods over which hospital discharge practices and quality efforts affect results and (2) identifying the share of readmissions and associated resource use for which readmissions during different follow-up periods are responsible.

To assess hospital quality, public reporting and value-based payment programs have primarily adopted 30-day all-cause, unplanned readmissions measures. A 30-day window theoretically limits quality measurement to the period in which a hospital might have more control over care coordination post-discharge, but limited empirical evidence supports the use of a 30-day interval to detect readmissions attributable to hospital variation (Chin et al. 2016; Vaduganathan et al. 2013).

One study testing the optimal interval for assessing readmission rates as a measure of hospital quality found that measuring readmission rates at shorter intervals (five to seven days) was a better signal of hospital-level quality than a longer period but that the optimal timing varies across conditions (Chin et al. 2016). Another study analyzing the risk of readmissions following hospitalization for acute myocardial infarction (AMI), heart failure (HF), and pneumonia found that the extent and timing of readmission risk varied by readmission diagnosis, but risk generally peaked within two to ten days after discharge (Krumholz et al. 2016).

Overall, the appropriate interval for readmissions measures depends on the goal of the measure or associated public reporting or value-based payment program. Readmissions that occur within the first few days after discharge might reflect poor care coordination on the part of the hospital. A short interval, such as seven days, might be more appropriate than a long one if the goal is to detect readmissions that could be directly avoided through efforts taken by hospitals at the time of discharge. Adjusting the existing 30-day all-cause readmission measures by weighting readmissions according to their timing could help to account for the concerns that variations in readmissions at the 30-day interval cannot be attributed to the hospital (Joynt and Jha, 2013).

Several studies of readmissions at longer intervals compared the share of all readmissions within 30 days to the share of those within longer intervals and compared the share of resources that the readmission groups represent. One study of pediatric readmissions found that 30 percent of readmissions occurring within a year occurred during the first month, and a similar analysis of unstable angina patients found that 40 percent of those readmitted within a year were readmitted within 30 days. Others found that 40 to 50 percent of readmissions occurring within 90 days occurred after 30 days. Readmissions that occur weeks or months after discharge might be indirectly related to the index hospitalization, but these readmissions could also be indicators of a patient's overall health status, socioeconomic status (SES), and ability to have health care needs met in a non-hospital setting. Measuring readmissions at longer intervals might be more appropriate when taking a population-based perspective to assess the quality across the continuum of care in a community (Jencks and Brock 2013).

One study comparing the timing of readmissions for AMI, HF, and pneumonia among high-, average-, and low-performing hospitals found no notable differences in the timing of readmissions based on hospital performance within the first 30 days (Dharmarajan et al. 2013). In other words, high-performing hospitals tended to have fewer readmissions regardless of the point at which they were measured. The high-performing hospitals identified for this study, however, were those with low 30-day readmission rates for conditions measured by the HRRP. Thus, the argument is circular: by this definition, high-performing hospitals are likely to be those with good community support as well as high quality discharge planning.

Alternative measures of post-discharge health care use

The topics reviewed here introduce several different options for measures of health care use following discharge. The population-based measures above include the full range of inpatient and institutional care. Measures based on initial inpatient encounters that incorporate ED use and observation stays along with readmissions might be considered measures of discharge quality that account for the incentives to avoid inpatient care of patients that would otherwise be admitted (Baier et al. 2013). Readmission measures with different periods of follow-up have different implications. Short intervals measure the quality of the index stay and its associated discharge planning; long intervals capture the impact of community support.

Several empirical studies have examined measures that incorporate post-acute care in addition to readmission. One option is to use a measure of ED visits following discharge analogous to readmission rates. This measure reflects the need for post-acute care but is not sensitive to the admitting decision of the ED. One study analyzing variations in ED admission rates and examining 30-day post-discharge hospital utilization patterns in three states found that stays beginning with ED visits accounted for 40 percent of all hospital-based care (Vashi et al. 2013). Another study analyzed a measure of post-acute days as a share of post-admission days. The study found that this measure did a better job of distinguishing hospital performance than the readmission rate did. The Centers for Medicare & Medicaid Services (CMS) developed measures for AMI, HF, and pneumonia of excess days in acute care after hospitalizations to more fully capture acute care after hospitalization (Horwitz et al. 2018). Population-based measures, such as the HCD measure tested by MedPAC, could reflect the ability of the population to avoid institutional care and could be converted to a measure of post-discharge care by excluding those without a prior hospitalization. We present alternative measures in an appendix below.

Some have proposed measuring the number of days patients spend alive and outside of the hospital or a skilled nursing facility as an indicator of patients' quality of life (Green et al., 2018; Lee et al., 2018). This measure is also known as "home time". Although our literature search did not identify efforts to use a home time measure for payment, public reporting or other quality improvement initiatives, researchers have constructed home time measures for analytic purposes. Several studies have focused on home time following stroke, but recently home time has been studied as a patient-centered outcome for a broader array of conditions. These studies suggest that home time can be calculated from administrative claims data and associated with other quality of life indicators and outcome measures.

One study of Medicare claims found that reduced home time was associated with poor self-rated health, mobility impairment, depressed mood, limited social activity, and difficulty with self-care (Lee et al., 2018). In two other studies, home time following hospitalization for stroke was significantly associated with measures of disability (Quinn et al., 2008; Fonarow et al., 2016). Greene et al. (2018) found that home time following HF hospitalization was highly correlated with both time-to-death and hospitalization. In a study examining hospital-level variation in home-time following stroke, O'Brien et al. (2016) found significant variation in 90-day and 1-year home time at the hospital level, suggesting that a home time measure may help to identify and reduce variations across providers. Because of findings like these, some have

concluded that home time measures could be made suitable for use in value-based purchasing or similar programs.

However, one of the challenges in developing a home time measure as a patient-centered outcome is that hospitalizations and SNF stays can be beneficial for a patient to subsequently maintain independence rather than simply a signal of low quality of life. Additional research is needed to understand how information about patient outcomes and quality of life post hospitalization contained in home time measures could complement or replace readmission measures.

Target readmission rate

The literature relating to a target or appropriate readmission rate approaches the subject by distinguishing avoidable and unavoidable readmissions. An appropriate target might be the level of readmissions that would result if all readmissions were unavoidable. Literature distinguishing avoidable readmissions is based on two methodological approaches: (1) chart review and (2) algorithms using information contained in administrative data. Both methods result in substantial variation in the share of readmissions classed as avoidable. The proportion of readmissions classified as avoidable ranged from 5 to 79 percent in a review of these studies (van Walraven et al. 2011).

Studies based on physicians' chart reviews in our survey produced estimates of avoidable readmissions ranging from about 5 percent to 47 percent of readmissions reviewed (Cakir and Gammon 2010; Feigenbaum et al. 2012).The studies that we reviewed used two algorithm-based methods: SQLape and 3-M's avoidable readmission measure. These methods tend to identify a greater proportion of readmissions as preventable than do chart reviews. SQLape's avoidable readmission algorithm is part of a publicly available classification system based on International Statistical Classification of Diseases and Related Health Problems, 10th revision (ICD-10) diagnosis codes and ICD-9 procedure codes (Donzé et al. 2016). 3-M's algorithm is part of a proprietary set of quality improvement tools that identify preventable adverse events, including potentially preventable complications (McCoy et al. 2018).

Identifying the share of readmissions that is avoidable implicitly defines a share that is unavoidable. The rate of unavoidable readmission, however, is not a proxy for a target rate. Depending on the method used to define avoidable readmissions, the definition might include readmissions that could be prevented by better ambulatory care. The optimal readmission rate is also affected by the admission rate.

An alternative approach is to consider interventions intended to reduce readmissions. Such a program will reduce readmission rates by investing in hospital discharge planning and use of community resources to reduce avoidable admissions. The readmission rates resulting from interventions of this type is an alternative indication of an optimal rate. Investigators evaluating a quality improvement program estimated that 20 percent to 30 percent of readmissions at the subject hospital were preventable. A quality improvement program at that hospital reduced readmissions by 28 percent (Ryan et al. 2014). A care transition program targeting avoidable

readmissions using 3-M's algorithm reduced that readmission rate by 44 percent without affecting other readmissions (McCoy et al. 2018).

Implications of declining admission rates

In its June 2018 Report to Congress, MedPAC noted that Medicare per capita admissions declined by 17 percent between 2010 and 2016. This change in admission patterns could be the result of technological improvements, changes in care, or policy changes discouraging short-stay admissions. MedPAC attempted to identify the role of falling admission rates in reducing the readmission rate. They found that heart failure admissions dropped by 14 percent per capita and that the readmission rate among this smaller group of heart failure admissions fell by 16 percent, producing a 25 percent fall in readmissions. This result suggests that the source of the falling readmission rate could be found in reduced admissions (though that was not MedPAC's conclusion). They also found that the magnitude of the change in inpatient admission rates varied by condition and procedure included in the HRRP, and that the per capita admission rate increased for THA/TKA. However, readmission declines among these patients were similar to those affecting other conditions, lending support to the conclusion that at least some of the decline in readmission rates is due to a focus on reducing readmissions in particular (Cram et al., 2012).

A related factor that may affect readmission rates is the shift to managed care. Among Medicare patients, readmissions of FFS patients are measured under HRRP but patients enrolled in Medicare Advantage (MA) managed care plans are excluded. MA enrollment has increased steadily over time, although this growth has been distributed unevenly across states and health care markets. As patients shift to MA, declining FFS admissions may affect readmission measures. Although one study suggests that 30-day risk-standardized mortality and readmission rates do not systematically differ with MA penetration (Kulkarni et al., 2012) other evidence suggests that MA patients have lower risk than FFS patients, particularly unmeasured risk. If MA patients are lower risk, their shift out of FFS may increase measured readmission rates among FFS. However, this increase in risk would affect both admission and readmission rates. Instead both have declined during this time, suggesting that the shift to managed care has not had a large impact on readmission rates.

The impact of HRRP

HRRP reduces reimbursement for hospitals with higher-than-average readmission rates for any of six conditions. Researchers have reviewed the impact of the program in a number of areas: effect on readmissions, effect on ED care and observation stays, effect on admissions, and effect on mortality. The effort to analyze these impacts is complicated by the fact that the program was initiated for all acute care prospective payment hospitals at the same time. Thus, treatment effects such as those listed previously are difficult to measure because no control similar to the subjects of the treatment was created. Research has attempted to identify comparison groups by distinguishing conditions subject to the program from those that were not and by distinguishing eligible hospitals likely to be penalized from those that are not. Most research has indicated that the program reduced readmission rates, though even that finding is not without controversy. Similarly, observation stays and ED treatments have been found to substitute for readmission, though the increase in this treatment setting is less than observed

declines in readmission rates. The increase in ED and observation stays might also be explained by factors other than the HRRP. Findings concerning both admission rates and mortality rates have also been mixed.

Readmission rates

Both unadjusted and risk-adjusted 30-day readmission rates declined after HRRP was established and implemented. To establish that readmission rate decreases were attributable to HRRP, the decreases for conditions included in HRRP, for Medicare patients, and for hospitals subject to HRRP were compared with other groups. Some researchers found that the decreases for groups affected by HRRP were greater, lending support to the finding that HRRP led to a decrease in readmission rates (Zuckerman et al. 2016; Desai et al. 2016; Ibrahim et al. 2017; MedPAC 2018b). Ody et al. (2019) cast doubt on this finding. They suggested that the observed decline in readmissions is attributable to an increase in data available for risk adjustment because of the change in electronic transaction standards implemented between 2010 and 2012 that increased the number of diagnosis codes recorded on claims. They found that after accounting for the effect of this additional diagnostic information by stripping diagnoses from later records, the change in risk-adjusted readmission rate was reduced and differences in readmission rate changes between targeted and non-targeted conditions and hospitals were no longer statistically significant. MedPAC addressed this finding by comparing trends in unadjusted readmission rates for AMI patients that would not have been effected by the changes in coding practices. MedPAC found that these unadjusted readmission rates for AMI beneficiaries decreased significantly, which suggests that increased diagnostic information explains only part of the drop in readmission rates and thus that readmissions for conditions affected by HRRP were reduced by the program.

Mortality

Results of several studies have suggested that the change in admitting policies produced by the HRRP has resulted in increased mortality. Other studies have supported the interpretation that the HRRP has not affected mortality or has even improved mortality outcomes. Differences in findings can be explained in part by differences in the analytic approach. Wadhera et al. (2018) and Gupta et al. (2018) measured aggregate readmission and mortality for conditions targeted by HRRP and other conditions. They found that, after the implementation of HRRP, aggregate readmissions rate reductions in targeted conditions were associated with aggregate increases in mortality for Medicare FFS patients. Wadhera et al. accounted for patients' clinical risk factors by matching pre-HRRP and post-HRRP patients based on clinical characteristics. Further, they found that the increase in mortality occurred among patients who were not readmitted. Conversely, MedPAC (2018b) and Dharmarajan et al. (2017) compared changes in mortality for hospitals that have decreasing readmission rates with mortality changes of hospitals that have increasing readmissions. Both found small but statistically significant positive correlations (0.05 and 0.06) between changes in HF readmission rates and mortality rates, suggesting that hospitals' reductions in readmission rates are weakly associated with reductions in mortality. MedPAC also compared raw and risk-adjusted mortality before and after HRRP. It found that aggregate risk-adjusted mortality for target conditions decreased during that time.

The aggregate approach described above captures the total effect of HRRP (that is, the findings are not confounded by sorting of patients among hospitals or by hospital-level variation in unmeasured patient risk factors). However, this approach measures only an association. It cannot demonstrate a causal relation between HRRP, readmissions, and mortality—only a temporal one, from which causality is inferred. Hospital-level correlations measure the relation of reducing readmissions to mortality within the hospital experiencing the reduction, attributing that relation to causality. Hospital-level correlations, however, do not account for the impact of unmeasured patient risk factors on mortality and readmissions. For instance, a decrease in unmeasured patient risk at a hospital would reduce both its risk-adjusted mortality and risk-adjusted readmission rate, creating a spurious association of reduced mortality and readmission rates. Similarly, risk adjusted readmissions and mortality and the aggregate relation between them might be affected by the coding intensity increase cited by Ody et al.

In response to the problem of identifying the relationship between HRRP and hospitals' outcomes, one approach is to measure the association between the likelihood of being penalized under HRRP with changes in mortality and readmission. Hospitals more likely to be penalized under the program are more likely to reduce their readmissions, but random fluctuations in unmeasured risk do not affect that likelihood. Thus, the change in readmissions and mortality associated with the likelihood of a penalty can be interpreted as a response to HRRP. Gupta (2017) measures the predicted likelihood of a penalty as a function of a patient's SES and finds that hospitals that are more likely to be penalized experience significantly greater reductions in readmission rates for HRRP conditions, including a significantly reduced likelihood of readmitting their own patients when they present at the ED. His findings indicate that HRRP has reduced readmissions, and because these hospitals do not exhibit significant increases in mortality, the evidence suggests that the program is reducing readmissions without increasing mortality.

The findings of these studies differ according to the condition resulting in the index stay. As MedPAC observed, AMI is less likely to be affected by changes in coding practice or admission policies than other measures. MedPAC (2018b) found that both raw and risk-adjusted AMI mortality fell, Wadhera et al. found no mortality effect for AMI, and Gupta found a significant reduction in mortality for penalized hospitals. Wadhera, however, found increased mortality for HF, and Gupta found no significant change for HF or pneumonia at 30 days but a significant increase at one year.

ED and observation stays

Studies of the impact of HRRP on ED and observation stays have addressed whether the decrease in hospital readmissions accompanying HRRP is attributable to the replacement of readmissions by observation stays and ED use without admission promoted by the program (Weaver et al. 2015). MedPAC assessed the impact of HRRP by comparing changes for focal conditions with those not covered by HRRP. It found that observation stays and ED visits increased and admissions decreased both for conditions included in HRRP as well as for conditions not included. MedPAC also found that observation stays for patients without a recent admission (that is, patients who would not be counted as a readmission) increased similarly to patients with admissions. As a result, MedPAC concluded that the reduction in readmission rates

reflects changes in practice that reduced admissions rather than shifting of short-stay admissions into observation stays to avoid readmission penalties. Zuckerman et al. also found no significant within-hospital association between changes in observation stays and readmissions after implementation of the Affordable Care Act. Both MedPAC and Zuckerman et al. noted concurrent policy changes that could explain the increase in observation stays and ED visits and decreases in admissions. For example, RAC audits, as described above, might have reduced admission rates.

MedPAC also evaluated the financial impact of HRRP and reductions in readmission rates that it attributed to the program. It found that increases in expenditures because of ED and observation stays were much smaller than the expenditures for the readmissions that they may have replaced.

Admission rates

MedPAC (2018b) noted the large national drop in initial inpatient admissions and a shift in the type of patients treated by hospitals from 2010 to 2014. This change in admission patterns could be the result of inpatient care being restricted increasingly to severely sick patients. Similar to its finding for ED and observation stays, MedPAC found that admission rates for HRRP-targeted conditions were reduced by less than rates for other conditions. It concluded that most of the change in admission rates was caused by factors other than HRRP. Gupta (2018), however, found that hospitals likely to be penalized were significantly less likely to admit patients for three HRRP conditions. The effect was smallest (but still statistically significant) for AMI and largest for HF.

Other HRRP affects

Many additional avenues by which HRRP might have affected treatment and outcomes remain unexplored. For example, because readmission rates were not adjusted for SES until fiscal year 2018, the program disadvantaged hospitals with low-SES patients who were more likely to be readmitted and thus caused hospitals treating these patients to be penalized more heavily. If admission rates for low-SES patients were reduced as a consequence, the result might have been an increase in mortality that would not be captured by inpatient or post-discharge mortality rates. In addition, the change in the program to stratify hospitals by patient SES has produced changes in its distributional impact and effect on low-SES patients that should be the subject of future research.

Conclusions

Our review resulted in conclusions concerning target rates; alternative measures of post-acute care quality, including population measures and readmissions measured at different intervals; and the impact of the HRRP.

Target rates

Identification of avoidable readmissions by chart review could provide valuable insight into readmission reduction goals, but it is subject to subjective variation. Alternatively, algorithms to identify avoidable readmissions based on administrative data are a less costly and more

consistent way to evaluate interventions. Readmission targets should consider diagnoses and follow-up periods rather than a raw 30-day readmission rate.

Alternative measures

Readmissions at a short interval represent the quality of initial care and post-discharge planning, and a target rate of 0 is desirable. Long-term readmissions are the result of care in the community, and the readmission goal should be based on population-based approach. A hospital's readmission rate should approach the community admission rate and that rate should exclude PPAs such as those measured by AHRQ's Prevention Quality Indicators.

To produce a complete picture of the impact of readmissions reduction efforts, particularly in the short run, measures that include other inpatient contacts, such as ED or observation stays, are necessary. For example, a measure of days of post-acute care possesses more discriminant power than the readmission rate, but this measure still compounds population effects and hospital quality effects. Population-based measures should be included to address community factors.

HRRP

Our findings suggest considerable controversy about the impact of readmission reduction under CMS's HRRP. The preponderance of the evidence suggests that it has contributed to the reduction in readmissions during the time period surrounding its implementation and that it has reduced the cost of inpatient care. However, other changes in practice and data collection occurring at the same time prevent this conclusion from being definitive. Several avenues deserve more investigation: evidence of unintended consequences of the program, particularly mortality effects for HF, and its effect on admission rates and on other post-acute care. These unintended consequences should be considered in the light of their potential impact on disadvantaged patients and their hospitals. The impact of changes in the program to account for these impacts should also be investigated.

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APPENDIX: ALTERNATIVE POST-ACUTE CARE MEASURES

Measure type	Description	Measure steward
Home and community days	Ratio of days not spent in a short- or long-term rehabilitation hospital, psychiatric facility, nursing home, observation status, ED, or death to days in the year	MedPAC
Potentially preventable admissions	Admissions that could be avoided by good ambulatory care	AHRQ/HEDIS
Potentially preventable readmissions	Based on proprietary clinical logic, readmissions that could be avoided by good care	3M[c]
30-day Post-Hospital AMI Discharge Care Transition Composite Measure	This measure scores a hospital on the incidence among its patients, during the month following discharge from an inpatient stay, having a primary diagnosis of AMI for three types of events: readmissions, ED visits, and evaluation and management services.	CMS (NQF #0698- not endorsed)
30-day Post-Hospital HF Discharge Care Transition Composite Measure	This measure scores a hospital on the incidence among its patients, during the month following discharge from an inpatient stay, having a primary diagnosis of HF for three types of events: readmissions, ED visits, and evaluation and management services.	CMS (NQF #0699- not endorsed)
30-day Post-Hospital HF Discharge Care Transition Composite Measure	This measure scores a hospital on the incidence among its patients, during the month following discharge from an inpatient stay, having a primary diagnosis of pulmonary nodular amyloidosis for three types of events: readmissions, ED visits and evaluation, and management services.	CMS (NQF#0707- not endorsed)
Excess Days in Acute Care after Hospitalization for AMI	This measure assesses days spent in acute care within 30 days of discharge from an inpatient hospitalization for AMI to provide a patient-centered assessment of the post-	CMS (NQF#2881-endorsed)

	discharge period. This measure aims to capture the quality of care transitions provided to discharged patients hospitalized with AMI by collectively measuring a set of adverse acute care outcomes that can occur after discharge: ED visits, observation stays, and unplanned readmissions at any time during the 30 days after discharge. To aggregate all three events, we measure each in terms of days. In 2016, CMS began annually reporting the measure for patients who are 65 and older, enrolled in fee-for-service Medicare, and hospitalized in nonfederal hospitals.	
Excess Days in Acute Care after Hospitalization for HF	This measure assesses days spent in acute care within 30 days of discharge from an inpatient hospitalization for HF to provide a patient-centered assessment of the post-discharge period. This measure aims to capture the quality of care transitions provided to discharged patients hospitalized with HF by collectively measuring a set of adverse acute care outcomes that can occur after discharge: ED visits, observation stays, and unplanned readmissions at any time during the 30 days after discharge. To aggregate all three events, we measure each in terms of days. In 2016, CMS began annually reporting the measure for patients who are 65 and older, enrolled in Medicare fee-for-service, and hospitalized in nonfederal hospitals.	CMS (NQF#2880-endorsed)
Excess Days in Acute Care after Hospitalization for Pneumonia	This measure assesses days spent in acute care within 30 days of discharge from an inpatient hospitalization for pneumonia, including aspiration pneumonia or for sepsis (not severe sepsis) with a secondary diagnosis of pneumonia coded in the claim as present on admission. This measure aims to capture the quality of care transitions provided to discharge patients hospitalized with	CMS (NQF#2882-endorsed)

	pneumonia by collectively measuring a set of adverse acute care outcomes that can occur after discharge: ED visits, observation stays, and unplanned readmissions at any time during the 30 days after discharge. To aggregate all three events, we measure each in terms of days. In 2018, CMS began annually reporting the measure for patients who are 65 and older, enrolled in Medicare fee-for-service, and hospitalized in nonfederal hospitals.	
30-day PCI readmission measure[d]	This measure estimates a hospital-level risk-standardized readmission rate following PCI for Medicare fee-for-service patients who are 65 and older. The outcome is defined as unplanned readmission for any cause within 30 days following hospital stays. The measure includes patients who are admitted to the hospital (inpatients) for their PCI and patients who undergo PCI without being admitted (outpatient or observation stay).	American College of Cardiology (NQF #0695)

[a]Please see https://www.bluecrossmn.com/sites/default/files/DAM/2019-01/FINAL_Medicare_Preventable_Readmissions_Bulletin_P3-19_0.pdf?ReturnTo=/.

[b]Please see https://www.forwardhealth.wi.gov/wiportal/content/provider/medicaid/hospital/resources_01.htm.spage.

[c]Please see https://multimedia.3m.com/mws/media/849903O/3m-ppr-grouping-software-fact-sheet.pdf and https://www.cms.gov/Medicare/Quality-Initiatives-Patient-Assessment-Instruments/Post-Acute-Care-Quality-Initiatives/Downloads/Potentially-Preventable-Readmissions-TEP-Summary-Report.pdf.

[d]NQF

AHRQ = Agency for Healthcare Research and Quality; AMI = acute myocardial infarction; CMS = Centers for Medicare & Medicaid Services; ED = emergency department; HEDIS = Healthcare Effectiveness Data and Information Set; HF = heart failure; MedPAC= Medicare Payment Advisory Commission; NQF = National Quality Forum; PCI = percutaneous coronary intervention.

Appendix III. RY 2021 YTD Results

Hospitals		CY2016 Base Period (YTD, Jan-Oct 2016)						CY2019 Performance Period (YTD, Jan-Oct 2019)								
A	B	C	D	E = D/C	F	G = D/F	H = D/F * 11.99%	I	J	K = J/I	L	M = J/L	N = J/L * 11.99%	O = N/H - 1	P	Q = N*P
CMS ID	Hospital Name	Eligible Disch	Readm	Percent Readm	Expected Readm	Readm Ratio	Case-mix Adj Readm Rate	Eligible Disch	Readm	Percent Readm	Expected Readm	Readm Ratio	Case-mix Adj Readm Rate	Change in Case-mix Adj Rate from CY2016 YTD	OOS Ratio (Oct 18-Sep 19)	Case-mix Adj Readm Rate, Adj for OOS
210001	Meritus	11,406	1,293	11.34%	1,340	0.965	11.57%	11,420	1,256	11.00%	1,471	0.854	10.24%	- 11.50%	1.05	10.77%
210002	UMMC	18,751	2,707	14.44%	2,454	1.103	13.23%	18,261	2,525	13.83%	2,482	1.017	12.20%	- 7.79%	1.04	12.70%
210003	UM-PGHC	9,063	1,026	11.32%	1,113	0.922	11.06%	7,964	924	11.60%	1,106	0.836	10.02%	- 9.40%	1.20	11.99%
210004	Holy Cross	20,295	1,782	8.78%	1,804	0.988	11.85%	19,635	1,644	8.37%	1,767	0.930	11.16%	- 5.82%	1.09	12.11%
210005	Frederick	11,752	1,140	9.70%	1,383	0.824	9.88%	11,511	1,163	10.10%	1,371	0.848	10.17%	2.94%	1.05	10.66%
210006	UM-Harford	3,392	536	15.80%	505	1.061	12.72%	2,983	406	13.61%	467	0.869	10.42%	- 18.08%	1.04	10.79%
210008	Mercy	10,710	888	8.29%	845	1.051	12.60%	10,363	891	8.60%	896	0.995	11.93%	- 5.32%	1.03	12.26%
210009	Johns Hopkins	32,813	4,801	14.63%	4,291	1.119	13.42%	30,702	4,533	14.76%	4,226	1.073	12.86%	- 4.17%	1.07	13.75%
210010	UM-Dorchester	1,824	291	15.95%	267	1.089	13.06%	1,022	124	12.13%	164	0.755	9.06%	- 30.63%	1.06	9.56%
210011	St. Agnes	12,320	1,470	11.93%	1,449	1.015	12.17%	9,959	1,230	12.35%	1,259	0.977	11.72%	- 3.70%	1.01	11.79%
210012	Sinai	13,147	1,756	13.36%	1,675	1.048	12.57%	10,502	1,195	11.38%	1,377	0.868	10.41%	- 17.18%	1.01	10.52%
210013	Bon Secours	2,948	680	23.07%	511	1.331	15.96%	2,335	541	23.17%	401	1.350	16.20%	1.50%	1.01	16.40%
210015	MS Franklin Sq	15,820	2,132	13.48%	1,977	1.078	12.93%	14,811	2,003	13.52%	1,986	1.009	12.10%	- 6.42%	1.01	12.18%
210016	White Oak	7,573	874	11.54%	918	0.952	11.41%	7,348	671	9.13%	852	0.787	9.44%	- 17.27%	1.16	10.97%
210017	Garrett	1,603	85	5.30%	169	0.502	6.02%	1,215	55	4.53%	150	0.366	4.38%	- 27.24%	1.68	7.34%
210018	MS Montgomery	5,320	636	11.95%	683	0.931	11.17%	4,503	496	11.01%	613	0.809	9.70%	- 13.16%	1.07	10.39%
210019	Peninsula	12,723	1,335	10.49%	1,512	0.883	10.59%	11,475	1,126	9.81%	1,453	0.775	9.30%	- 12.18%	1.08	10.08%
210022	Suburban	10,054	1,198	11.92%	1,249	0.959	11.51%	9,974	1,117	11.20%	1,330	0.840	10.07%	- 12.51%	1.11	11.16%
210023	Anne Arundel	20,633	1,729	8.38%	1,802	0.959	11.51%	19,901	1,884	9.47%	2,004	0.940	11.28%	- 2.00%	1.03	11.67%
210024	MS Union	8,651	1,220	14.10%	1,120	1.090	13.07%	8,071	1,000	12.39%	1,033	0.968	11.61%	- 11.17%	1.01	11.76%
210027	Western MD	8,721	1,083	12.42%	1,129	0.959	11.50%	7,884	953	12.09%	1,094	0.871	10.44%	- 9.22%	1.14	11.94%
210028	MS St. Mary's	6,209	628	10.11%	678	0.926	11.10%	5,308	529	9.97%	624	0.847	10.16%	- 8.47%	1.17	11.87%
210029	JH Bayview	14,553	2,275	15.63%	1,865	1.220	14.63%	14,046	2,010	14.31%	1,862	1.080	12.95%	- 11.48%	1.02	13.21%
210030	UM-Chester	1,165	180	15.45%	152	1.182	14.18%	494	44	8.91%	80	0.550	6.60%	- 53.46%	1.16	7.66%
210032	Union Cecil	4,482	504	11.24%	572	0.881	10.56%	3,751	449	11.97%	510	0.881	10.57%	0.09%	1.22	12.95%
210033	Carroll	7,590	904	11.91%	928	0.974	11.69%	7,991	1,012	12.66%	1,028	0.985	11.81%	1.03%	1.02	11.99%
210034	MS Harbor	5,158	600	11.63%	596	1.006	12.07%	5,362	763	14.23%	692	1.103	13.23%	9.61%	1.01	13.31%
210035	UM-Charles	4,895	514	10.50%	615	0.836	10.03%	4,821	561	11.64%	674	0.832	9.98%	- 0.50%	1.18	11.80%
210037	UM-Easton	5,524	546	9.88%	596	0.917	11.00%	4,251	364	8.56%	496	0.734	8.80%	- 20.00%	1.06	9.29%
210038	UMMC Midtown	3,312	714	21.56%	549	1.302	15.61%	3,530	678	19.21%	584	1.160	13.92%	- 10.83%	1.01	14.12%
210039	Calvert	4,120	403	9.78%	507	0.796	9.54%	4,436	547	12.33%	605	0.904	10.85%	13.73%	1.11	12.04%
210040	Northwest	8,408	1,322	15.72%	1,234	1.072	12.85%	6,739	854	12.67%	1,061	0.805	9.65%	- 24.90%	1.02	9.84%
210043	UM-BWMC	12,978	1,883	14.51%	1,730	1.089	13.06%	13,499	1,731	12.82%	1,921	0.901	10.81%	- 17.23%	1.02	10.98%

Hospitals		CY2016 Base Period (YTD, Jan-Oct 2016)						CY2019 Performance Period (YTD, Jan-Oct 2019)								
A	B	C	D	E = D/C	F	G = D/F	H = D/F * 11.99%	I	J	K = J/I	L	M = J/L	N = J/L * 11.99%	O = N/H - 1	P	Q = N*P
CMS ID	Hospital Name	Eligible Disch	Readm	Percent Readm	Expected Readm	Readm Ratio	Case-mix Adj Readm Rate	Eligible Disch	Readm	Percent Readm	Expected Readm	Readm Ratio	Case-mix Adj Readm Rate	Change in Case-mix Adj Rate from CY2016 YTD	OOS Ratio (Oct 18-Sep 19)	Case-mix Adj Readm Rate, Adj for OOS
210044	GBMC	12,511	1,020	8.15%	1,132	0.901	10.81%	13,546	1,167	8.62%	1,324	0.882	10.58%	- 2.13%	1.02	10.75%
210045	McCready	223	28	12.56%	28	0.987	11.84%	109	12	11.01%	13	0.895	10.74%	- 9.29%	1.00	10.74%
210048	Howard	13,323	1,385	10.40%	1,437	0.964	11.56%	11,315	1,198	10.59%	1,340	0.894	10.72%	- 7.27%	1.02	10.89%
210049	UMUCH	8,908	993	11.15%	1,053	0.943	11.31%	8,085	947	11.71%	1,029	0.920	11.04%	- 2.39%	1.03	11.33%
210051	Doctors	7,760	1,127	14.52%	1,133	0.994	11.93%	8,180	916	11.20%	1,238	0.740	8.87%	- 25.65%	1.19	10.60%
210056	MS Good Sam	6,306	986	15.64%	948	1.040	12.47%	5,345	938	17.55%	876	1.071	12.85%	3.05%	1.01	12.93%
210057	Shady Grove	15,957	1,440	9.02%	1,650	0.873	10.47%	14,241	1,183	8.31%	1,503	0.787	9.44%	- 9.84%	1.05	9.93%
210058	UMROI	462	33	7.14%	36	0.917	11.00%	359	27	7.52%	31	0.860	10.31%	- 6.27%	1.00	10.31%
210060	Ft Wash	1,772	210	11.85%	256	0.820	9.83%	1,441	174	12.07%	220	0.791	9.49%	- 3.46%	1.42	13.46%
210061	Atlantic General	2,569	253	9.85%	348	0.728	8.73%	2,187	234	10.70%	305	0.768	9.21%	5.50%	1.10	10.14%
210062	MS Southern MD	8,153	1,007	12.35%	1,062	0.948	11.37%	8,266	911	11.02%	1,116	0.816	9.79%	- 13.90%	1.29	12.59%
210063	UM-St. Joe	12,031	1,136	9.44%	1,211	0.938	11.25%	10,969	1,040	9.48%	1,185	0.878	10.53%	- 6.40%	1.01	10.67%
210064	Levindale	946	141	14.90%	144	0.980	11.76%	809	101	12.48%	121	0.833	9.99%	- 15.05%	1.00	9.99%
210065	HC-Germantown	3,582	398	11.11%	420	0.948	11.37%	3,942	426	10.81%	470	0.906	10.87%	- 4.40%	1.06	11.52%

Appendix IV. Modeling of Benchmarking

Below please find slides presenting findings from the Benchmarking for readmissions project:

Medicare Benchmarking (Revised)

	Unadjusted Rates	2018 Readmissions Rate			2018 Readmissions per 1000	
		Maryland	Nation	Peer County BM[1]	Maryland	Peer County BM[1]
Performance	Overall (Per CMMI)	15.40%	15.45%			
	MD % Above (Below) National	*(0.32%)*				
	HSCRC Calculated (CCW)	15.47%		15.57%	38.2	39.8
	MD % Above (Below) Benchmark	*(0.64%)*			*(4.07%)*	
	Benchmark 25th Percentile (CCW)	15.47%		14.72%	38.2	34.1
	MD % Above (Below) Benchmark	*5.11%*			*11.97%*	
Opportunity	Benchmark if all MD counties were at or below **benchmark average**	15.47%		15.16%	38.2	37.1
	MD improvement opportunity	*1.98%*			*2.83%*	
	Benchmark if all MD counties were at or below **benchmark 25th percentile**	15.47%		14.53%	38.2	33.1
	MD improvement opportunity	*6.07%*			*13.26%*	

1. Benchmark reflects the straight average of each county's peer counties blended to a state average based on MD admits or beneficiaries

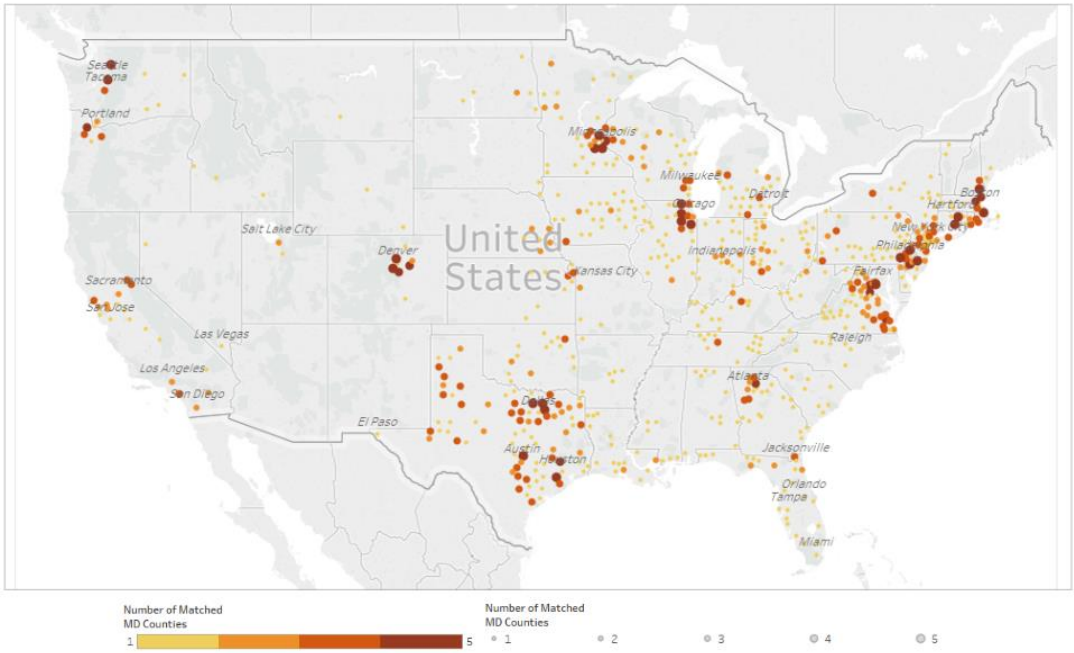
Commercial Benchmarking

	Unadjusted Rates	2017 Readmissions Rate			2017 Readmissions per 1000			
		MD MCDB	Nation[1]	Peer MSA BM[2]	MD MCDB	MD CSHD	Nation[1]	Peer MSA BM[2]
Performance	Overall (Casemix = 6.40%)	6.84%	6.82%	6.98%	2.48	2.64	2.91	3.17
	MD % Above (Below) Nation	*0.23%*			*(14.82%)*	*(9.34%)*		
	MD % Above (Below) Benchmark	*(2.06%)*			*(21.71%)*	*(16.68%)*		
	Benchmark 25th Percentile (CHSD)	6.84%	5.63%	6.53%	2.48	2.64	2.02	2.14
	MD % Above (Below) Benchmark	*4.63%*			*15.93%*	*23.38%*		
Opportunity	Benchmark if all MD MSAs were at or below benchmark average	6.84%		6.72%/	2.48	2.64		2.49/ 2.58
	MD improvement opportunity	*1.76%*			*(0.47%)*	*(2.40%)*		
	Benchmark if all MD MSAs were at or below benchmark 25th percentile	6.84%		6.44%	2.48	2.64		2.14/ 2.11
	MD improvement opportunity	*6.20%*			*16.93%*	*25.34%*		

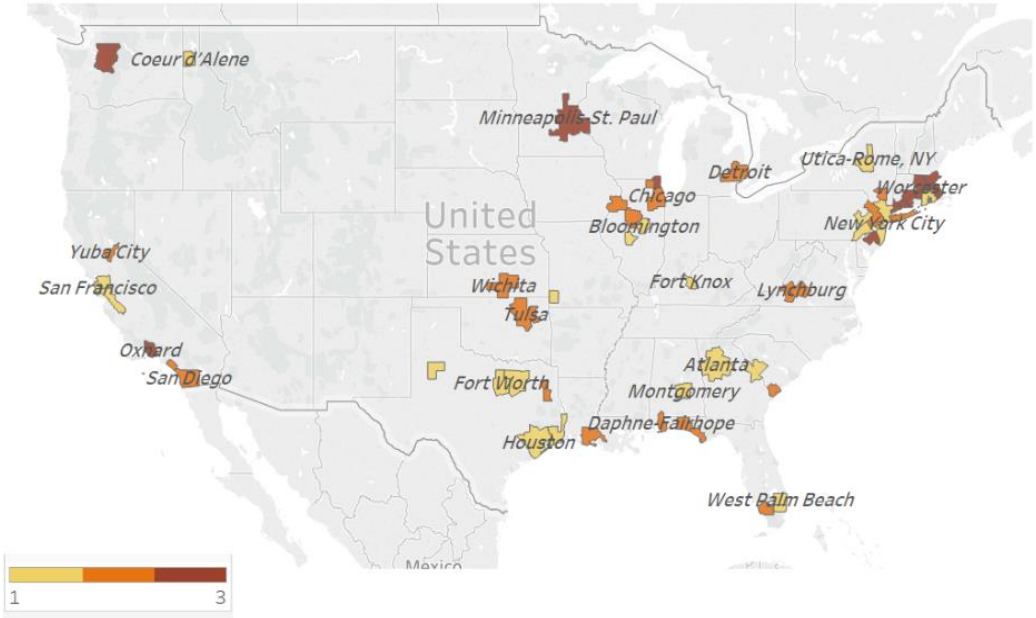
1. Nation reflects the total of the data in the CSHD and may not reflect an accurate balance of national experience
2. Benchmark reflects the straight average of each Modified MSA's peers blended using MCDB admissions or beneficiaries by modified MSA

Below please find maps illustrating the peer counties and peer MSAs for the Benchmarking for Readmissions project:

Medicare - Distribution of Peer Counties for All Maryland Counties



Commercial - Distribution of Peer MSAs



Appendix V. Modeling of Improvement - Attainment by-Hospital

Improvement Column
Improved to Greater than RY 2022 Proposed Target (-3.07%)
Improved to Greater than TCOC Five-Year Proposed Target (-7.5%)
Attainment Column
Achieved readmission rate lower than RY 2022 Proposed Target (65th Percentile, currently 11.23% - subject to change for final policy)

		Observed Readm		Expected Readm		Case-Mix Adj Readm Rate				
CMS ID	**Hospital Name**	**2017-10 to 2018-09**	**2018-10 to 2019-09**	**2017-10 to 2018-09**	**2018-10 to 2019-09**	**2017-10 to 2018-09**	**2018-10 to 2019-09**	**Current 12M Improvement**	**OOS Ratio**	**Oct18-Sep19 Attainment**
210001	MERITUS MEDICAL CENTER	1513	1429	1555	1589	10.94%	10.11%	-7.57%	1.05	10.63%
210002	UNIVERSITY OF MARYLAND	3269	2927	2876	2740	12.78%	12.01%	-6.02%	1.04	12.50%
210003	UM-PRINCE GEORGE'S	1252	1106	1335	1216	10.54%	10.22%	-3.02%	1.20	12.23%
210004	HOLY CROSS HOSPITAL	1983	1987	1923	1975	11.59%	11.31%	-2.44%	1.09	12.27%
210005	FREDERICK	1556	1314	1669	1515	10.48%	9.75%	-6.97%	1.05	10.22%
210006	UM-HARFORD	533	467	556	507	10.78%	10.35%	-3.91%	1.04	10.72%
210008	MERCY MEDICAL CENTER	1120	1100	1026	1021	12.27%	12.11%	-1.30%	1.03	12.45%
210009	JOHNS HOPKINS HOSPITAL	5260	5182	4725	4689	12.51%	12.42%	-0.73%	1.07	13.28%
210010	UM- DORCHESTER	188	142	238	177	8.88%	9.02%	1.56%	1.06	9.52%
210011	ST. AGNES HOSPITAL	1570	1440	1566	1404	11.27%	11.53%	2.30%	1.01	11.59%
210012	SINAI HOSPITAL	1667	1453	1679	1541	11.16%	10.60%	-5.03%	1.01	10.71%
210013	BON SECOURS HOSPITAL	588	540	458	403	14.43%	15.06%	4.37%	1.01	15.25%
210015	MEDSTAR FRANKLIN SQ	2666	2354	2335	2230	12.83%	11.87%	-7.55%	1.01	11.94%
210016	WASHINGTON ADVENTIST	867	831	965	944	10.10%	9.89%	-2.02%	1.16	11.50%
210017	GARRETT COUNTY	122	83	213	177	6.44%	5.27%	-18.13%	1.68	8.83%
210018	MEDSTAR MONTGOMERY	724	619	739	667	11.01%	10.43%	-5.27%	1.07	11.17%
210019	PENINSULA REGIONAL	1643	1346	1730	1598	10.67%	9.47%	-11.31%	1.08	10.27%
210022	SUBURBAN HOSPITAL	1462	1359	1484	1457	11.07%	10.48%	-5.32%	1.11	11.62%
210023	ANNE ARUNDEL	2042	2250	2062	2215	11.13%	11.42%	2.58%	1.03	11.81%
210024	MEDSTAR UNION	1212	1220	1125	1146	12.11%	11.97%	-1.18%	1.01	12.12%
210027	WESTERN MARYLAND	1143	1115	1226	1213	10.48%	10.33%	-1.40%	1.14	11.82%

		Observed Readm		Expected Readm		Case-Mix Adj Readm Rate				
CMS ID	Hospital Name	2017-10 to 2018-09	2018-10 to 2019-09	2017-10 to 2018-09	2018-10 to 2019-09	2017-10 to 2018-09	2018-10 to 2019-09	Current 12M Improvement	OOS Ratio	Oct18-Sep19 Attainment
210028	MEDSTAR ST. MARY'S	615	613	633	666	10.92%	10.35%	-5.26%	1.17	12.09%
210029	JOHNS HOPKINS BAYVIEW	2374	2258	1943	1964	13.73%	12.92%	-5.90%	1.02	13.18%
210030	UM-SHORE CHESTERTOWN	93	49	131	89	7.98%	6.19%	-22.45%	1.16	7.19%
210032	UNION HOSPITAL OF CECIL	512	503	563	542	10.22%	10.43%	2.05%	1.22	12.78%
210033	CARROLL HOSPITAL	1115	1180	1090	1119	11.50%	11.85%	3.09%	1.02	12.04%
210034	MEDSTAR HARBOR	941	816	770	740	13.74%	12.39%	-9.77%	1.01	12.47%
210035	UM-CHARLES REGIONAL	653	656	729	720	10.07%	10.24%	1.72%	1.18	12.11%
210037	UM-SHORE EASTON	537	415	622	543	9.70%	8.59%	-11.48%	1.06	9.07%
210038	UMMC MIDTOWN	744	731	586	595	14.27%	13.81%	-3.23%	1.01	14.00%
210039	CALVERT HEALTH	540	620	608	640	9.98%	10.89%	9.07%	1.11	12.08%
210040	NORTHWEST	1311	1096	1307	1198	11.27%	10.28%	-8.79%	1.02	10.48%
210043	UM-BWMC	1804	2038	1838	2109	11.03%	10.86%	-1.55%	1.02	11.03%
210044	GBMC	1309	1433	1470	1495	10.01%	10.77%	7.64%	1.02	10.94%
210045	MCCREADY	19	13	21	15	10.17%	9.74%	-4.21%	1.00	9.74%
210048	HOWARD COUNTY	1363	1443	1431	1463	10.71%	11.09%	3.55%	1.02	11.27%
210049	UM-UPPER CHESAPEAKE	996	1119	1065	1149	10.51%	10.95%	4.14%	1.03	11.23%
210051	DOCTORS	1045	1103	1196	1340	9.82%	9.25%	-5.79%	1.19	11.05%
210056	MEDSTAR GOOD SAM	1062	1090	942	962	12.67%	12.74%	0.50%	1.01	12.81%
210057	SHADY GROVE ADVENTIST	1543	1433	1725	1648	10.05%	9.77%	-2.79%	1.05	10.28%
210058	UMROI	26	28	37	28	7.90%	11.24%	42.31%	1.00	11.24%
210060	FORT WASHINGTON	194	209	267	252	8.17%	9.32%	14.14%	1.42	13.23%
210061	ATLANTIC GENERAL	311	271	363	335	9.63%	9.09%	-5.58%	1.10	10.01%
210062	MEDSTAR SOUTHERN MD	945	1065	1132	1193	9.38%	10.03%	6.94%	1.29	12.91%
210063	UM-ST. JOSEPH	1257	1307	1353	1328	10.44%	11.06%	5.94%	1.01	11.21%
210064	LEVINDALE	144	112	144	140	11.24%	8.99%	-20.00%	1.00	8.99%
210065	HC-GERMANTOWN	462	509	440	518	11.80%	11.04%	-6.42%	1.06	11.71%

Appendix VI. Statistical Methodology for PAI and Disparity Gap Measure

The below includes a write-up of the PAI measure, written by Mathematica with edits by the HSCRC.

Overview

This document outlines the key steps required to calculate the Patient Adversity Index (PAI) and the hospital-level disparity gap, which are proposed to be used with the Readmissions Reduction Incentive Program (RRIP). Mathematica implemented this code in SAS, and results were validated and compared with the results HSCRC produced in STATA. The following information gives a summary of the major sections of the SAS program and how to use it.

The PAI is a metric that reflects the association of race, insurance source, and area socio-economic factors with the probability of readmission. As it is operationalized in this code, the PAI is the predicted probability of readmission, calculated for each inpatient record across the universe of eligible discharges. The disparity gap measures the difference in readmission rates between “low” and “high” PAI patients within each hospital. The remainder of this document provides additional details on how these calculations are performed.

Step 1: Data Cleaning

In the Step 1 section of the program, there are multiple input data checks and indicator variables set up to apply exclusions for year, readmission denominator, race, gender, and certain hospital identifiers. At the end of Step 1, the exclusions are applied and saved to a new temporary dataset, which gets used in Step 2.

Step 2: Calculate PAI and Other Model Covariates

At the beginning of the Step 2 section of the program, the Area Deprivation Index (ADI) variable is imputed with the mean value by zip code for any records with missing ADI information. Immediately following the imputation, the ADI variable is standardized so that it has a mean value of 0 and a standard deviation of 1.

In the next section of Step 2, new indicator variables are created that will be used in the PAI modeling step: init_black (black race indicator) and init_med (Medicaid coverage indicator). In development, HSCRC and Mathematica tested multiple specifications for Poisson models to estimate the association between readmissions and the key PAI input variables: black race indicator, Medicaid coverage indicator, and standardized ADI value. In one set of specifications, three separate models were run to estimate the association of each of the input variables with readmissions separately. In the second specification, all three input variables and their interaction terms are included in a single model to predict readmissions. This specification takes into account the likely correlation between the input variables, and also allows for a more

flexible way to estimate the association of these factors with readmission. For this reason, HSCRC decided to estimate PAI and later the disparity gap using the single, interacted model. PAI scores for selected combinations of race, Medicaid status and ADI are shown in Table XYZ.

Raw PAI score for combination of Medicaid status, race, and ADI value.

ADI	Medicaid	Black	Raw PAI Score
Mean	No	No	REFERENCE
Mean	Yes	No	2.52
Mean	No	Yes	1.48
Mean	Yes	Yes	3.72
Mean + 1SD	No	No	1.30
Mean + 1SD	Yes	No	3.36
Mean + 1SD	No	Yes	2.34
Mean + 1SD	Yes	Yes	4.53

The program calculates predicted values for each model specification, and then standardizes those values – these standardized values are the PAI estimates. As noted above, the PAI values from the single, interacted model are used in the remainder of the calculations.

In the remainder of Step 2, new variables are created which are used in the Step 3 Disparity Gap model. Three variables--soiRisk_centd, age_yrs_centd, sex_centd –are created by centering individual values around the mean of the original variable (severity of illness, age in years, and gender, respectively). PAI_Z_hospMean is the average PAI value at the hospital-level, and PAI_Z_hospCentd is the individual PAI value centered around the hospital average.

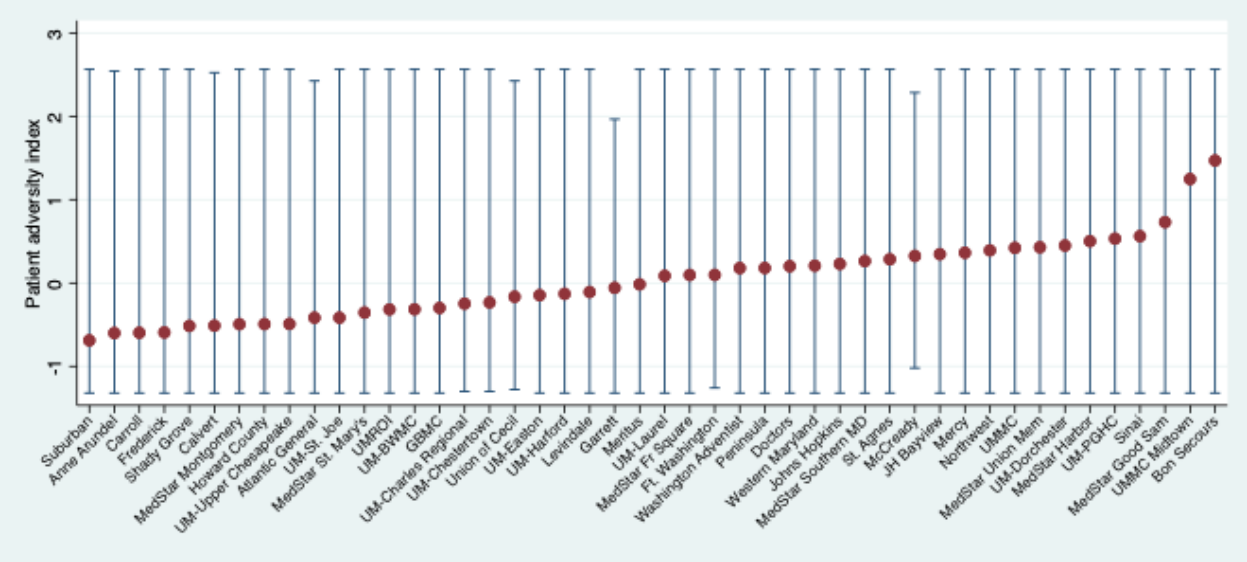
Step 3: Calculate Disparity Gap Measure

Step 3 starts out by limiting the dataset to discharges only for the year of interest (for instance, 2018). Using the limited dataset, a Poisson model is run with unplanned 30-day readmissions as the outcome and the centered variables created at the end of Step 2 as predictors. The model specification includes hospital-level fixed effects, and allows the relationship between PAI and readmissions to vary by hospital. The SAS procedure PROC GLIMMIX is used to calculate fixed effects and a random intercept and random slope for PAI_Z_hospCentered for each hospital. Using the fixed intercept, random slope, and random intercept to measure risk, the disparity gap is calculated as the slope characterizing the relationship between PAI and readmission risk at a given hospital. . For display purposes, the slope may be used to calculate readmission rates at one standard deviation above and below the hospital-specific mean value, along with a risk difference, which describes the gap between low- and high-PAI patients on the same scale as the readmission rate.

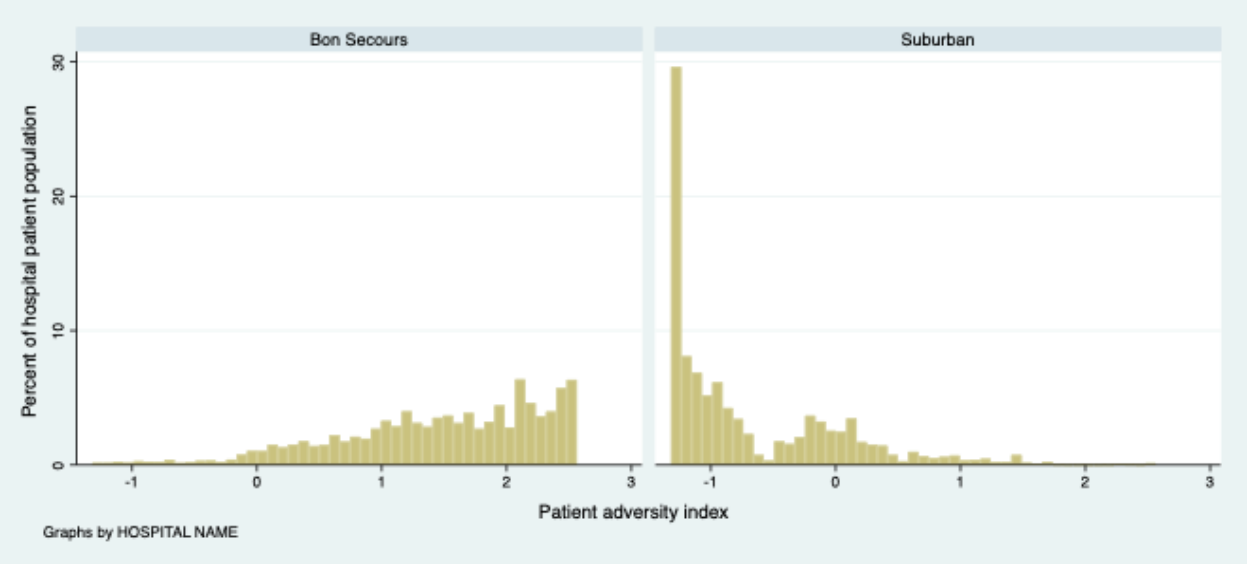
Appendix VII. Modeling of PAI and Disparity Gap

Below are several figures that provide preliminary modeling of the PAI and disparity gap measure.

Figure below shows the range of the Patient Adversity Index by hospital with the average PAI score indicated by the red dot. This illustrates that in general all hospitals see patients with both high and low PAI, although the average PAI for hospitals varies.



The figure below further shows that there is overlapping PAI distributions at two hospitals with differing mean PAI scores.



This table provides preliminary data on the mean PAI value and 2018 disparity gap metric. These values will be updated once policy is finalized and v37 grouper data is available.

Hospital ID	Hospital	Mean PAI	Base Year Disparity Gap
210001	Meritus	0.056	4.223
210002	UMMC	0.397	3.142
210003	UM-PGHC	0.508	2.424
210005	Frederick	-0.594	2.941
210006	UM-Harford	-0.091	3.614
210008	Mercy	0.315	2.962
210009	Johns Hopkins	0.203	2.672
210010	UM-Dorchester	0.493	2.848
210011	St. Agnes	0.268	3.153
210012	Sinai	0.508	2.452
210013	Bon Secours	1.398	3.616
210015	MedStar Fr Square	0.140	3.401
210016	Washington Adventist	0.222	1.959
210017	Garrett	0.066	1.995
210018	MedStar Montgomery	-0.492	4.107
210019	Peninsula	0.222	2.421
210022	Suburban	-0.707	3.381
210023	Anne Arundel	-0.622	3.519
210024	MedStar Union Mem	0.379	3.896
210027	Western Maryland	0.369	2.660
210028	MedStar St. Mary's	-0.333	3.982
210029	JH Bayview	0.386	3.691
210030	UM-Chestertown	-0.201	2.454
210032	Union of Cecil	-0.098	3.394
210033	Carroll	-0.583	4.707
210034	MedStar Harbor	0.529	3.578
210035	UM-Charles Regional	-0.250	2.863
210037	UM-Easton	-0.119	2.427
210038	UMMC Midtown	1.176	2.848
210039	Calvert	-0.499	2.629
210040	Northwest	0.359	3.447
210043	UM-BWMC	-0.296	2.925
210044	GBMC	-0.323	2.842
210045	McCready	0.460	3.042
210048	Howard County	-0.498	3.194
210049	UM-Upper Chesapeake	-0.488	3.340
210051	Doctors	0.170	2.287
210055	UM-Laurel	0.095	3.192
210056	MedStar Good Sam	0.668	2.609
210057	Shady Grove	-0.510	2.978
210058	UMROI	-0.352	2.628
210060	Ft. Washington	0.066	2.490
210061	Atlantic General	-0.399	2.551
210062	MedStar Southern MD	0.240	2.759
210063	UM-St. Joe	-0.431	2.945
210064	Levindale	-0.118	3.267

Potentially Avoidable Utilization (PAU) Savings Policy Measurement Report for Rate Years 2021 and 2022

February 12, 2020

Health Services Cost Review Commission

4160 Patterson Avenue
Baltimore, Maryland 21215
(410) 764-2605
FAX: (410) 358-6217

Table of Contents

OVERVIEW OF CURRENT MEASUREMENT REPORT

The current measurement report addresses the following topics:

- **Adjust PAU Savings measurement timeline:** Discuss proposed alignment of the PAU Savings Timeline to enable better transparency and reporting with concurrent performance period results
- **Update Commission on PAU refinement**
    - **Per capita PQI approach:** Transition existing PQI measures to per capita calculation using hospital attribution algorithm. Include risk adjustment for PQIs based on current AHRQ risk adjustment methodology.
    - **Pediatric Quality Indicators**: Add Pediatric Quality Indicators (PDIs) into PAU Savings Policy with a per capita attribution approach.
    - **Readmissions approach:** Refine readmission measure as estimated revenue associated with "sending" hospital
- **Update Commission on status of other PAU-related initiatives**
    - **Potentially avoidable emergency department visits**
    - **Low value care**
    - **Hospital-defined PAU**

INTRODUCTION AND OVERVIEW

The HSCRC operates a Potentially Avoidable Utilization (PAU) Savings Policy, which maintains hospitals' focus on improving patient care and health through reducing potentially avoidable utilization and its associated costs. The PAU Savings Policy prospectively reduces hospital global budget revenues in anticipation of volume reductions due to care transformation efforts. Currently, two measures of avoidable utilization are defined and utilized in the PAU Savings Policy: 1) 30-day readmissions; and 2) Prevention Quality Indicators (PQIs) for adults. Staff and stakeholders have explored additional and alternative measures of avoidable utilization over the past several months, and present the following report detailing efforts to date, challenges, and a plan moving forward. Additional discussion of the proposed statewide PAU reduction for RY 2021 will be presented in the RY 2021 Update Factor Recommendation.

ASSESSMENT

This PAU Savings Measurement Report provides an update to the "RY 2019 PAU Savings Supplemental Report on Efforts to Modernize PAU Measurement and Adjustment in Future Years." Staff and stakeholders met in the summer and fall of 2018 to discuss expanding and refining PAU measures in a PAU specific subgroup and then with the Performance

Measurement Work Group (PMWG) in early 2019. Staff worked to incorporate guidance from the PMWG into reporting and analytics throughout 2019. Measures discussed in this report include evaluations of data availability, measure feasibility, and stakeholder endorsement of potential measures.

Adjust PAU Savings Measurement Timeline

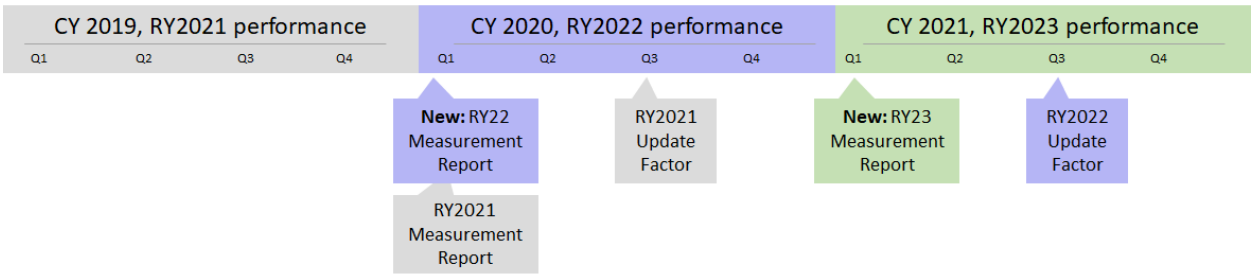
Staff suggests adjusting the PAU Savings Policy timeline to establish PAU measures earlier in the performance year. In the existing PAU Savings Policy timeline, Commissioners vote on the PAU Savings Policy and attendant revenue adjustment six months after the relevant performance period has ended. Depending on the final vote of the Commission, hospitals' ultimate PAU assessment could be different than what the hospitals had been monitoring throughout the performance period. In other quality policies, the policy and measures are decided prior to the performance period or within the first few months of the new period.

Establishing measures early within the performance year enables:

1) **Increased transparency:** Hospitals can track performance throughout the performance year;
2) **Improved policy development process:** Earlier evaluation of PAU measures will enable a more robust and comprehensive development process, with earlier feedback from Commissioners; and
3) **Enhanced measurement and reporting:** Staff will have time to validate and test reporting prior to releasing data for monitoring during the performance period.

As an initial step toward aligning the PAU policy timeline with the other quality policies, staff propose releasing a measurement report in the beginning of the performance period (Dec-Jan timeframe), while keeping the vote on the PAU Savings Policy during the Update Factor conversation in June. The current PAU Savings Measurement report will therefore be applicable to RY22, as the first year of prospective measurement reports, and to RY21, as the final year of post-performance year measurement decision-making.

Figure 1. Timeline



PAU REFINEMENT IN CY2019 (ALSO APPLICABLE TO CY2020)

Background

The HSCRC proposes the following changes to impact calculation of Potentially Avoidable Utilization for Calendar Year 2019 and 2020:

- **Per capita PQI approach:** Transition existing PQI measures to per capita calculation using hospital attribution algorithm. Include risk adjustment for PQIs based on current AHRQ risk adjustment methodology.
- **Pediatric Quality Indicators**: Add Pediatric Quality Indicators (PDIs) into PAU Savings Policy with a per capita attribution approach.
- **Readmissions approach:** Refine readmission measure as estimated revenue associated with "sending" hospital.

Prevention Quality Indicators (PQIs)

In CY2019, staff and stakeholders overhauled the measurement of avoidable admissions. As originally specified by the Agency for Healthcare Research and Quality (AHRQ), Prevention Quality Indicators (PQIs) were intended to capture population-level differences in access to care per 100,000 residents (See Appendix I for PQI measure definitions). Prior to RY21, the PAU Savings Policy used the same logic and code to identify PQIs; however, the policy compared the hospital revenue associated with these admissions as a percentage of total hospital revenue. Stakeholders noted that this was not how PQIs were originally intended to be used and requested a change in methodology. In RY21 and beyond, staff proposes a switch to a per capita approach. A per capita approach better reflects the goals of the TCOC Model in the following ways:

a. Aligns with possible goal of proposed avoidable admissions reduction in the Statewide Integrated Health Improvement Strategy (SIHIS)
b. Reflects initiatives and investments occurring in communities
c. Explicitly recognizes existing hospital accountability outside of the hospital
d. Enables easier potential measurement across multiple Maryland initiatives, including the Medicare Performance Adjustment (MPA), Maryland Primary Care Program, and Care Redesign Program

Staff worked with the Performance Measurement Work Group (PMWG) to determine how to apply a per capita approach. Per the work group's recommendation, staff aligned the overall PQI composite measure (PQI 90) with the MPA algorithm for attribution of Medicare Fee-For-Service (FFS) beneficiaries, and geographic attribution for non-Medicare FFS patients. Stakeholders agree that hospitals are already focusing care coordination efforts on the MPA-attributed Medicare FFS beneficiaries. In addition, the MPA attribution provides detail-level patient data for certain attributed patients. Now that the measurement of PQI more expressly aligns with the AHRQ intention, HSCRC implemented further age and sex risk adjustment based

on national norms, as well as out of state adjustments as they became available. While national norms are based on inpatient admissions only, for RY21 and RY22, HSCRC is implementing the PQI software on inpatient admissions and observation stays greater or equal to 24 hours (OBS). Maryland hospitals use a higher rate of OBS compared to the nation and these cases are similar to inpatient admissions. Staff tested the impact of including OBS and found that there was a high correlation between hospital relative performance on inpatient only and inpatient + OBS. Therefore, including OBS in performance does not impact one hospital unduly over another. However, this methodological difference should be noted when comparing PQI results outside of the PAU Savings Policy. See Appendix II for hospital-specific year-to-date results for CY19.

Pediatric Quality Indicators (PDIs)

Throughout 2019, staff also added the Pediatric Quality Indicators (PDIs), per stakeholder recommendation. PDIs, which align with the PQIs, are admissions associated with diabetes short-term complications, asthma, urinary tract infection, and gastroenteritis (See Appendix I for PDI measure table). HSCRC will measure the performance of PDI 90, the overall composite for pediatric admissions ages 6-17. There was strong support for adding the PDIs from payers, consumers, as well as the Task Force on Maryland Maternal and Child Health. Staff also intended to incorporate the Low Birthweight PQI as well; however, the measure steward retired the PQI prior to HSCRC's implementation.[1] Given that the HSCRC can now assign PQIs and PDIs using the per capita attribution logic, as opposed to assigning responsibility based on discharges, the inclusion of PDIs will not unduly penalize hospitals that offer pediatric services, and instead will measure the rates of PDIs throughout the state, i.e. hospital population health management. See Appendix III for hospital-specific year-to-date results for CY19.

Readmissions

Over the past year, staff also considered adjusting the readmissions methodology in the PAU Savings Policy. The PAU subgroup and the PMWG did not come to a conclusion on a way to measure per capita readmissions. Stakeholders indicated that hospitals built workflows and care coordination based on the sending hospital, and that attributing patients based on a different approach would not be indicative of clinical performance and could lead to confusion. At this time, staff plans to maintain the readmission measure used under the RY20 PAU Savings Policy for RY21.[2]

Prior to RY20, PAU readmissions were measured as the revenue associated with 30-day readmissions at the receiving hospital. Starting in RY20, staff updated the methodology to associate the revenue with the sending hospital, with the understanding that the sending hospital

[1] https://www.qualityindicators.ahrq.gov//News/Retirement%20Notice_v2019_Indicators.pdf

[2] The RY21 average cost calculation removes costs associated with readmissions flagged as categorical exclusion or ventilator support.

can influence the likelihood of readmission more than the receiving hospital. The updated PAU readmission logic estimates the average per hospital cost of an intrahospital readmission, and applies that average cost to the number of sending discharges from that hospital which resulted in a non-PQI readmission. See Appendix IV for hospital-specific year-to-date results for CY19.

OTHER PAU METRICS CONSIDERATIONS

Enhancements in chronic care—with a focus on prevention and treatment in primary care, home, and long-term care settings—are essential to improving indicators of healthy lives and health equity across the population. In order to optimize success under the hospital global budget system and the TCOC Model, patients must receive care in the appropriate setting. Therefore, a central focus of the Total Cost of Care Model is the reduction of hospital utilization through improved care coordination and enhanced community-based care. The current metrics of PAU focus on preventing the need for hospitalizations through improved management in the community, but do not comprehensively cover all populations or settings of care.

Avoidable Emergency Department Use

Maryland hospitals may be investing in emergency department (ED) navigator programs to connect patients with primary care providers, but reductions in readmissions and PQIs do not capture all of the avoided utilization from these efforts. HSCRC staff plans to explore potentially avoidable ED visits with the PMWG to identify a broad subset of ED visits that could be prevented with high-quality preventive care or with care provided in a lower acuity setting. Staff understands that there are factors not under hospital control that impact whether Marylanders elect to use the emergency room or primary care. Other centers at the HSCRC are studying the regulatory and billing barriers preventing the reduction of ED visits, such as paying for transport to alternative settings of care. In addition, the Maryland Primary Care Program incentivizes reductions in avoidable ED visits.

Recognizing that there is no one definition of avoidable ED utilization, and that avoidable ED utilization is not currently defined in the HSCRC data, HSCRC proposes the timeline below for developing, implementing, and reporting potential avoidable ED measures. While this timeline is aggressive, staff hopes that a measure will be available for CY2021 monitoring or reporting.

CY2020 Q1 (Current): ED measure selection and initial testing
CY2020 Q2: Discuss attribution approaches and develop risk adjustment if applicable
CY2020 Q3-Q4: Build summary reporting and incorporate selected ED measures into data
CY2021 Q1: RY2023 PAU measurement report, potentially recommending avoidable ED measure inclusion in RY2023 PAU measurement (CY2021 Performance Period).

Low Value Care

Staff explored different approaches to incorporating low value care measures into PAU with the PAU Subgroup; however, staff ultimately did not propose low value care measure inclusion in the PAU Savings Policy. The subgroup strongly supported individual hospital efforts to reduce medical care that may have little or no net benefit (or even potentially cause harm). However, stakeholders expressed a number of concerns about implementing low value care measures in the PAU Savings Policy, including how to define low value care, and whether existing data feeds could capture existing low value care measures. For example, in some cases, exclusion logic crucial to determining low value care is only available with access to claims outside of hospitals and often EHR information. In addition, stakeholders believe that the HSCRC should not be in the position of passing judgment on the appropriateness of specific clinical decisions. The sections below further detail some of the challenges and identify potential workarounds.

Challenge 1) Measure definition

Research shows that the definition of "valued" service for a patient varies depending on many different factors. Except in cases where the services provide little to no value for almost all patients, HSCRC is not the correct entity to determine whether a specific test or procedure is clinically appropriate for a patient, at least without additional clinical expertise. This is why HSCRC often expresses poor clinical outcomes through case-mix adjusted rates; however this is difficult to implement for low value care using hospital data only. Additionally, some existing measures that can be assessed in hospital data account for limited amounts of utilization. For example, the measure of arthroscopic surgery for knee osteoarthritis, a service providing little to no value, accounted for just $2 million across two years in Maryland.[3] Some stakeholders questioned the narrow scope of measures and requested more broad utilization measures to represent low value care, such as comparative rates of advanced imaging.

Challenge 2) Measure capture - Hospital-based claims-based data

There were strong concerns from stakeholders and experts that measuring low value care in hospital-only claims data was not appropriate. Many low value care measures are targeted toward services that are often provided in ambulatory care, rather than in the hospital. Examples of such measures include vitamin D screening or prostate-specific antigen testing. For these measures, it would be difficult to hold hospitals accountable for this utilization in the PAU Savings Policy.

Furthermore, many low-value services provided within the hospital rely on information not captured in the case-mix data, such as EHR information or outpatient claims data, to inform whether or not the hospital service constitutes low or no value care. For example, imaging for

[3] Stahel, P. F., Wang, P., Hutfless, S., McCarty, E., Mehler, P. S., Osgood, G. M., & Makary, M. A. (2018). Surgeon practice patterns of arthroscopic partial meniscectomy for degenerative disease in the United States: a measure of low-value care. JAMA surgery, 153(5), 494-496.

patients with non-specific low back pain requires information about prior use of physical therapy or over the counter medicine. In addition, many low value care procedures are performed outside of the hospital and would not be captured in HSCRC's hospital claims data, such as pre-operative testing performed in urgent care centers. Implementing the measures on just hospital case-mix data will provide an incomplete picture of the use of low value care throughout the system. Finally, it is important to note that while the Commission has access to all Medicare claims, HSCRC is committed to focusing PAU on all-payer metrics and does not have access to outpatient ambulatory data for all payers.

Potential Solution

Because of the challenges associated with including low-value care measures into the PAU Savings Policy at this time, HSCRC staff is considering approaches to incorporating low-value care into other Commission policies. Currently, reducing PAU is one of the primary ways to generate funding for new initiatives under the hospital global budget system. However, hospitals have opportunities to reduce cost and generate savings outside of reducing PAU under its current definition. Information on broad measures of utilization in hospitals could be used to help inform other decisions. For example, a hospital's successful efforts to reduce unnecessary costs, such as duplicative testing, could be used to inform efficiency or rate review decisions, or eligibility for competitive transformation funding.

Hospital-defined PAU

The "Supplemental Report on Efforts to Modernize PAU Measurement and Adjustment in Future Years" also described the potential for Hospital-Defined PAU Savings metrics.[4] Per the Supplemental Report, hospitals could submit proposals for PAU metrics as an alternative to the standard PAU Savings Policy. The proposals would need to be approved by HSCRC and would be required to meet guidelines defined by the HSCRC, which could include elements such as being grounded in the medical and economic literature, and demonstrating strong physician leadership. In addition, hospitals would need to present an implementation plan to achieve expected reductions in PAU. To date, HSCRC staff has not received any proposals for hospital-defined PAU. Staff notes that other initiatives at HSCRC may accomplish similar ends, thereby minimizing the need for hospital-defined PAU. As an example, the Care Transformation Initiatives (CTIs) allow hospitals to calculate their return on investment for certain interventions. Hospitals may feel they can better accredit their unique low-value care interventions under a program that rewards tailored initiatives for specific populations. Barring receipt of any hospital-defined PAU proposals in CY2020, the HSCRC will remove this suggestion from future consideration.

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4 https://hscrc.maryland.gov/Documents/Quality_Documents/PAUSavings/RY2019/Final%20PAU%20Savings%20Policy%20for%20RY19.pdf

LIST OF ABBREVIATIONS

AHRQ	Agency for Health Care Research and Quality
CTI	Care Transformation Initiatives
CY	Calendar Year
FFY	Federal Fiscal Year
FY	State Fiscal Year
HSCRC	Health Services Cost Review Commission
MPA	Medicare Performance Adjustment
NQF	National Quality Forum
PMWG	Performance Measurement Work Group
PAU	Potentially Avoidable Utilization
PDI	Pediatric Quality Indicator
PQI	Prevention Quality Indicator
RY	Rate Year
YTD	Year to Date

APPENDIX I. LISTS OF PQI AND PDI MEASURES

The PAU Savings Policy performance is measured on the overall composite of adult avoidable admissions (PQI 90) and the overall composite of pediatric avoidable admissions ages 6-17 (PDI 90).

Indicator Name
Prevention Quality Indicators (PQIs)
PQI 01 Short-term Diabetes Complications Admission Rate
PQI 03 Long-term Diabetes Complications Admission Rate
PQI 05 Chronic Obstructive Pulmonary Disease or Asthma in Older Adults Admission Rate
PQI 07 Hypertension Admission Rate
PQI 08 Heart Failure Admission Rate
PQI 11 Community-Acquired Pneumonia Admission Rate
PQI 12 Urinary Tract Infection Admission Rate
PQI 14 Uncontrolled Diabetes Admission Rate
PQI 15 Asthma Younger Adults Admission Rate
PQI 16 Lower Extremity Amputation among Patients with Diabetes Rate
PQI 90 Prevention Quality Overall Composite*
PQI 91 Prevention Quality Acute Composite
PQI 92 Prevention Quality Chronic Composite
PQI 93 Prevention Quality Diabetes Composite
Pediatric Quality Indicators (PDIs)
PDI 14 Asthma Admission Rate
PDI 15 Diabetes Short-term Complications Admission Rate
PDI 16 Gastroenteritis Admission Rate
PDI 18 Urinary Tract Infection Admission Rate
PDI 90 Pediatric Quality Overall Composite*
PDI 91 Pediatric Quality Acute Composite
PDI 92 Pediatric Quality Chronic Composite

See https://www.qualityindicators.ahrq.gov/Modules/PQI_TechSpec_ICD10_v2019.aspx for more detailed specifications on PQIs and https://www.qualityindicators.ahrq.gov/Modules/PDI_TechSpec_ICD10_v2019.aspx for more detailed specifications on PDIs.

APPENDIX II. CYTD 2019 PQI PER CAPITA RESULTS

Hospital ID	Hospital Name	PQI90YTD Observed (YEAR TO DATE ONLY)	PQI90 Observed (including annualization)	PQI 90 Expected	Attributed Population	PQI90 Per Capita Rate	PQI90 Risk Adjusted Rate (Observed/Expected x Statewide Rate)	Estimated Out of State All Payer PQIs (annualized)**	Observed with estimated Out of State	PQI90 Per Capita Rate with OOS	PQI90 Risk adjusted Rate with OOS
A	B	C	D=(C/10)*12	E	F	G=D/F * 1000	H=D/E*Statewide per capita	I	J=D+I	K=J/F*1000	L=J/E*Statewide per capita
210001	Meritus	1557	1,868	1,438	115,347	16.20	16.97	175	2044	17.7	20.2
210002	UMMC	792	950	401	46,228	20.56	30.98	17	967	20.9	34.3
210003	UM-PGHC	1232	1,478	1,056	105,313	14.04	18.29	376	1854	17.6	24.9
210004	Holy Cross	1100	1,320	2,143	235,317	5.61	8.05	240	1560	6.6	10.3
210005	Frederick	1488	1,786	2,317	196,242	9.10	10.07	209	1995	10.2	12.2
210006	UM-Harford	306	367	341	29,710	12.36	14.09	25	392	13.2	16.3
210008	Mercy	1218	1,462	805	78,942	18.51	23.72	23	1485	18.8	26.2
210009	Hopkins	2518	3,022	1,624	106,418	28.39	24.31	19	3041	28.6	26.6
210010	UM-Dorches			#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
210011	St. Agnes	1416	1,699	1,398	116,510	14.58	15.88	39	1738	14.9	17.7
210012	Sinai	3372	4,046	2,602	164,580	24.59	20.32	44	4090	24.9	22.3
210013	Grace	260	312	119	13,581	22.97	34.30	7	319	23.5	38.1
210015	MS Fr Sq	2529	3,035	1,498	112,764	26.91	26.47	26	3061	27.1	29.0
210016	White Oak	1145	1,374	1,621	196,572	6.99	11.08	290	1664	8.5	14.6
210017	Garrett	161	193	276	18,688	10.34	9.14	165	358	19.2	18.4
210018	MS Mont	1371	1,645	1,601	88,076	18.68	13.42	70	1715	19.5	15.2
210019	Peninsula	1629	1,955	1,638	126,272	15.48	15.59	50	2005	15.9	17.4
210022	Suburban	1179	1,415	2,919	195,683	7.23	6.33	240	1655	8.5	8.0
210023	AAMC	1860	2,232	2,920	243,637	9.16	9.99	211	2443	10.0	11.9
210024	MS Union	1863	2,236	1,108	84,734	26.38	26.35	30	2266	26.7	29.0
210027	Western MD	887	1,064	898	65,405	16.27	15.49	99	1163	17.8	18.4
210028	MS St. Marys	1395	1,674	1,288	96,432	17.36	16.98	265	1939	20.1	21.4
210029	JH Bayview	1645	1,974	876	65,605	30.09	29.43	14	1988	30.3	32.2
210030	UM-Chester	142	170	361	25,217	6.76	6.17	44	214	8.5	8.4
210032	Union of Cecil	557	668	788	70,106	9.53	11.07	311	980	14.0	17.6

Hospital ID	Hospital Name	PQI90YTD Observed (YEAR TO DATE ONLY)	PQI90 Observed (including annualization)	PQI 90 Expected	Attributed Population	PQI90 Per Capita Rate	PQI90 Risk Adjusted Rate (Observed/Expected x Statewide Rate)	Estimated Out of State All Payer PQIs (annualized)**	Observed with estimated Out of State	PQI90 Per Capita Rate with OOS	PQI90 Risk adjusted Rate with OOS
210033	Carroll	1616	1,939	1,634	132,265	14.66	15.51	136	2076	15.7	18.0
210034	MS Harbor	990	1,188	436	39,665	29.95	35.57	14	1202	30.3	39.1
210035	UM-Charles	692	830	1,025	108,227	7.67	10.59	306	1136	10.5	15.7
210037	UM-Easton	788	946	1,247	85,552	11.05	9.91	83	1029	12.0	11.7
210038	UMMC Midtown	500	600	235	23,597	25.43	33.37	9	609	25.8	36.8
210039	Calvert	423	508	768	68,819	7.38	8.64	163	671	9.7	12.4
210040	Northwest	999	1,199	754	70,998	16.88	20.77	22	1221	17.2	23.0
210043	UM-BWMC	1846	2,215	2,079	202,673	10.93	13.92	70	2286	11.3	15.6
210044	GBMC	864	1,037	1,352	107,877	9.61	10.02	32	1069	9.9	11.2
210045	McCready	23	28	27	2,275	12.13	13.26	1	29	12.6	15.0
210048	Howard	1308	1,570	2,346	226,567	6.93	8.74	63	1632	7.2	9.9
210049	UMUCH	1490	1,788	1,792	158,269	11.30	13.03	56	1844	11.6	14.6
210051	Doctors	1384	1,661	1,579	143,732	11.55	13.74	305	1966	13.7	17.7
210055	UM-Laurel	0		#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
210056	MS Good Sam	1599	1,919	1,021	72,366	26.52	24.54	22	1940	26.8	27.0
210057	Shady Grove	1291	1,549	2,656	263,231	5.89	7.62	171	1720	6.5	9.2
210058	UMROI			#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
210060	Ft. Wash	325	390	471	46,403	8.40	10.81	283	673	14.5	20.3
210061	Atlantic	190	228	351	19,306	11.81	8.50	16	244	12.6	9.9
210062	MS South MD	1715	2,058	1,629	147,808	13.92	16.50	512	2570	17.4	22.4
210063	UM-St. Joe	1329	1,595	1,805	135,768	11.75	11.54	48	1643	12.1	12.9
210064	Levindale	0	-	0	20	0.00	0.00	0	0	0.4	0.7
210065	HC-German	147	176	283	33,468	5.27	8.15	19	195	5.8	9.8
State	**Statewide**	**51,141**	**61,369**	**56,159**	**4,697,487**	**13.06**	**14.28**	**5320**	**66689**	**14.2**	**16.9**

PQI90 defined as the overall composite of adult avoidable admissions.

**Out of State adjustments are placeholders built on estimated 2018 Medicare data and will be replaced with other data when it is available.

Staff is working to resolve missing values for hospitals with N/A values.

APPENDIX III. CYTD 2019 PDI PER CAPITA RESULTS

Hospital ID	Hospital Name	PDI90YTD Observed (YEAR TO DATE ONLY)*	PDI90 Observed (including annualization)	PDI 90 Expected	Attributed Population	PDI90 Per Capita Rate	PDI90 Risk Adjusted Rate (Observed/Expected * Statewide Rate)
A	B	C	D=(C/9)*12	E	F	G=D/F * 1000	H=D/E*Statewide per capita
210001	Meritus	22.4	30	26.5	22,964	1.30	1.00
210002	UMMC	19.8	26	10	8,137	3.24	2.45
210003	UM-PGHC	1.4	2	25	21,769	0.08	0.06
210004	Holy Cross	6.0	8	54	46,094	0.17	0.13
210005	Frederick	12.2	16	48	42,488	0.38	0.30
210006	UM-Harford	3.7	5	7	5,876	0.84	0.65
210008	Mercy	31.0	41	16	13,537	3.05	2.33
210009	Johns Hopkins	31.2	42	16	13,588	3.06	2.32
210010	UM-Dorchester		#N/A	#N/A		#N/A	#N/A
210011	St. Agnes	31.9	42	25	21,609	1.97	1.51
210012	Sinai	34.7	46	31	27,133	1.70	1.31
210013	Grace	7.5	10	3	2,783	3.60	2.71
210015	MedStar Fr Square	20.5	27	24	20,199	1.35	1.02
210016	White Oak	4.8	6	44	37,060	0.17	0.13
210017	Garrett	8.8	12	3	3,050	3.85	3.02
210018	MS Montgomery	3.6	5	17	14,524	0.33	0.25
210019	Peninsula	23.6	31	25	21,653	1.45	1.12
210022	Suburban	5.1	7	45	39,133	0.17	0.13
210023	Anne Arundel	24.8	33	55	48,422	0.68	0.53
210024	MS Union Mem	23.8	32	14	11,681	2.71	2.07
210027	Western Maryland	3.6	5	11	9,694	0.50	0.38
210028	MedStar St. Mary's	2.4	3	22	19,309	0.17	0.13
210029	JH Bayview	17.5	23	12	10,359	2.25	1.72
210030	UM-Chestertown	0.0	-	5	3,965	0.00	0.00
210032	Union of Cecil	4.4	6	18	15,180	0.38	0.29
210033	Carroll	9.6	13	31	27,471	0.47	0.36
210034	MedStar Harbor	10.1	13	8	6,961	1.93	1.46
210035	UM-Charles	10.0	13	30	26,209	0.51	0.40

Hospital ID	Hospital Name	PDI90YTD Observed (YEAR TO DATE ONLY)*	PDI90 Observed (including annualization)	PDI 90 Expected	Attributed Population	PDI90 Per Capita Rate	PDI90 Risk Adjusted Rate (Observed/Expected * Statewide Rate)
A	B	C	D=(C/9)*12	E	F	G=D/F * 1000	H=D/E*Statewide per capita
210037	UM-Easton	2.8	4	19	16,336	0.23	0.18
210038	UMMC Midtown	10.0	13	5	4,193	3.18	2.43
210039	Calvert	2.4	3	18	16,151	0.20	0.16
210040	Northwest	15.2	20	18	15,338	1.33	1.03
210043	UM-BWMC	46.0	61	48	41,309	1.49	1.14
210044	GBMC	18.0	24	22	18,823	1.27	0.98
210045	McCready	1.9	3	1	541	4.73	3.60
210048	Howard County	15.9	21	57	49,791	0.43	0.33
210049	UMUCH	31.8	42	40	34,622	1.22	0.95
210051	Doctors	4.1	5	33	28,645	0.19	0.14
210055	UM-Laurel		#N/A	#N/A		#N/A	#N/A
210056	MedStar Good Sam	23.3	31	14	11,644	2.67	2.04
210057	Shady Grove	25.9	34	67	57,388	0.60	0.46
210058	UMROI		#N/A	#N/A		#N/A	#N/A
210060	Ft. Washington	0.1	0	10	8,405	0.02	0.02
210061	Atlantic General	1.3	2	3	2,348	0.74	0.57
210062	MS Southern MD	2.5	3	31	27,739	0.12	0.10
210063	UM-St. Joe	25.9	35	28	24,075	1.44	1.10
210064	Levindale	0.0	0	0	5	1.50	1.15
210065	HC-Germantown	2.9	4	9	8,003	0.49	0.38
Statewide	**Statewide**	604.2	806	55,526	906,204	0.89	0.01

PQI90 defined as the overall composite of pediatric avoidable admissions (ages 6-17).

*PDI90YTD may be different than what is available in the Avoidable Admissions Report. PDI90 for PAU Summary is limited to ages 6-17 and adds an adjustment to remove PDIs for age 5.

**HSCRC is working with payers to produce OOS estimates for PDIs, but does not have estimates at present. Future years may include OOS adjustments for PDIs

APPENDIX IV. CYTD 2019 PAU READMISSIONS RESULTS

Hospital ID	Hospital Name	Total experienced revenue (actual)	30 day readmissions (sending)	Intrahospital 30 day readmissions	Total Charge of Intrahospital 30 readmissions*	Intrahospital Readmission YTD Average charge*	Estimated RYTD2021 Readmission Revenue (sending, intrahospital average)	Estimated RYTD2021 Readmission Performance %
A	B	C	D	E	F	G=F/E	H=D*G	I=H/C
210001	Meritus	$305,006,658	1107	1090	$14,101,299	$12,937	$14,321,228	4.70%
210002	UMMC	$1,527,045,616	2660	1542	$39,795,924	$25,808	$68,649,260	4.50%
210003	UM-PGHC*	$274,618,638	886	508	$9,420,440	$18,544	$16,430,138	5.38%
210004	Holy Cross	$438,287,474	1665	1239	$18,102,366	$14,610	$24,326,424	5.55%
210005	Frederick	$300,739,302	1171	1116	$14,414,833	$12,917	$15,125,241	5.03%
210006	UM-Harford	$90,180,629	494	360	$4,291,435	$11,921	$5,888,802	6.53%
210008	Mercy	$475,798,248	928	625	$8,642,234	$13,828	$12,831,989	2.70%
210009	Johns Hopkins	$2,114,572,825	4287	3013	$74,840,470	$24,839	$106,485,595	5.04%
210010	UM-Dorchester	$35,787,956	131	103	$1,531,803	$14,872	$1,948,216	5.44%
210011	St. Agnes	$358,173,047	1089	818	$14,102,047	$17,240	$18,773,997	5.24%
210012	Sinai	$673,997,743	1114	790	$15,214,333	$19,259	$21,454,135	3.18%
210013	Grace	$94,115,516	511	227	$4,094,668	$18,038	$9,217,513	9.79%
210015	MS Fr Square	$470,150,831	2182	1615	$20,238,952	$12,532	$27,344,516	5.82%
210016	White Oak	$239,422,546	728	519	$8,096,756	$15,601	$11,357,300	4.74%
210017	Garrett	$54,254,554	78	93	$942,683	$10,136	$790,636.94	1.46%
210018	MS Montgomery	$149,153,827	533	466	$5,824,757	$12,499	$6,662,222	4.47%
210019	Peninsula	$387,777,891	1281	1190	$17,806,709	$14,964	$19,168,399	4.94%
210022	Suburban	$285,153,242	1148	856	$11,675,888	$13,640	$15,658,784	5.49%
210023	Anne Arundel	$547,649,733	1755	1462	$16,258,008	$11,120	$19,516,282	3.56%
210024	MSr Union Mem	$345,187,679	1009	532	$9,383,976	$17,639	$17,797,804	5.16%
210027	Western MD	$287,622,495	892	945	$14,706,647	$15,563	$13,881,830	4.83%
210028	MS St. Mary's	$160,544,588	556	490	$5,842,069	$11,923	$6,628,960	4.13%
210029	JH Bayview	$595,851,148	1738	1042	$18,134,715	$17,404	$30,247,729	5.08%
210030	UM-Chestertown	$36,438,958	54	73	$836,922	$11,465	$619,093	1.70%
210032	Union of Cecil	$136,665,125	450	382	$6,060,371	$15,865	$7,139,180	5.22%

Hospital ID	Hospital Name	Total experienced revenue (actual)	30 day readmissions (sending)	Intrahospital 30 day readmissions	Total Charge of Intrahospital 30 readmissions*	Intrahospital Readmission YTD Average charge*	Estimated RYTD2021 Readmission Revenue (sending, intrahospital average)	Estimated RYTD2021 Readmission Performance %
A	B	C	D	E	F	G=F/E	H=D*G	I=H/C
210033	Carroll	$198,972,050	822	756	$10,328,810	$13,662	$11,230,532	5.64%
210034	MedStar Harbor	$156,580,681	667	354	$5,399,137	$15,252	$10,172,949	6.50%
210035	UM-Charles	$136,714,057	505	425	$5,693,696	$13,397	$6,765,450	4.95%
210037	UM-Easton	$208,108,410	412	373	$5,468,697	$14,661	$6,040,491	2.90%
210038	UMMC Midtown	$193,888,995	739	254	$4,352,577	$17,136	$12,663,600	6.53%
210039	Calvert	$129,463,432	526	375	$4,800,186	$12,800	$6,733,061	5.20%
210040	Northwest	$226,626,082	884	538	$6,932,623	$12,886	$11,391,149	5.03%
210043	UM-BWMC	$391,777,979	1782	1262	$17,787,439	$14,095	$25,116,653	6.41%
210044	GBMC	$396,947,575	1074	787	$9,857,847	$12,526	$13,452,767	3.39%
210045	McCready	$13,044,414	3	7	$57,276	$8,182	$24,547	0.19%
210048	Howard County	$253,837,777	1160	901	$11,746,177	$13,037	$15,122,714	5.96%
210049	UMUCH	$273,132,950	1320	1045	$12,151,375	$11,628	$15,349,105	5.62%
210051	Doctors	$221,360,163	1114	672	$10,152,478	$15,108	$16,830,149	7.60%
210055	UM-Laurel**	$39,645,109	37	126	$1,620,444	$12,861	$475,845	
210056	MS Good Sam	$217,191,488	975	681	$9,942,252	$14,599	$14,234,502	6.55%
210057	Shady Grove	$375,403,219	1071	918	$14,019,537	$15,272	$16,356,126	4.36%
210058	UMROI	$105,668,792	24	2	$61,861	$30,931	$742,337	0.70%
210060	Ft. Washington	$43,910,440	184	89	$815,590	$9,164	$1,686,164	3.84%
210061	Atlantic General	$96,415,936	254	222	$2,917,315	$13,141	$3,337,829	3.46%
210062	MS Southern MD	$231,083,995	852	690	$10,188,988	$14,767	$12,581,185	5.44%
210063	UM-St. Joe	$331,436,061	1035	738	$10,064,775	$13,638	$14,115,233	4.26%
210064	Levindale	$48,594,793	96	22	$713,919	$32,451	$3,115,281	6.41%
210065	HC-Germantown	$97,933,178	382	171	$2,383,538	$13,939	$5,324,628	5.44%
Statewide	**Statewide**	**$14,771,933,843**	**44,365**	**32,504**			**$715,127,570**	4.84%

*Methodology was changed to better reflect the average cost of a readmission at the same sending and receiving hospital. Does not include costs from categorical exclusions or ventilator support product line.

**Laurel's readmission results were added to PG's readmissions results

Policy Update Report and Discussion

Staff will present materials at the Commission Meeting.

State of Maryland
Department of Health

Nelson J. Sabatini
Chairman

Joseph Antos, PhD
Vice-Chairman

Victoria W. Bayless

Stacia Cohen

John M. Colmers

James N. Elliott, M.D.

Adam Kane

Health Services Cost Review Commission
4160 Patterson Avenue, Baltimore, Maryland 21215
Phone: 410-764-2605 · Fax: 410-358-6217
Toll Free: 1-888-287-3229
hscrc.maryland.gov

Katie Wunderlich
Executive Director

Allan Pack, Director
Population Based
Methodologies

Chris Peterson, Director
Payment Reform &
Provider Alignment

Gerard J. Schmith, Director
Revenue & Regulation
Compliance

William Henderson, Director
Medical Economics &
Data Analytics

TO: **Commissioners**

FROM: **HSCRC Staff**

DATE: **February 12, 2020**

RE: **Hearing and Meeting Schedule**

March 11, 2020	To be determined - 4160 Patterson Avenue HSCRC/MHCC Conference Room
April 8, 2020	To be determined – 4160 Patterson Avenue HSCRC/MHCC Conference Room

Please note that Commissioner's binders will be available in the Commission's office at 11:15 a.m.

The Agenda for the Executive and Public Sessions will be available for your review on the Thursday before the Commission meeting on the Commission's website at http://hscrc.maryland.gov/Pages/commission-meetings.aspx.

Post-meeting documents will be available on the Commission's website following the Commission meeting.