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Final Recommendation on Integrated Efficiency Policy for RY 2022: Withholding Inflation for Relative Efficiency Outliers and Potential Global Budget Revenue Enhancements

June 9, 2021

This document contains the final staff recommendation for creating an Integrated Efficiency Policy for the purposes of withholding inflation for inefficient hospitals and awarding Global Budget Revenue enhancements for high performing hospitals.

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Key Methodology Concepts and Definitions

1. Equivalent Casemix Adjusted Discharges (ECMADS) – ECMADS are a volume statistic that account for the relative costliness of different services and treatments, as not all admissions or visits require the same level of care and resources.

2. Inter-hospital Cost Comparison (ICC) Standard – Each hospital's ICC revenue base is built up from a peer group standard cost, with adjustments for various social goods (e.g., trauma costs, residency costs, uncompensated care mark-up) and costs beyond a hospitals control (e.g. differential labor market costs) that are not included in the peer group standard. The revenue base calculated through the ICC does not include profits. Average costs are reduced by a productivity factor of 2 percent. The term "Relative efficiency" is the difference between a hospital's actual revenue base and the ICC calculated cost base.

3. Volume Adjusted Inter-hospital Cost Comparison (ICC) - A version of the ICC that incorporates hospitals' reduction in potentially avoidable utilization, as defined by the Potentially Avoidable Utilization Shared Savings Program and additional proxies for avoidable utilization. Volumes from this analysis, both negative and positive, amend a hospital's final ICC calculated cost base – not the peer group cost standard - as well as the hospital's position relative to the ICC Cost Standard.

4. Efficiency Matrix – A combined ranking of a hospital's performance in the Inter-hospital Cost Comparison and Total Cost Care. Total Cost of care is measured by comparing the per capita cost of care in a hospital's service area to matched national Medicare and Commercial benchmarks on a risk-adjusted basis. Both measures are weighting equally and hospitals are arrayed into quartiles to determine overall efficiency.

Policy Overview

Policy Objective	Policy Solution	Effect on Hospitals	Effect on Payers/Consumers	Effect on Health Equity
The GBR approach explicitly rewards hospitals by allowing them to retain revenue as volume declines. While this incentive remains fundamental to the model, it has the potential side effect of masking hospitals that operate inefficiently.	This policy penalizes significantly inefficient hospitals and rewards significantly efficient ones by evaluating them on a normalized cost per case basis. To avoid penalizing hospitals that are effectively reinvesting savings from lower utilization in improving population health, the cost per case measure is balanced with a measure of total cost of care.	Hospitals that run efficiently and effectively manage total cost of care in their service areas will be entitled to additional revenue. Those that are inefficient and are not effectively managing total cost of care will lose revenue. Only clear outliers will be impacted, most hospitals will not be affected.	By incenting both efficiency and effective total cost of care management, this policy will control unit level cost inflation faced by the direct healthcare consumer while also improving the effectiveness of the healthcare delivery for all residents.	Through this policy, hospitals are evaluated, in part, on total cost of care, thereby incentivizing hospitals to improve care coordination and non-hospital investments in their service area. An increased focus on total cost of care can help to improve access and quality of care for residents in the hospital's service area. Although this does not directly effect health equity, the investments that are made in the community can indirectly improve health disparities.

Recommendations

Since 2018, staff has been working with Commissioners and stakeholders to develop a formulaic and transparent methodology that identifies and addresses relative efficiency performance in order to bring hospitals closer to peer average standards over time. The purpose of this exercise is to update the HSCRC's efficiency measures to be in line with the incentives of Maryland's Total Cost of Care (TCOC) Model, so that objective standards are in place when the Commission adjusts hospitals' permanent rate structure and to address and correct maldistribution of global revenues.

In July 2019, a staff draft recommendation was brought before the Commission. During the course of review following the publication of the July draft recommendation, a number of concerns were identified by staff, Commissioners, and stakeholders regarding: a) the casemix

adjustment for rehabilitation cases; b) use of a growth calculation in lieu of a benchmark attainment analysis for total cost of care performance; c) the appropriateness of current peer groups in the hospital cost per case efficiency assessment and d) general concerns that the policy should identify larger amounts of inappropriately retained revenue.

Commissioners at the October and November 2020 Commission meetings also expressed concern that the designation of hospitals as outliers based on a one standard deviation hospital pricing rule created an undesirable cliff effect, especially when the penalty was not scaled to reflect gradations in hospital performance. Commissioners also noted a desire to expedite the use of staff's proposed Revenue for Reform concept that allows hospitals to have safe harbors for hospital revenue, i.e., revenue that is used for specific care transformation efforts at the hospital that could be excluded from efficiency analyses. Finally, staff also noted that an additional risk adjustment for hospitals deemed similar to critical access hospitals would be included in future iterations of the Integrated Efficiency Policy.

In light of all of these issues, staff has: a) implemented a change to its casemix adjustment that reduces the variability of rehabilitation case groupings; b) incorporated total cost of care benchmark performance into efficiency evaluations; c) reviewed the effectiveness of ICC peer groups and recommended an alternative approach; d) arrayed hospitals into quartiles instead of quintiles and incorporated Commercial benchmark performance to expand the extent of revenue redistributed through this policy; e) proposed a scaling approach that penalizes all hospitals in the worst quartile but on a sliding scale basis; f) reflected a pilot Revenue for Reform safe harbor; and g) proposed a critical access hospital adjustment. As such, staff is presenting the following recommendations for Commission approval:

1) Formally adopt policies to
    a. Determine hospitals that are relatively inefficient;
    b. Evaluate Global Budget Revenue enhancement requests using the criteria identified above;
2) Use the Inter-Hospital Cost Comparison, including its supporting methodologies to compare relative cost-per-case for the above evaluations;
    a. Abandon ICC peer groups and adopt a direct regression based risk adjustment for indigent care cost variation that will be applied to all efficiency policies

3) Use Total Cost of Care measures with a geographic attribution to evaluate per capita cost performance for the above evaluations;
4) Withhold the Medicare and Commercial portion of the Annual Update Factor for relatively inefficient hospitals based on criteria described herein;
5) Use set aside outlined in the Annual Update Factor and funding secured from withholds from outlier hospitals to fund potential Global Budget Revenue enhancement requests.
6) If inflation is withheld in RY 2022 Update Factor based on relative efficiency policy, update volumes for RY 2022 rate orders to reflect CY 2019 volumes with 5 percent corridors. This limit may be extended to 10 percent at the discretion of the HSCRC staff if the Hospital presents satisfactory evidence that it would not otherwise be able to achieve its approved total revenue for the Rate Year.

Introduction

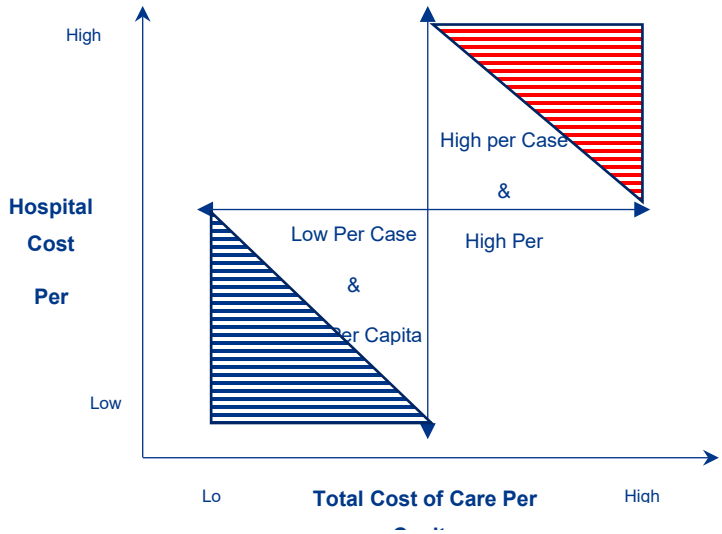
The goals of the HSCRC and the Total Cost of Care (TCOC) agreement are relatively straight forward. The Commission's enabling statute requires that hospital costs are reasonable; that rates are set in reasonable relationship to costs; and that rates are set equitably and applied on an all-payer basis. The TCOC agreement with the federal government requires that the relative growth of per capita total health care spending in Maryland must meet certain standards.

The policies and the methodologies adopted by the Commission to achieve its goals, however, are anything but straight forward. These approaches are complex in part because the economics of health care and health services are technical and complex.

This section of the policy proposal is an attempt to describe the integrated efficiency methodology in more general language and to point to sections of this Final Recommendation on Integrated Efficiency Policy for RY 2022 and the related appendix which describe these approaches in necessarily more precise terms. The intent is to use this primer to paint the broad overview and to provide context to the more technical aspects of the policy.

The integrated efficiency policy is established by the HSCRC to **simultaneously** evaluate whether hospitals are "technically efficient" on a ***cost per case*** basis AND are effective in controlling ***total cost per capita.*** Those hospitals identified as particularly high in both these categories are considered presumptively inefficient (red in the 2 X 2 diagram below), while those that are low in both these categories are presumptively efficient (blue below). Presumptively inefficient hospitals are not granted access to a portion of inflation as part of the annual update

factor. They are free to file a rate application if they so desire. Presumptively efficient and effective hospitals are granted the opportunity to request slightly higher revenue through an expedited adjustment to their GBR agreement.



The simultaneous nature of this comparison is important. Clearly, controlling TCOC is essential in order for the waiver to succeed. At the same time, controlling hospital cost per case is central to the mission of the Commission. Finding the right balance between these two elements that tend to move in opposite directions is critical.[1] The remainder of this section identifies the steps taken to calculate Maryland hospitals' values equitably along these dimensions and to establish the thresholds that determine high and low performance along both.

A. Hospital Cost per Case

The Commission has relied on the Inter-hospital Cost Comparison (ICC) methodology to evaluate individual hospital's cost per case or technical efficiency. (See overview of ICC methodology). Although it involves complex calculations, the ICC process can be seen in three basic calculations:

- Adjusting all hospitals' permanent revenue to produce a **standard cost per case** for the comparison group. – See Table 7;
- Adjusting this standard cost per case back up to **approved total revenue** for each hospital. – See Table 10; and
- The approved revenue is compared to actual revenue to calculate the **relative efficiency of the hospital** – See Tables 12a and 12b.

[1] As hospitals volumes fall as part of improving total cost of care, hospital unit rates increase under the GBR.

These calculations are summarized in the following tables with references to sections in the Policy Paper with more detail.

Calculation of Standard Cost Per Case for Comparison Group		
Step		Description
1	Permanent Revenue	Remove from actual revenue the impact of current one-time adjustments in rates. – **See p. 13.**
2	Markup	Remove approved markup for payer differential, uncompensated care, and other similar factors.
3	Profit	Remove hospital-specific current regulated profit in order to bring revenue to approximation of costs. **See p. 25.**
4	Direct Medical Education	Remove the direct expenses associated with medical education – capping the number of residents to the levels in 2011 and the costs to the statewide average cost per resident. **See p. 20**
5	Indirect Medical Education	Adjust hospital costs for the estimated marginal impact on costs of operating a teaching program. This adjustment is separately calculated for major academic hospitals and other teaching hospitals and inflated to current year. **See p. 21.**
6	Labor Market	Adjust the portion of hospital costs associated with differences in the labor market in which the hospital operates. Use hospital wage and salary data for two groups – Montgomery and Prince George's Counties, where wages are higher than Maryland's average, and a second grouping of all other hospitals. **See p. 21.**
Policy Choice	Retain peer groups or, alternatively, make direct adjustment for impact of poverty on cost.	The HSCRC has traditionally made this calculation by groups of peer hospitals. The policy paper introduces an approach that directly estimates the effect on hospital costs of treating a higher share of poor patients – one of the major reasons for the peer groups. **See p. 22.**
7	Volume	Divide by volume, which is measured by ECMADs – a statistic that incorporates the difference in the types of cases (discharges/visits) a hospital treats (case-mix adjusted) and incorporates both inpatient and outpatient activity (equivalent).
8	Standard Cost Per Case	This is calculated at the individual hospital level but aggregated to create Standard Cost per Case for comparison group. The group would either be the peer group or the statewide standard depending on the decision on the Policy Choice above.

Calculation of Hospital Approved Revenue		
Step		Description
1	Standard Cost per Case	Begin with Standard Cost per Case calculated above.
2	Productivity adjustment	Remove 2% uniform productivity adjustment.
3	Volume (adjusted)	Multiply by hospital specific volume. Adjust hospital volume to reflect steps hospital has taken (or not) to remove potentially avoidable utilization (PAU). This step protects hospitals that have eliminated PAU (and have higher cost per case as a result) and penalizes hospitals that have added PAU (and have lower cost per case as a result). **See p. 26.**
4	Indirect Medical Education	Add back in hospital specific indirect medical education/ Separately calculated for major academic hospitals and other teaching hospitals and inflated to current year.
5	Labor Market	Readjust standard labor costs to the hospital-specific labor market described above.
6	Direct Medical Education	Add back the hospital specific direct expenses associated with medical education – capping the number of residents in most cases to the levels in 2011 and the costs to the statewide average cost per resident.
7	Markup	Add back hospital-specific approved markup for payer differential, uncompensated care, and other similar factors.
8	Hospital Approved Revenue	

Calculation of Hospital Relative Efficiency		
Step		Description
1	Actual v. Standard	Compare actual Permanent Revenue to standardized Hospital Approved Revenue and express as percentage above or below the standard.
2	Rank	Rank order hospitals from most to least efficient. These results will be combined with the TCOC results below to produce a composite score.

B. Total Cost of Care Per Capita

The evaluation of the TCOC attributed to a hospital is likewise complex, but it involves several basic steps. These are separately performed against a benchmark standard for the payer categories for which the Commission has comparable information on total health care spending.

Such data exists for Medicare and commercial insurance payers. It does not exist for Medicaid. The task is to find appropriate geographic areas in the country to compare to Maryland areas; attribute the geographic data on total costs to individual hospitals; and adjust the data to make fair comparisons. Once those steps are accomplished an aggregate TCOC comparison can be made.

- **Establish Benchmark Groups** for each Maryland geography for Medicare and Commercial populations using national data from similar locations.
- **Convert Geographic Benchmarks** into Hospital-specific Benchmarks assigning weights based on a hospitals' primary service area.
- **Adjust the data for differences** in Beneficiary Risk and Demographics and compare.

As before, these calculations are summarized in the following tables with references to sections in the Policy Paper with more detail.

Establish Benchmarks for Medicare and Commercial Populations			
	Step		Description
Medicare	1	Claims data	Medicare TCOC claims data for Maryland is collected by county. Data is for Medicare Part A and Part B only.
	2	Data on area characteristics	Potential benchmark Medicare counties are identified for comparison based on population density, size and other demographic factors.
	3	Identify cohorts	20 county cohorts identified for 5 largest Maryland counties using a statistical technique that finds 20 US counties that have values closest to each of the 5 largest counties and 50 county cohorts identified for remaining Maryland counties.[2]
	4	Calculate County Benchmark	Simple average of benchmark cohort values for Medicare TCOC per capita.
Commercial	1	Claims data	National commercial claims data is not available at the county level, but at the MSA level. Maryland commercial claims data is available at the county level. For comparison purposes, Maryland data is aggregated to MSA level, but excludes non-Maryland residents from the MSA.
	2	Data on area characteristics	Potential benchmark commercial MSAs are identified for comparison based on population density, size and other demographic factors.

[2] The technique is called: "K-nearest neighbor."

Establish Benchmarks for Medicare and Commercial Populations			
	Step		Description
	3	Identify cohorts	20 MSA cohorts are identified for each Maryland MSA using a statistical technique that finds 20 US MSAs that have values closest to each of the Maryland MSAs.[2]
	4	Calculate benchmark	Simple average of benchmark values.

Convert Geographic Benchmarks to Hospital Benchmarks			
	Step		Description
Medicare	1	Calculate a hospital specific TCOC	Using Maryland Medicare data by zip code, allocate costs and beneficiaries to each hospital in accordance with its primary service area.[3] This is similar to the approach the HSCRC has used in calculating the Medicare Performance Adjustment (MPA).
	2	Calculate benchmark TCOC for each hospital	Using the corresponding benchmark for each county, calculate each hospital's benchmark weighted by Medicare beneficiaries allocated to its primary service area.
Commercial	1	Calculate a hospital specific TCOC	Using Maryland commercial data by county, allocate costs and beneficiaries to each hospital in accordance with its primary service area.[4]
	2	Calculate benchmark TCOC for each hospital	Using the corresponding benchmark for each county, calculate each hospital's benchmark allocated to its primary service area.

Adjust the data for differences and compare		
Step		Description
1	Medical Education	Remove estimated medical education costs from all data – Medicare and commercial, Maryland and Benchmark.
2	Risk adjustment	Separately risk adjust Medicare and commercial data.
3	Benefit adjustment (Commercial only)	Account for differences in commercial benefit plans by area. Richer plans result in higher utilization.
4	Demographic Adjustment	Calculated separately for Medicare and commercial. Demographic factors adjusted are Median Income and Deep Poverty.
5	Compare	Compare hospital to benchmark and express as % above or below

[3] Shared zip codes are split among hospitals based on ECMAD share, and any unassigned zip codes are assigned to a hospital based on travel distance.
[4] Shared counties are split among hospitals based on ECMAD share.

Adjust the data for differences and compare		
Step		Description
6	Rank	Rank order hospitals on Medicare and commercial standards. These results will be combined with the hospital efficiency results above to produce a composite score

Background

Efficiency Tools

While staff has utilized the ICC and various total cost of care analyses to support Commission proposals to modify hospitals' global revenues outside of a full rate application,[5] thereby implicitly approving these efficiency tools through adjudication, no formal policies that address scaling of inflation or global budget modifications are currently in place. It is important that formal policies reflective of all methodology enhancements are approved by the Commission to provide greater clarity to the industry and to allow for the Commission's methodologies to be more formulaic and uniform in their application.

In terms of the ICC, staff did not materially change the methodology from what was presented to the Commission in November of 2017. The ICC still currently places hospitals into peer groups based on socioeconomic factors and teaching status and then develops a peer group cost average, devoid of unique hospital cost drivers (e.g., labor market, casemix) and various social goods (e.g., residency programs), to ultimately build up hospital revenue for each hospital based on the calculated peer group cost average. The difference between a hospital's evaluated revenue and its revenue calculated from the ICC cost standard is the measure of a hospital's relative cost-per-case efficiency. As aforementioned, staff has also included in this report a slightly different ICC assessment that removes peer groups and directly risk adjusts for indigent care.

Additional modifications to the November 2017 ICC include modifying the casemix methodology that governs the singular volume statistic used in the ICC, creating a differential cost estimate for indirect medical education costs of major academic medical centers versus other residency programs, limiting the resident and intern cost strip to the State average cost per

[5] Anne Arundel Medical Center, Garret Regional Medical Center, UMMC Midtown Hospital, Bayview Hospital

resident, updating the input values to reflect RY 2020 revenue and RY 2019 casemix volume, and adjusting the ICC for changes in Volume, all of which will be discussed in greater detail in the *ICC Calculation* section below.

As for Medicare total cost of care, staff originally had two established tools for analysis: total cost of care growth relative to 2013 (the base year for the All-Payer Model) based on a strictly geographic attribution; and total cost of care growth relative to 2015 based on the attribution in the Medicare Performance Adjustment (MPA), which incorporates patient and physician matching. Although both of these approaches yield similar results when the performance period is the same, both have limitations in determining absolute efficiency because both are dependent upon the date by which growth is evaluated, i.e., the base year, and typically growth calculations are not as reliable year over year as attainment analyses. For these reasons, staff has developed total cost of care "attainment" benchmark calculations into the final efficiency determinations, inclusive of Commercial performance, that will be discussed in the Overview of the *Total Cost of Care Calculation* section.

Efficiency Implementation

Withholding Inflation from Outlier Hospitals

In prior applications of the HSCRC efficiency methodologies, hospitals' revenues were reduced under spend-down agreements if they were deemed to have cost-per-case beyond a set level. In another application of efficiency measures, hospitals with favorable hospital cost-per-case positions were given higher annual updates than those hospitals with poor relative cost-per-case. However, all of these prior iterations of efficiency analyses were based on fee-for-service mechanisms and did not have to account for relative cost efficiency in a per capita system. In a per capita system, a hospital aligned with the TCOC Model will reduce utilization by improving the health of the population, retain a portion of the revenue associated with the reduced utilization, and potentially appear to be less cost efficient in a cost-per-case analysis. Moreover, hospitals can confound this analysis in the global revenue era by reducing utilization through shifting services to non-hospital providers (referred to as deregulation), eliminating services outright, or by simply continuing to pursue additional volume growth beyond population and

demographic driven changes. Despite these complexities, the HSCRC must still establish charges that are reasonably related to costs, which in turn should be reasonable themselves, while also properly incentivizing hospitals to reduce unnecessary utilization and total cost of care.

For these reasons, staff cannot evaluate hospital cost-per-case or total cost of care analyses independently, and any combination of tools will not precisely identify hospitals' efficiency ranking, especially near the mid-range of performance. Thus, staff will focus this policy on the worst quartile and recommend that hospitals in this quartile have a portion of their Annual Update Factor withheld, based on a 50/50 weighting of a Volume adjusted cost-per-case and geographic Medicare and Commercial total cost of care attainment calculations.

Staff notes that this policy would be the first broad scale, incremental step towards creating a formulaic use of efficiency methodologies in the per capita and global revenue era. Over time this policy will bring hospitals more in line with average cost-per-case and total cost of care performance.

Global Budget Revenue Enhancements

Staff's original efficiency proposals limited the application of the policy to poor performing outlier hospitals. Positive revenue adjustments would be addressed through an additional policy on the evaluation of rate applications once total cost of care benchmarks were developed. However, concerns regarding GBR enhancement requests have prompted staff to also outline a methodology for evaluating excellent performing hospitals and describe a process by which additional revenue may be requested outside of a full rate application.

Specifically, staff proposed that all GBR revenue enhancements outside of a full rate application be limited to hospitals that are among the best performers in cost-per-case, as measured by a Volume Adjusted ICC, and Medicare and Commercial total cost of care, using a geographic benchmark attainment analysis. This evaluation mirrors the analysis performed for determining poor performing outliers. For hospitals to receive a GBR enhancement outside of a full rate review, they must be in the best quartile of performance as evaluated in the Efficiency Matrix and must be better than one standard deviation from average Volume Adjusted ICC performance (1.05 times the ICC standard), which indicates potential insolvency. Further, a hospital that

qualifies for a GBR enhancement must submit a formal request to the HSCRC that outlines either: a) how a previous methodology disadvantaged the hospital; or b) a spending proposal that aligns with the aims of the Total Cost of Care (TCOC) Model. Total revenue enhancements will be capped by the funding made available by the set aside in the Annual Update Factor approved by the Commission each year (.25% or ~$45 million in RY 2021) and the funding derived from withholding inflation from hospitals in the worst quartile.

This process and proposed budget cap does not restrict hospitals from submitting a formal rate application request.

Overview of Efficiency Calculations

Overview of ICC Calculation

The general steps for the ICC calculation, consistent with prior practices, are as follows:

1. Calculate approved permanent revenue for included volume as measured by Equivalent Case Mix Adjusted Discharges (ECMADs) that will be evaluated in the ICC methodology. This excludes the hospital revenues for one-time temporary adjustments and assessments for funding Medicaid expansion, Medicaid deficits and user fees, such as fees that support the operations of the HSCRC.

2. Permanent revenues are adjusted for social goods (e.g., medical education costs) and for costs that take into consideration factors beyond a hospital's control (e.g., labor market areas as well as markup on costs to cover uncompensated care and payer differential).

3. Hospitals are divided into peer groups for comparison, recognizing that specific adjustments may not fully account for cost differences. The adjusted revenue per ECMAD is compared to other hospitals within the peer group to assess relative adjusted charge levels. The peer groups are:

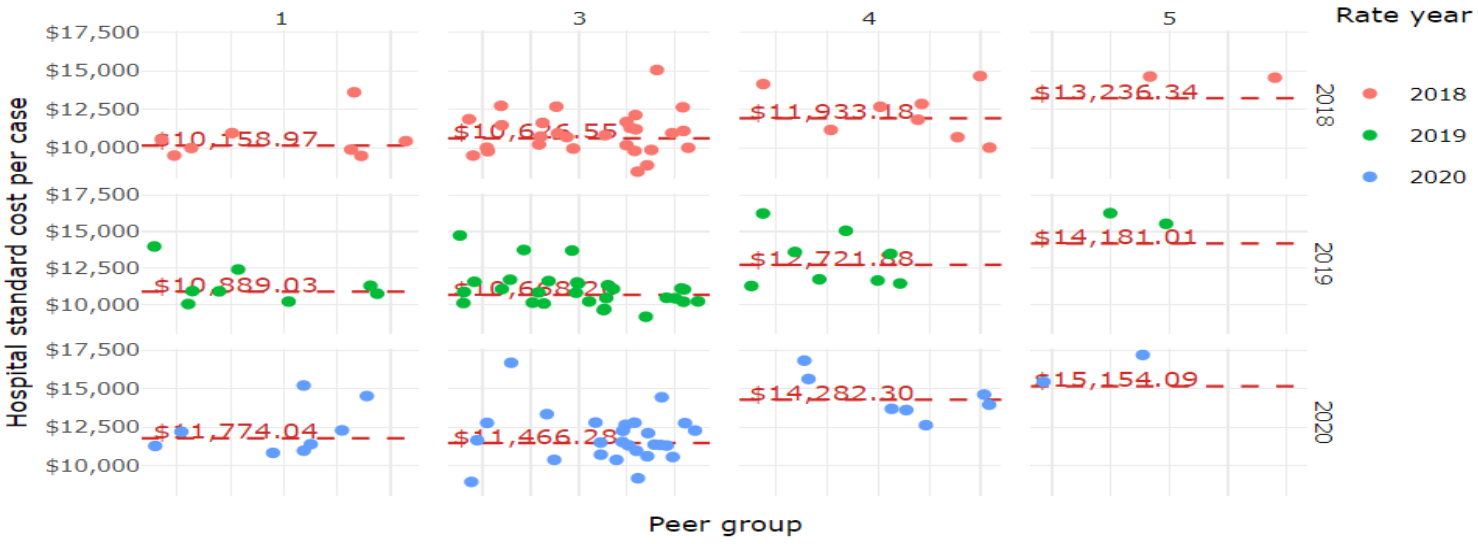
- Peer Group 1 (Non-Urban Teaching)
- Peer Group 3 (Suburban/Rural Non-Teaching)
- Peer Group 4 (Urban Hospitals)

- Peer Group 5 (Academic Medical Center Virtual, which overlaps with peer group 4)

Staff have also developed an alternative approach, whereby all peer groups, save Peer Group 5, are eliminated and instead direct adjustments are made through a regression to account for the intended purposes of the peer groups, most notably added costs related to teaching and to a greater extent serving a lower socioeconomic population or indigent care.

Staff arrived at this alternative approach due to many industry requests to assess the validity of the peer groups and because analysis of the peer groups indicated that there was greater variation in terms of cost per case within the peer group than across peer groups, which is not ideal for an adjustment that aims to align hospitals with similar characteristics and therefore similar cost profiles. This is best demonstrated graphically in Table 1 below, which shows that: a) hospital cost per case variation is greater in the smaller peer groups (Peer Group 1and Peer Group 4); b) cost per case performance in many cases tends to be more similar across peer groups than within peer groups; and c) variation with the peer groups is growing larger over time, which is another imprecision associated with peer groups since they do not automatically update, and yet there are ongoing changes in the patient population and market.

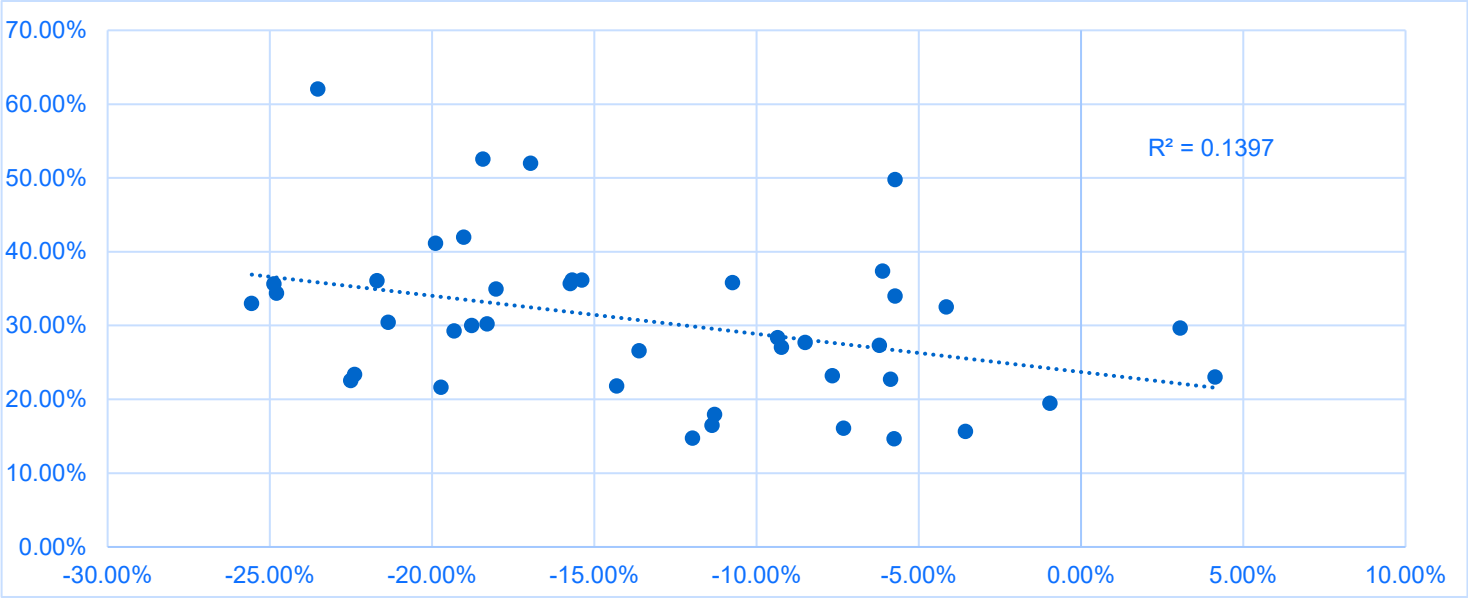
Table 1: Hospital Cost Per Case Variation (RY 2018 ICC – RY 2020 ICC)



The second concern about the current peer group design was that there remained a statistically significant relationship between levels of indigent care and ICC performance after application of the peer groups, indicating the peer groups had not fully addressed the residual cost variation for which they were intended. Specifically, staff noted that poor share (the percent of hospital revenue attributable to Medicaid, dual eligibles, and charity care) as well as the percent of revenue attributable to dual eligibles by itself had a small but not insignificant bearing on ICC performance when the historical peer groups were retained and indigent care was not adjusted for directly, as evidenced by a R2 of 0.1397 and a p value less than .05.[6]

[6] R2 denotes the extent to which a given set of variables in a regression explains variation in results or outcomes; the larger the R2 the higher the percentage of variation is explained. The complementary measures of p value indicate the extent to which the variables in the regression are not random. Typically p values less than .1 indicate the independent variables in the regression are not random and exert meaningful influence on the outcome.

Table 2: Correlation between Integrated Efficiency ICC Performance & Poor Share Percentage



Conversely, the alternative approach of consolidating Peer Groups 1, 3 and 4 and directly risk adjusting for indigent care resulted in an elimination of the statistically significant relationship between indigent care and ICC performance, which will be discussed in greater detail in subsection *D. Disproportionate Share Hospital (DSH) Adjustment.*

4. There are two additional steps to convert revenues to cost. The first additional adjustment is to remove profits from regulated services from the adjusted revenues (profit strip henceforth). The second is to make a productivity adjustment to the costs. These two adjustments are made to allow for consideration of efficient costs for purposes of rate setting.

5. After applying the calculated peer group cost average to each hospital, all costs that were removed in Step 2 (social goods and factors beyond a hospital's control) are added back to each hospital to build revenue up to the ICC calculated value. The profit strip and productivity adjustment outlined in Step 4 are not added back to a hospital's revenue. The difference between the ICC calculated value and the revenue included in the ICC evaluation, as described in Step 1, is the measure of a hospital's relative efficiency in relation to the ICC Cost Standard.

For a graphic outline of this process(not inclusive of staff's alternative approach outlined in Table 7 to directly risk adjust for indigent care in lieu of using peer groups), please see Tables 3a and 3b.

Table 3a: Overview of ICC Cost Comparison Calculation Determining Peer Group Cost-per-case (Stripping Down)

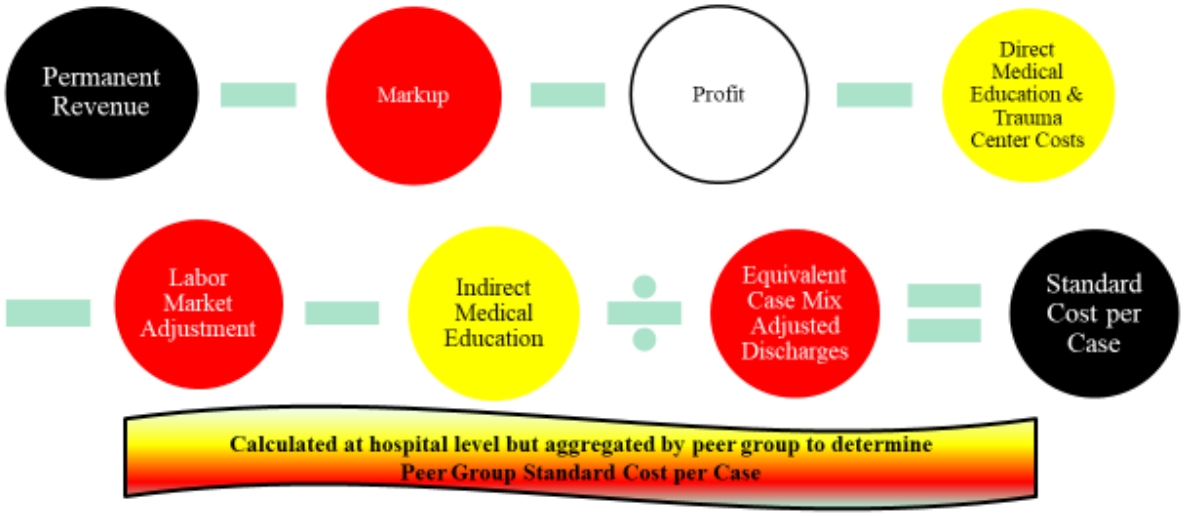
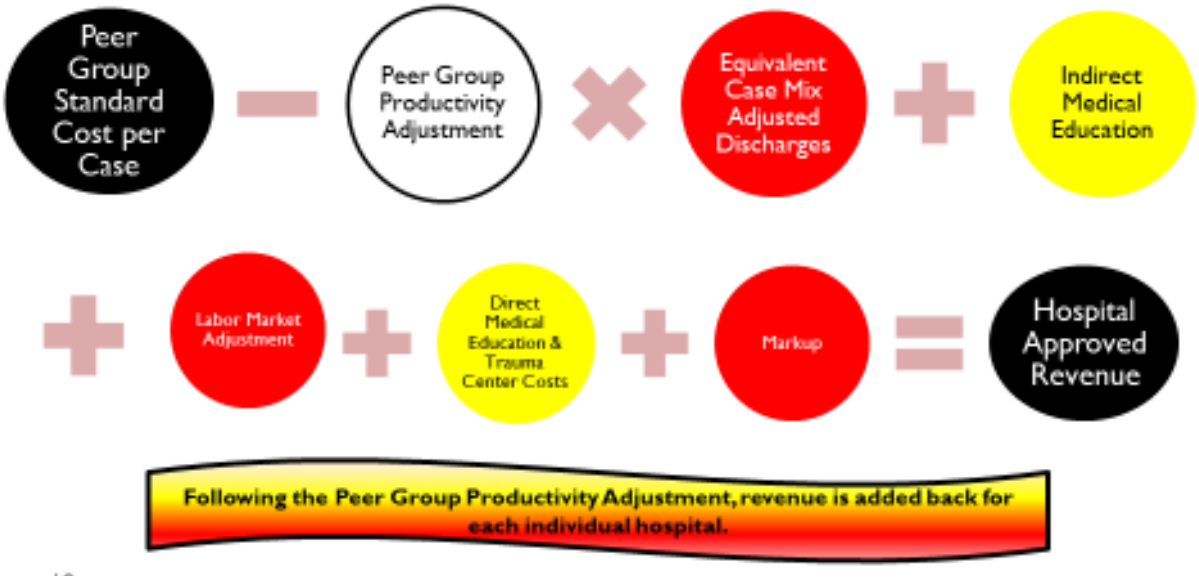


Table 3b: Overview of ICC Cost Comparison Calculation Determining Total Revenue (Building Back Up)



Proposed Changes to ICC Methodology

The following section outlines the proposed changes to the ICC relative to the methodology in effect in 2011.

Step 1- Calculate Permanent Revenue

A. Outpatient Drug Overhead Adjustment

As described in Appendix 1, staff has concluded its work in developing weights on outpatient cases, particularly cases that are subject to cycle billing and are ubiquitous across multiple outpatient settings. Staff did not develop usable weights for oncology and infusion drugs because these costs are highly variable by hospital due to various discounts that only certain hospitals receive, e.g., 340b discounts, and therefore do not offer a reliable efficiency comparison. As such, staff excluded oncology drugs from the cost-per-case/visit comparisons but retained the charges/cost constituting drug overhead, especially since the magnitude of drug overhead allocations are not uniform across hospitals. In the HSCRC rate setting calculations, a

significant portion of costs continues to be allocated based on "accumulated costs." This process is allocating too much overhead to outpatient biological drugs, and staff has concluded that this allocation distorts cost comparisons.[7]

B. Revenue for Reform Safe Harbor

In response to Commissioner requests to expedite the use of staff's proposed Revenue for Reform concept, whereby hospital revenue is placed into safe harbors, i.e., it is not assessed in efficiency analyses if the revenue subsidizes care transformation, staff has put into the modelling for this iteration of the Integrated Efficiency Policy a pilot safe harbor for Chestertown Hospital. Specifically, a portion of revenue has been removed from the ICC and any potential scaling adjustments in the Efficiency Matrix in recognition of Chestertown's intent to divert inpatient hospital revenue to rural health transformation, including an Aging and Wellness Center.

Staff does not recommend including any additional safe harbors until the Revenue for Reform Policy is officially promulgated, at which point a reporting and auditing function for safe harbors will be outlined.

Step 2- Adjustments to Revenue

Adjustments to revenue along with changes to each adjustment methodology are proposed by staff below:

A. Medical Education Costs

Consistent with past practices, direct medical education costs, including nurse and other training as well as graduate medical education (GME) costs, are stripped from the permanent revenues using amounts reported in hospitals' annual cost filings. HSCRC policies limited recognition of growth in residencies beginning in 2002, unless increases in residencies were approved through a rate setting process, consistent with Medicare policies that also limit recognition of growth in

[7] Medicare adds six percent to average sales price to pay for overhead on physician administered drugs that are not bundled into a visit cost, while non-governmental payers use a somewhat higher overhead figure on top of average sales price in their payment formulation. It is likely that HSCRC will need to change its overhead allocation and rate setting formulation for these biological and cancer drugs in the near term as costs continue to escalate. In the meantime, staff recommends retaining the overhead related revenues/costs in revenues evaluated under ICC charge-per case/visit comparisons.

residencies. For the proposed ICC formulation, the staff is limiting the counts and costs used in the GME calculations based on the number of residents and interns that were included in the 2011 regression. Moreover, staff is capping direct medical education costs for hospitals to no more than the average direct cost per resident statewide, which in the RY 2019 annual filing was $132,803.

Over the years, the calculation of indirect medical education ("IME") costs has been difficult. In 2011, the HSCRC reached a calculation after much debate of an IME allowance per resident of $230,746. Staff believed this figure was too high for those hospitals that are not major academic medical centers with high ratios of residents per bed. As such, staff worked with a contractor to create a nationally calibrated two-peer-group model to determine major academic indirect medical education costs versus the IME costs per resident of other teaching hospitals.[8] The criteria staff used for defining these two peer groups were as follows:

Table 4 Criteria used to define teaching intensity hospital peer groups

Teaching intensity	Major AMC	Number of beds	IRB ratio
High	Yes	500 or more	0.60 or higher
Moderate to Low	No	Fewer than 500	0.03 to 0.60

Source: AAMC website and HCRIS, 2013-2015.
AAMC = American Association of Medical Colleges; AMC = academic medical center; HCRIS = Hospital Cost Reporting Information System

IRB ratio=Number of Interns and Residents/beds

Using the most recent three years of national hospital data (2013–2015) from the Hospital Cost Reporting Information System[9] and a regression that controlled for the other factors commonly

[8] Several studies also show that major teaching hospitals (sometimes, though not always, defined as academic medical centers or AMCs) have higher IME costs than non-major teaching hospitals. In its 2007 Report to Congress, MedPAC (2007) reported separate IME cost estimates for AMCs and other teaching hospitals. The results showed a stronger relationship to cost in AMCs than in other teaching hospitals. The IME cost estimate for major AMCs (2.6 percent) was nearly double the estimate for other teaching hospitals (1.5 percent). Nguyen and Sheingold (2011) also reported that the impact of teaching intensity on costs was higher among large urban hospitals than other hospitals. They found that costs per case for large urban hospitals increased 1.4 percent for every 10 percent increase in the ratio of residents to beds, compared with a 1.1 percent increase over all teaching hospitals.
[9] All Medicare-certified institutional providers are required to submit an annual cost report to a Medicare administrative contractor, which serves as the basis for the Hospital Cost Reporting Information System database. The cost report contains provider information such as facility characteristics, utilization data, cost and charges by cost center, in total and for Medicare.

associated with costs, such as hospitals' average patient severity and indigent care burden[10], it was determined that IME costs among high-teaching intensity hospitals are $302,887 and $110,875 for low- and moderate-teaching intensity hospitals combined. These values were inflated from the 2015 analysis to be equivalent to RY 2020 dollars.

Future development work may result in different allowed resident counts, but the methodologies for determining the cost per resident for direct and indirect medical education will remain the same.

Table 5 Estimated IME costs, by hospital peer group, 2013–2015

Teaching intensity	IME coefficient ($)	Standard error	P-value	95 percent confidence interval	
All	230,675***	11,753	0.000	207,639	253,711
High[a]	192,012***	41,873	0.000	109,942	274,082
Moderate and low (omitted group)	110,875***	17,216	0.000	77,132	144,619

Sources: HCRIS, 2013–2015; IPPS Impact File, 2013–2015.

Notes: The results are based on 124 hospitals in the high-teaching intensity group, 510 hospitals in the moderate-teaching intensity group, and 1,006 hospitals in the low-teaching intensity group.

[a] To calculate the marginal effect for these groups, add the estimated IME coefficient with the estimated IME coefficient for the omitted group within a given model. Estimated IME costs for high-teaching intensity hospitals in the two-peer group model are $302,887.

***Significantly different from zero at the .01 level, two-tailed t-test.

HCRIS = Hospital Cost Reporting Information System; IPPS = inpatient prospective payment system.

B. Labor Market Adjustment

In the prior ICC, the labor market adjustment was constructed using an HSCRC wage and salary survey that was based on two weeks of pay and included fringe benefits and contract labor. Each hospital was provided with a unique labor market adjustor that was more indicative of a hospital's ability or decision to pay salaries as opposed to the cost pressures hospitals face in

[10] Several variables (including hospitals' case-mix index, wage index, census region, and urban or rural designation) were derived from the IPPS Impact File, which CMS uses to estimate payment impacts of various policy changes in the IPPS proposed and final rules.

various labor markets, and there were concerns about the consistency and accuracy of reported benefit levels and their impact on the measured wage levels. Staff suspended the wage and salary survey submission for 2017 and intends to replace this survey data with data that better accounts for labor costs hospitals cannot control. One potential solution is to utilize CMS's nationally reported data. Although this national CMS data is available historically, HSCRC staff has not had the opportunity to audit the data, and there may be reporting errors. Staff and MHA have stressed the importance of accurate data in the 2017 reports to Medicare.

While staff will continue to use the HSCRC wage and salary survey in its formulation of the ICC until a new labor data source is available, it proposed in the 2018 ICC formulation to eliminate hospital specific adjustments for most hospitals. Specifically, the ICC will use two sets of hospital groupings, with the first set of grouping for Prince George's County and Montgomery County where wages are higher than Maryland's average, and a second grouping of all other hospitals.

C. Capital Cost Adjustment

Previously, there was a capital cost adjustment for differences in capital costs, which was being phased out over time. The time has elapsed, and there is no longer an adjustment for capital cost differences.

D. Disproportionate Share Hospital (DSH) Adjustment

In the 2011 analysis, staff made an adjustment to charges for patients considered to be poor, in consideration of the cost burden that those patients may place on hospitals with higher levels of indigent care. Prior calculations utilized the percentage of Medicaid, charity pay, and self-pay, referred to as poor share, as an independent variable in a multi-variate regression to determine this cost burden.

Staff discontinued this adjustment and instead retained peer groups, most notably Peer Group 4 (the urban peer group), because the peer group design and direct risk adjustment for indigent care were duplicative and disadvantaged hospitals, not part of the urban peer group, with similar levels of indigent care. Since this discontinuation, stakeholders have continued to raise concerns

that while the peer group assignments and indigent care are duplicative, there is variation in patient populations outside of the urban peer group that are not adequately addressed with the current ICC evaluation.

As such, staff engaged Mathematica Policy Research in developing a new DSH adjustment once it was determined that the peer groups in their current configuration (and in many other configurations based on cluster analyses) did not adequately address residual cost variation related to indigent care. The alternative approach built off the discontinued regression that utilized poor share as an independent variable because it demonstrated the greatest influence on ICC performance once peer groups were removed. Staff further added to the regression by controlling for Baltimore city hospitals, as staff was concerned that indigent care, as the last remaining adjustment in the ICC, was capturing other cost variation, likely due to actual inefficiency, e.g. excess capacity. Finally, staff identified slight volatility in the regression's annual coefficients and thus advanced the idea of using a regression that calculated indigent care cost per 1% of poor share over a three year ICC assessment, thereby smoothing out any instability in the DSH adjustment.

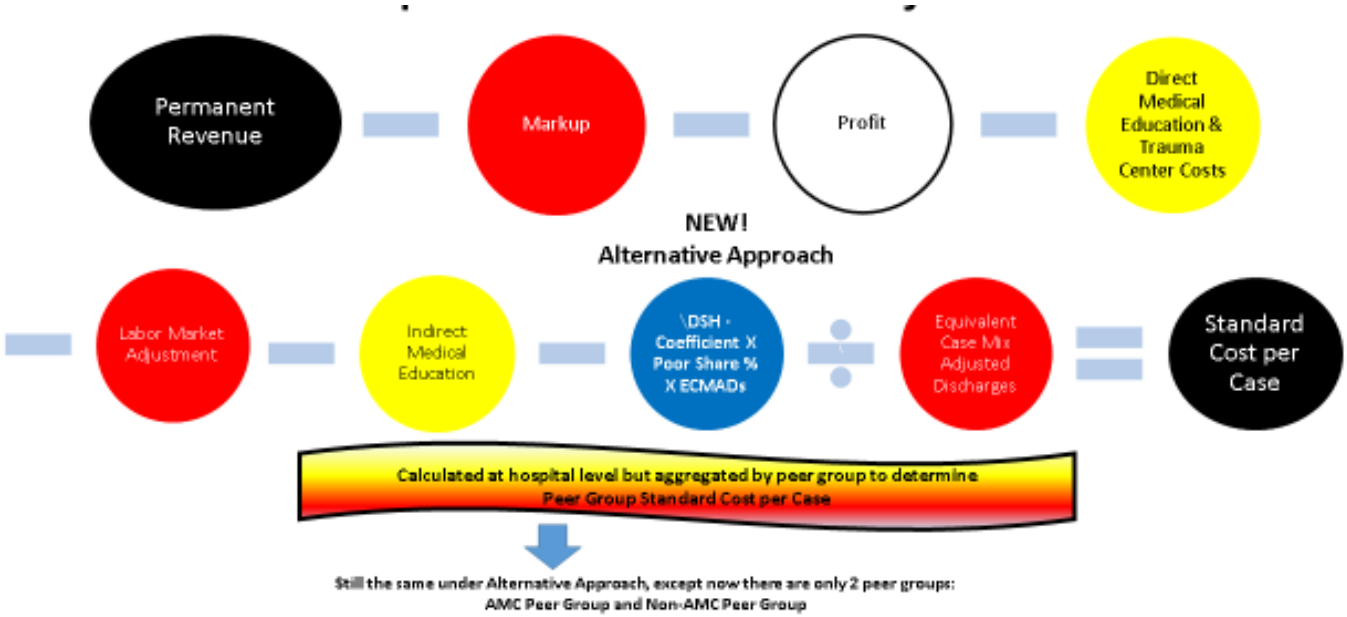
Table 6 DSH Adjustment Based on 3 Year ICC Assessment Poor

	RY18-RY20
Poor Share (DSH Adjustment)	6,314.39***
Metropolitan Indicator	1,103.34**
Constant	9,076.45***
Observations	41
R2	0.51

Note: *p<0.1; **p<0.05; ***p<0.01

After calculating the poor share coefficient of $6,314, staff incorporated it directly into the ICC by multiplying it by a hospital's poor share percentage and its ECMADS when developing the peer group cost per case, which is a statewide peer group, save the academic medical centers, in the alternative approach. For a graphical demonstration of this see table 7 below:

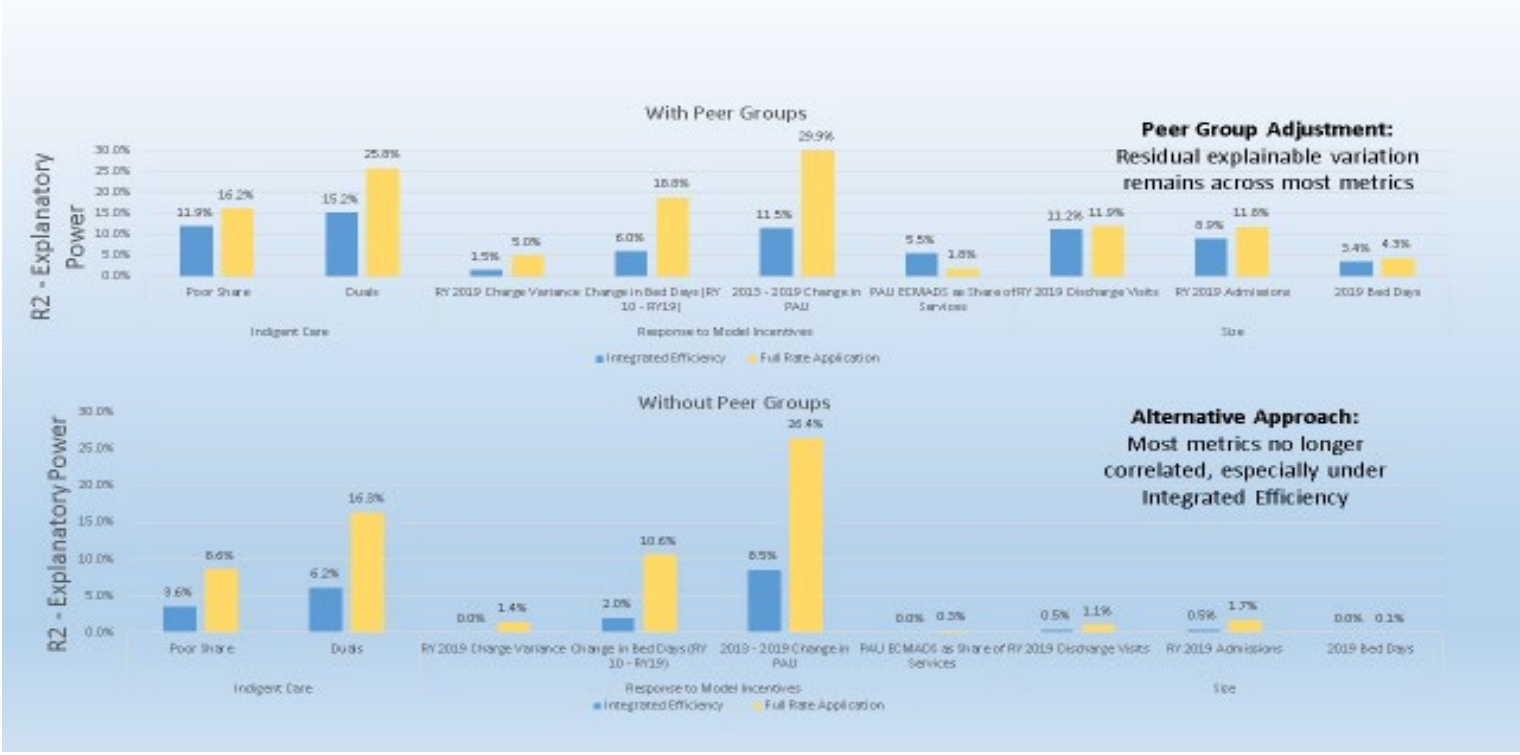
Table 7: Overview of ICC Cost Comparison Calculation Determining Peer Group Cost-per-case with DSH Cost Strip (Stripping Down)



Similar to other cost strips (e.g., labor market, indirect medical education), the DSH adjustment is built back into a hospital's revenue base once the standard cost per case is developed.

Finally, to determine the efficacy of the alternative approach, staff ran final correlations to evaluate if the relationship between indigent care and ICC performance was reduced, ideally to a point where it was no longer statistically significant. In this exercise, staff also evaluated other hospital characteristics that stakeholders expressed concern over, most notably charge variance – the degree to which a hospital must change its charges to align the GBR to current service volume and which serves as a measure of TCOC Model incentives. In all cases, the relationship between indigent care and these other statistics of interest weakened under the alternative approach, and in the ICC used in the Integrated Efficiency Methodology the relationship between indigent care and ICC performance was not statistically significant:

Table 9: Residual Variation As Measured by R^2 with Other Metrics



Due to the sensitivity of the peer group risk adjustment, staff has reflected in the *Efficiency Assessment* section results of the Integrated Efficiency Methodology with peer groups and with the alternative approach. Based on the workgroup process and stakeholder comment letters, staff has put forward in this policy the recommendation to abandon ICC peer groups and adopt a direct regression based risk adjustment for indigent care cost variation that will be applied to all efficiency policies.

Step 3 Productivity and Cost Adjustments

A. Profits

Staff has retained the same adjustment used to remove profits from the ICC costs, which has been used historically. Consistent with the statutory authority of HSCRC, the Commission does not regulate professional physician services. The adjustment removes profits for regulated services and does not incorporate subsidies or losses for professional physician services.

B. Productivity Adjustment

In prior iterations of this policy, staff recommended using an alternative approach to calculate the productivity adjustment. The excess capacity adjustment, which was formulated based on the declines in patient days (including observation cases >23 hours) from 2010 through 2018 in each peer group as well as the change in outpatient surgery days with a length of stay greater than 1 from 2013 to 2017, produced varying levels of required increased productivity for each peer group, which staff believed was a methodological improvement to the historical 2 percent productivity adjustment employed across the board. However, given further review based on the final promulgation of the Major Capital Financing policy that also uses this calculation on a hospital specific basis, staff has determined that the excess capacity calculation should not be used to determine a peer group productivity adjustment due to the 85 percent variable cost factor in place from 2010 to 2014, which made the calculation overestimate the level of productivity expected of each peer group. Thus, staff is recommending returning to the historical 2 percent productivity adjustment. This approach varies from the final approved policy for Full Rate Applications, which temporarily discontinued the use of a productivity adjustment, but because the Integrated Efficiency Policy is a relative ranking methodology and all hospitals incur the same productivity adjustment, the retention of a 2 percent productivity adjustment does not affect results.

Step 4- Building up a Hospital's Permanent Revenue

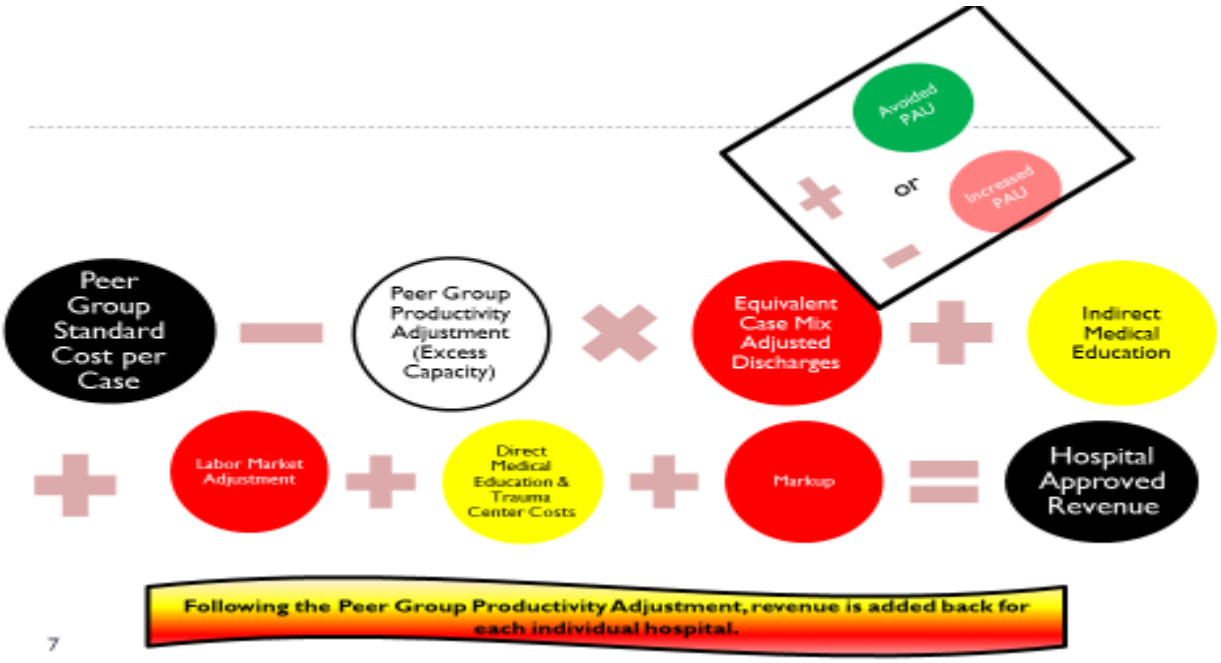
A. Volume Adjustment

In iterations of the ICC that relatively rank hospitals for the purpose of identifying inefficient hospitals, staff proposes to volume adjust the ICC because there exists an inverse correlation of (.53), whereby reductions in potentially avoidable utilization result in worse ICC performance. To correct for this, growth rates for potentially avoidable utilization, as defined by the PAU Shared Savings program,[11] will be assessed from CY 2013 to RY 2019. The inverse of PAU

[11] In the PAU Shared Savings program, there are two volume measurements: readmissions that are specified as 30-day, all-payer, all-cause readmissions at the receiving hospital with exclusions for planned admissions; and hospitalizations for ambulatory-care sensitive conditions as determined by the Agency for Health Care Research and Quality's Prevention Quality Indicators (PQIs).

growth rates, both positive and negative, will be multiplied by a hospital's PAU ECMADS, thereby adding or subtracting volume used in the final calculation of a hospital's ICC approved revenue. That is, if a hospital reduced PAU over the course of the All-Payer Model, the volume will be added to its evaluation, thereby making the hospital appear more efficient in a cost-per-case analysis. Conversely, if a hospital increased PAU, volume will be removed from the ICC evaluation, thereby making the hospital less efficient.

Table 10: Overview of ICC Cost Comparison Calculation Determining Total Revenue (Building Back Up) with Volume Adjustment



This PAU volume adjustment in concert with the alternative approach to ICC peer groups is also what ensures that there is no statistically significant relationship between indigent care and ICC performance, as evidenced by Table 9.

B. Critical Access Hospital (CAH) Adjustment

In recognition of the costs required to provide hospital care in rural areas, HSCRC staff proposes to add an additional risk adjustment for hospitals that would otherwise qualify as critical access hospitals. Based on analyses of hospital size, driving distance to the nearest facility, and low volume with short length of stay, staff has concluded that Chestertown Hospital should be

provided a Critical Access Hospital (CAH) Adjustment, i.e., an adjustment that benchmarks Chestertown Hospital's costs to similar national CAH's.[12] [13]

Following selection of peer hospitals, the CAH adjustment is based on straight average of cost centers from Medicare Cost Reports, excluding cost centers that represent services not provided (e.g., Psych, SNF). Casemix adjusted inpatient and outpatient discharges are then utilized to recognize differences in acuity and to scale the straight average method to the hospital's volume, which effectively weights the comparison. Then to convert the analysis to all-payer, a ratio of non-Medicare casemix index to Medicare casemix index is utilized, all of which will yield a predicted total cost standard based on national CAH benchmarks. Finally, staff adjusted the hospital's approved cost structure at the end of the ICC methodology so as not to affect Maryland peer group cost average, i.e., it functions as a final credit in ICC.

Overview of Medicare Total Cost of Care Calculations

Consistent with the Total Cost of Care (TCOC) Model, the cost used in this evaluation will include all types of medical costs (including both hospital and non-hospital services) with the exception of retail pharmacy.

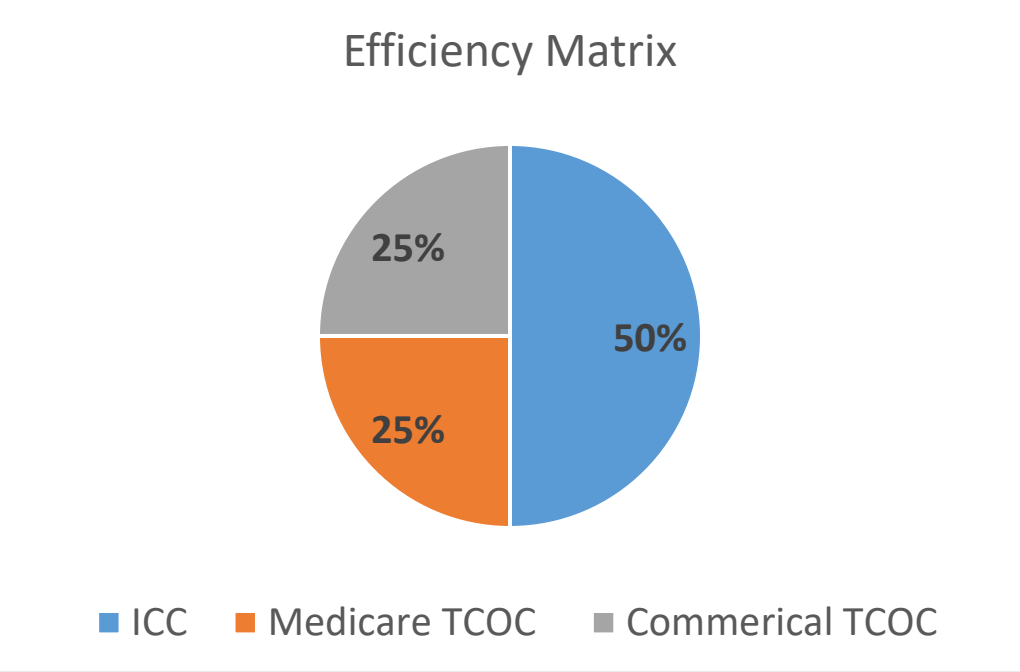
Hospitals' TCOC performance will be ranked by percentage variance from the Medicare benchmark performance (or average of similar demographic national peers), and this same approach will be applied to Commercial performance. The score from this ranking will be added to the ranking from the ICC and will comprise 50% of the evaluation – Medicare and

[12] Qualification for CAH classification nationally requires: a) Having 25 or fewer acute care inpatient beds; b) Being located more than 35 miles from another hospital; c) Maintaining an annual average length of stay of 96 hours or less for acute care patients; and d) Providing 24/7 emergency care services. Sixty-two percent of rural hospitals are paid as Critical Access Hospitals (CAH), comprising 35% of rural hospital payment for Medicare

[13] The criteria used for choosing peer CAH hospitals were as follows: flagged CAH's in national cost report database (~1,300 hospitals); established selection criteria, including: similar size; high quality; not financially distressed;, private, not for profit hospitals; similar wage levels--wage index of .85 or higher; and heavy Medicare mix--Medicare revenue is 30% or higher (24 hospitals); removed hospitals not available in American Hospital Directory data and hospitals that once swing beds were removed were too small for comparison (15 hospitals).

Commercial performance will comprise an even share of the total cost of care evaluation (25% each) as both represent approximately the same share of hospital payments statewide. This statewide weighting approach ensures that total of care is heavily influential to the efficiency analysis and ensures that hospitals with more favorable payer mixes, i.e., more commercial purchasers, are not artificially advantaged.

Table 11: Efficiency Matrix Weighting



Geographic Attribution Approach

For the purpose of this calculation, a hospital's attributed beneficiaries will be determined based on the Primary Service Area-Plus (PSAP) method used for the geographic attribution layer of the Medicare Performance Adjustment attribution approved by the Commission in November 2017. Under this approach, beneficiaries are attributed based on their zip code of residence. Zip codes are attributed to hospitals through three steps:

1. Costs and beneficiaries in zip codes listed as Primary Service Areas (PSAs) in the hospitals' GBR agreements are assigned to the corresponding hospitals. Costs and beneficiaries in zip codes claimed by more than one hospital are allocated according to the hospital's share on equivalent case-mix adjusted discharges (ECMADs) for inpatient

and outpatient discharges among hospitals claiming that zip code. ECMADs are calculated from Medicare FFS claims for the federal fiscal years 2014 and 2015.

2. Zip codes not claimed by any hospital are assigned to the hospital with the plurality of Medicare FFS ECMADs in that zip code, if such zip code does not exceed 30 minutes' drive time from the hospital's PSA. Plurality is identified by the ECMAD of the hospital's inpatient and outpatient discharges during the attribution period.
3. Zip codes still unassigned will be attributed to the nearest hospital based on drive-time.

Medicare and Commercial Benchmark Methodologies

A Medicare and a Commercial benchmark was calculated for each hospital. Each benchmark was developed in a three step process. Step 1 was to identify benchmark groups for each Maryland geography. Step 2 was to translate the geographic benchmarks into hospital-level benchmarks. Step 3 was to complete the cost comparison adjusting for beneficiary risk and demographics.

Detailed methodologies for each payer and additional data files related to the benchmarking process can be found in the Resources section of the Total Cost of Care Workgroup page on the HSCRC's website. The following is an abbreviated overview of these materials.

Step 1: Identify Benchmark Groups for each Maryland Geography

For Medicare benchmarking the geographic unit was a county. Due to limitations of the commercially available national data, the benchmark geographic unit was a Metropolitan Statistical Area. (MSA) However, in Maryland where more granular data is available through the Maryland Health Care Commission's Medical Claims Database (MCDB), Maryland counties were reorganized into a group of MSA-like cohorts such that all Maryland counties were included and no non-MD counties were included (this is not the case with standard MSAs).

Potential comparison geographies for each Maryland geography were narrowed based on population density and size. Various demographic factors were then calculated for every geographic unit within this narrowed selection. The demographic values used were intended to capture the health needs and economic situation of the geography. Factors related to health

system design like physician supply or provider concentration were explicitly excluded to avoid creating results that were biased by the nature of the delivery system.

A benchmark cohort was then developed for each Maryland geographic units (1 for Medicare and 1 for Commercial). The cohort was established based on selecting the 20 or 50 most statistically similar national geographies for each Maryland geography. The cohort includes 20 members for all Commercial areas and for 5 large Maryland counties for Medicare. (Anne Arundel, Baltimore City, Baltimore County, Montgomery County and Prince George's County). 50 member cohorts were used for Medicare for the remaining Maryland counties.

The cohort sizes were selected to balance the relative similarity of the included national geographies against the need for stable results over time. Medicare and Commercial benchmark cohorts are not identical as the same geographic unit was not used, but there is substantial overlap, and the selection metrics were identical except that payer mix was used in the Commercial selection but not in the Medicare selection.

Step 2: Translate Geographic Benchmarks into Hospital benchmarks

As the policy requires measuring performance at a hospital level, it was necessary to develop a hospital specific benchmark. This was done in three steps:

A. Calculate Maryland per capital total cost of care for each Maryland hospital based on its Primary Service Area Plus (PSAP). The PSAP is the service area selected by the hospital in their GBR agreement with any shared zip codes split based on ECMAD share and any unassigned zip codes assigned to a hospital based on travel distance. With these modifications, the PSAP methodology attributes 100% of Maryland's population to a hospital.

B. Calculate the benchmark by blending the relevant geographic benchmarks based on the distribution of the beneficiaries within the hospital's PSAP. For example, a hospital with 60% of its beneficiaries in geographic unit A and 40% in geographic unit B has a benchmark per capita total cost of care equal to 60% A and 40% B.

C. Adjust the Maryland and benchmark values using the adjustments described in Step 3 below to adjust for differences between the Hospital's PSAP demographics and those in the geographic units in its benchmark.

Step 3: Complete the Cost Comparison adjusting for Beneficiary Risk and Demographics

Per capita total cost of care is calculated for each Maryland hospital and its benchmark. For Medicare the paid amounts are used and for Commercial the allowed amount was used. For Medicare, the paid amount was utilized, as that is the amount for which Maryland is accountable under the Total Cost of Care Model. For Commercial, the allowed amount was utilized to remove the impact of varying cost sharing amounts across different commercial populations. The raw amounts are then adjusted as follows:

A. Medical Education costs were stripped from all values. Medical Education was removed so that Maryland hospitals would not be harmed or helped versus their benchmark cohort based on the level of medical education provided.

B. Risk adjustment is applied. Medicare risk adjustment is applied using Medicare Hierarchical Conditioning Categories (HCCs). Commercial risk adjustment is applied using HHS-HCC Platinum Risk Scores. Both these methodologies are publicly available validated risk adjustment methodologies. Age and sex are incorporated in these methodologies and therefore were not separately addressed.

C. (Commercial Only) Benefit adjustment is applied. While the use of allowed amounts removes the cost impact of member cost shares, it does not remove the utilization impact of varying cost shares. Generally, a plan with richer benefits will result in higher utilization. The benefit adjustment is intended to eliminate this impact from the comparison, so Maryland is not harmed or helped because of its commercial health plans having poorer or richer benefits. The adjustment resulted in a scaled index for each MSA reflecting the relative richness of benefits. This value is then used to remove the impact of benefit differential from the per capita total cost of care.

D. Demographic Adjustment was applied. A demographic adjustment was developed to better standardize for demographic factors beyond the control of the health system that impact cost of care. The adjustment was calculated separately for Medicare and Commercial, but in both cases was based on a regression of the risk and benefit adjusted total per capita cost of care against Median Income and Deep Poverty as reported by zip code in census data. The resulting regression coefficients were used to create a predicted value for each county, and the ratio of the actual value to the predicted value was used to adjust the risk and benefit-adjusted per capita total cost of care.

The values calculated can then be used to compare each hospital's per capita total cost of care to their peer average (or other comparison points derived from the benchmark cohort, e.g. 75th percentile) while removing the impact of medical education, beneficiary risk, benefits and demographics from the comparison.

Efficiency Assessment

Withholding Inflation from Outlier Hospitals

In this section, staff provides the results of the Volume Adjusted ICC for RY 2020 permanent revenue as well as results for 2018 Medicare and Commercial Total Cost of Care benchmark performance. Using these three statistics and weighting them respectively as 50%, 25%, and 25%, hospitals are arrayed into quartiles, such that hospitals in the bottom quartile will be considered to be the most costly relative to hospital peers. Based on this analysis, staff ultimately recommends that the remaining hospitals that are in worst quartile of performance, as outlined above should have a portion of their Medicare and Commercial RY 2022 update factor withheld, effective July 1, 2021.

Global Budget Revenue Enhancements

In this section, the best performing quartile for Volume Adjusted ICC and Medicare Total Cost of Care growth from 2013 to 2018 is also listed. Staff removed hospitals that are not better than one standard deviation from average Volume Adjusted ICC performance or 1.05 times the ICC Cost Standard. The remaining hospitals will be considered favorably when submitting requests for GBR enhancements.

ICC Results

As noted above, the difference between the Volume Adjusted ICC evaluated revenue figure, the revenue that was actually inputted into the ICC methodology, and the Volume Adjusted ICC calculated value is a hospital's measure of efficiency relative to the ICC cost standard. Table 12a (with peer groups) and Table 12b (without peer groups) below demonstrate this measure of efficiency as a percentage variance from the ICC standard. The table is ranked in order of most favorable to least favorable. Please note the results in table 12a have changed slightly because: a) staff has updated RY 2020 permanent revenue figures for hospitals that modifications to their rate structure after February of 2020; b) all revenue at Sinai Hospital associated with the Bon Secours transition was removed from the analysis, as this represented a prospective budget

amount with no associated volume – future years will include this revenue minus the agreed upon safe harbors; and c) staff included a critical access hospital adjustment and a pilot safe harbor for rural care transformation at Chestertown Hospital.

Table 12a: RY 2020 Volume Adjusted ICC Efficiency Rankings (Percentage and Dollar)* Inclusive of Historical ICC Peer Groups

	Relative Efficiency to ICC Standard %		Relative Efficiency to ICC Standard %
Garrett County Memorial Hospital	4.14%	Western Maryland Regional Medical Center	-14.31%
Mercy Medical Center	3.06%	St. Agnes Hospital	-15.38%
Atlantic General Hospital	-0.95%	MedStar Franklin Square Hospital Center	-15.68%
Suburban Hospital	-3.56%	Sinai Hospital	-15.74%
MedStar Union Memorial Hospital	-4.16%	Prince Georges Hospital Center	-16.96%
MedStar Harbor Hospital Center	-5.73%	University of Maryland Shore Medical Center at Chestertown	-18.01%
Fort Washington Medical Center	-5.73%	Shady Grove Adventist Hospital	-18.30%
Anne Arundel Medical Center	-5.76%	University of Maryland Shore Medical Center at Dorchester	-18.43%
Howard County General Hospital	-5.87%	Harford Memorial Hospital	-18.78%
Johns Hopkins Bayview Medical Center	-6.12%	MedStar Good Samaritan Hospital	-19.03%
Johns Hopkins Hospital	-6.22%	Doctors Community Hospital	-19.32%
Holy Cross Hospitals	-6.43%	Carroll Hospital Center	-19.73%
Greater Baltimore Medical Center	-7.32%	Washington Adventist Hospital	-19.89%
Peninsula Regional Medical Center	-7.66%	University of Maryland Shore Medical Center at Easton	-21.35%
University of Maryland Baltimore Washington Medical Cente	-8.50%	Northwest Hospital Center	-21.69%
MedStar St. Mary's Hospital	-9.24%	Calvert Memorial Hospital	-22.39%
Meritus Medical Center	-9.35%	MedStar Montgomery Medical Center	-22.51%
University of Maryland Medical Center	-10.74%	University of Maryland Medical Center Midtown Campus	-23.52%
Upper Chesapeake Medical Center	-11.30%	University of Maryland Rehabilitation & Orthopaedic Institute	-24.80%
University of Maryland St. Joseph Medical Center	-11.37%	Union Hospital of Cecil County	-24.87%
Frederick Memorial Hospital	-11.97%	MedStar Southern Maryland Hospital Center	-25.56%
University of Maryland Charles Regional Medical Center	-13.62%		

*Highlighted values represent hospitals that have an ICC calculated value better than one standard deviation of average performance, which would qualify these hospitals for a global budget revenue enhancement.

Table 12b: RY 2020 Volume Adjusted ICC Efficiency Rankings (Percentage and Dollar)* Inclusive of Alternative Peer Groups Approach

	Relative Efficiency to ICC Standard %		Relative Efficiency to ICC Standard %
Garrett County Memorial Hospital	6.76%	Upper Chesapeake Medical Center	-11.57%
Fort Washington Medical Center	2.45%	University of Maryland St. Joseph Medical Center	-12.38%
Atlantic General Hospital	-0.42%	Western Maryland Regional Medical Center	-12.73%
Holy Cross Hospitals	-2.49%	Shady Grove Adventist Hospital	-12.95%
University of Maryland Shore Medical Center at Dorchester	-2.92%	Harford Memorial Hospital	-13.55%
Howard County General Hospital	-3.64%	Frederick Memorial Hospital	-13.83%
Meritus Medical Center	-4.41%	Northwest Hospital Center	-13.99%
MedStar St. Mary's Hospital	-4.89%	Doctors Community Hospital	-14.45%
Peninsula Regional Medical Center	-5.25%	Johns Hopkins Bayview Medical Center	-14.51%
University of Maryland Baltimore Washington Medical Center	-6.16%	MedStar Union Memorial Hospital	-14.99%
Suburban Hospital	-7.36%	University of Maryland Shore Medical Center at Easton	-16.13%
Anne Arundel Medical Center	-7.80%	Union Hospital of Cecil County	-17.65%
Johns Hopkins Hospital	-7.87%	University of Maryland Shore Medical Center at Chestertown	-17.67%
MedStar Harbor Hospital Center	-9.25%	Carroll Hospital Center	-18.33%
St. Agnes Hospital	-9.61%	Prince Georges Hospital Center	-19.24%
University of Maryland Medical Center	-9.70%	MedStar Southern Maryland Hospital Center	-19.51%
Washington Adventist Hospital	-9.71%	Calvert Memorial Hospital	-20.27%
University of Maryland Charles Regional Medical Center	-9.72%	University of Maryland Rehabilitation & Orthopaedic Institute	-20.32%
MedStar Franklin Square Hospital Center	-9.84%	MedStar Montgomery Medical Center	-20.76%
Mercy Medical Center	-10.18%	University of Maryland Medical Center Midtown Campus	-22.31%
Greater Baltimore Medical Center	-10.69%	Sinai Hospital	-23.96%
MedStar Good Samaritan Hospital	-11.00%		

Highlighted values represent hospitals that have an ICC calculated value better than one standard deviation of average performance, which would qualify these hospitals for a global budget revenue enhancement.

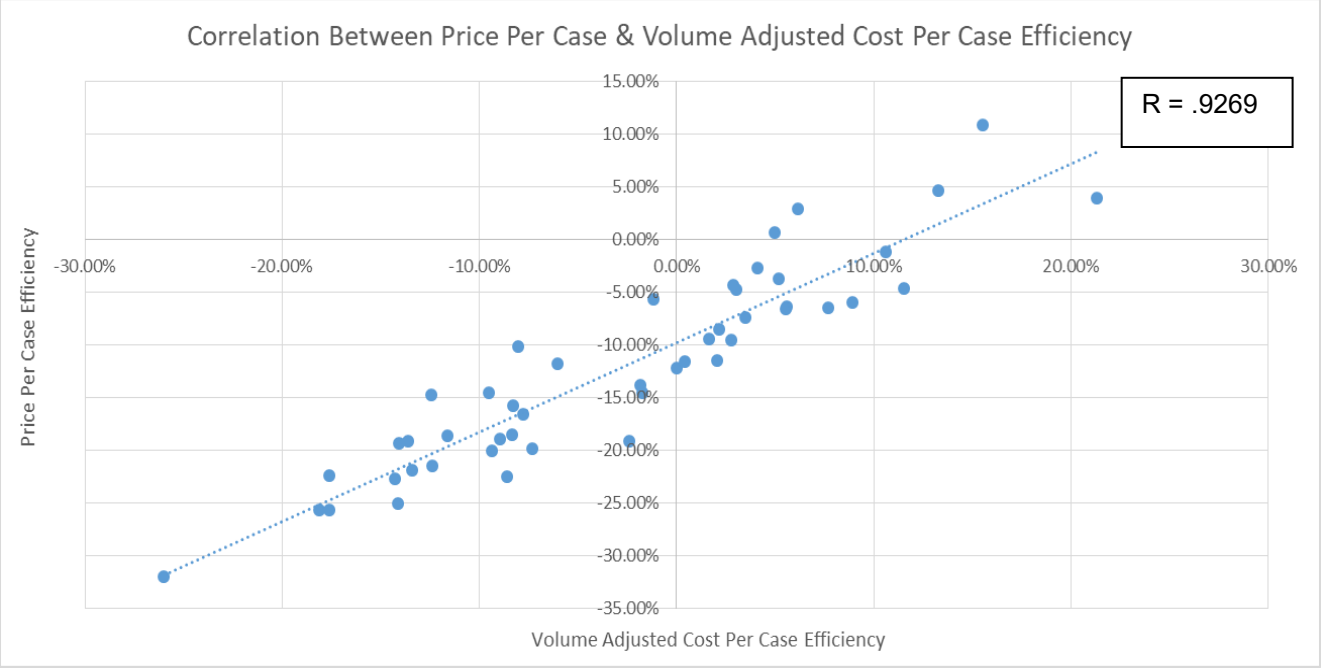
As shown in Table 12a and Table 12b, only two hospitals are deemed more efficient than the ICC cost standard, i.e., have a positive percentage variance, but it is important to note that this is because the ICC standard has become more difficult to attain, since hospital profits have improved under the All-Payer Model and Total Cost of Care Model. It is also important to note that this does not preclude best performing hospitals from qualifying for a GBR enhancement under the Integrated Efficiency Policy, as the standard for qualification based on ICC performance is being better than one standard deviation from average performance – 5 hospitals

meet the one standard deviation ICC rule in the version with peer groups and 7 hospitals meet the standard without peer groups.

While total profit margins are lower because of unregulated losses, most notably physician subsidies, staff has not made adjustments to the profits stripped from hospitals' revenue base to account for these losses. This is consistent with the statutory authority of HSCRC, as the Commission does not regulate professional physician services. Future work outlined in the *Future Policy Considerations* section below does indicate that staff will attempt in subsequent iterations of the ICC to credit unregulated losses that are in line with the incentives of the Total Cost of Care Model, but at this point staff will make no modifications.

Critics of the ICC have noted that not accounting for unregulated losses does not accurately portray the new costs associated with providing care in a population-based per capita model. Staff agrees with this concern but notes that this is why the implementation of the efficiency policy incorporates total cost of care performance and only removes funding from hospitals in the worst quartile. Regardless of any imprecision in the ICC methodology, hospital prices per case grew in the global revenue era as volumes have declined or remained static. This is an expected outcome similar to the rise in per diem payments when length-of-stay initially fell under the DRG system. To ensure that charges do not become unreasonably high, especially given Medicare outpatient coinsurance that is already high due to the all-payer rate setting nature of the system, staff recommends using the combination of cost-per-case analyses and total cost of care. Moreover, staff notes that there is a high degree of correlation between high priced hospitals and high cost hospitals, as determined by the ICC (R=.9269). This suggests that the hospitals identified in the outlier analysis are not just inefficient in costs relative to their peers, but that they are also receiving reimbursement commensurate with their higher costs (see Table 13 below for the correlation analysis).

Table 13: Correlation between Hospital ICC Cost Efficiency and ICC Price Efficiency



TCOC Results

Using the geographic attribution described in the *Efficiency: Overview of Total Cost of Care Calculations* section, staff has determined that 7 hospitals perform better than their national geographic peers in Medicare total cost of care; 10 hospitals perform worse than national peers but better than average statewide performance relative to national benchmarks (11.5% statewide unweighted); and 26 hospitals perform worse than average statewide performance relative to national benchmarks. As one would expect due to the all-payer rate setting nature of the Maryland system, the results are quite different relative to national peers for commercial, as 40 hospitals perform better than national benchmarks, but quite interestingly the results on the two total cost of care metrics are correlated but not strongly (R = .5165). Table 14 below shows hospital total cost of care performance relative to national benchmarks, both in terms of percentage variance and statewide ranking based on percentage variance.

Table 14: Hospital Attributed Total Cost of Care Growth Performance

Hospital Name*	2018 Medicare TCOC Relative to Benchmark	2018 Medicare TCOC Rank	2018 Commercial TCOC Relative to Benchmark	2017 Commercial TCOC Rank
Suburban Hospital	-10.14%	1	-36.06%	1
MedStar Southern Maryland Hospital Center	-6.70%	2	-28.54%	7
Doctors Community Hospital	-4.86%	3	-31.06%	6
Fort Washington Medical Center	-3.80%	4	-21.35%	23
Howard County General Hospital	-2.22%	5	-32.32%	3
Shady Grove Adventist Hospital	-2.05%	6	-31.64%	4
Anne Arundel Medical Center	-1.33%	7	-31.15%	5
Washington Adventist Hospital	2.03%	8	-26.22%	11
MedStar Montgomery Medical Center	2.69%	9	-32.46%	2
Calvert Memorial Hospital	2.86%	10	-26.77%	9
Holy Cross Hospitals	2.89%	11	-28.02%	8
MedStar St. Mary's Hospital	5.28%	12	-13.24%	37
Prince Georges Hospital Center	5.39%	13	-22.23%	20
University of Maryland Charles Regional Medical Center	6.02%	14	-21.83%	22
Garrett County Memorial Hospital	7.79%	15	3.01%	43
University of Maryland Baltimore Washington Medical Center	10.19%	16	-24.27%	15
Frederick Memorial Hospital	10.22%	17	-25.04%	14
University of Maryland Shore Medical Center at Dorchester	11.60%	18	-23.21%	17
University of Maryland Shore Medical Center at Easton	11.60%	18	-12.07%	38
University of Maryland Shore Medical Center at Chestertown	13.29%	20	-12.02%	40
MedStar Union Memorial Hospital	13.87%	21	-13.68%	36
St. Agnes Hospital	14.13%	22	-23.55%	16
Greater Baltimore Medical Center	14.37%	23	-20.28%	26
Johns Hopkins Hospital	14.42%	24	-20.79%	25
Meritus Medical Center	14.45%	25	-16.75%	32
Union Hospital of Cecil County	15.43%	26	-3.56%	42
Carroll Hospital Center	15.88%	27	-21.25%	24
University of Maryland St. Joseph Medical Center	16.58%	28	-18.03%	29
University of Maryland Rehabilitation & Orthopaedic Institute	16.60%	29	-26.77%	9
University of Maryland Medical Center	16.60%	29	-25.70%	12

Johns Hopkins Bayview Medical Center	17.46%	31	-17.82%	30
Mercy Medical Center	17.56%	32	-19.96%	27
University of Maryland Medical Center Midtown Campus	19.01%	33	-23.21%	17
MedStar Franklin Square Hospital Center	19.24%	34	-16.15%	34
Upper Chesapeake Medical Center	19.30%	35	-22.89%	19
MedStar Good Samaritan Hospital	20.32%	36	-9.88%	41
Sinai Hospital	20.99%	37	-14.56%	35
Peninsula Regional Medical Center	21.47%	38	-21.99%	21
Harford Memorial Hospital	21.74%	39	-18.97%	28
Northwest Hospital Center	23.86%	40	-16.30%	33
Western Maryland Regional Medical Center	24.36%	41	-12.05%	39
MedStar Harbor Hospital Center	27.59%	42	-25.13%	13
Atlantic General Hospital	29.41%	43	-17.29%	31

*Dorchester Hospital receives the same TCOC performance as Easton; UMROI receives the same TCOC performance as Midtown Hospital.

Implementation of Efficiency Results

Withholding Inflation from Outlier Hospitals

Staff recognizes that any combination of cost-per-case and total cost of care tools does not precisely identify a hospital's efficiency rank order, especially near the median of performance, and staff believes that implementation of an efficiency policy should align with historical HSCRC policies to focus on the tail ends of the distribution. Moreover, a central limitation in these analyses is that the total cost of care tools are Medicare and Commercial only.

Therefore, staff recommends weighting equally the two rankings from the Volume Adjusted ICC and geographic total cost of care benchmark performance to array hospitals into quartiles, such that hospitals in the bottom quartile will be considered the least efficient and hospitals in the top quartile will be considered the most efficient relative to hospital peers. Finally, staff recommends that the remaining hospitals, deemed inefficient as outlined above, should have the Medicare and Commercial portion of their annual update factor withheld on a sliding scale to recognize gradations in performance.

In reviewing the array of hospitals according to a 50/50 ranking of Volume Adjusted ICC and geographic total cost of care benchmark performance ranking, staff identified eleven hospitals

when using an ICC that maintained historical peer groups and ten hospitals when using staff's proposed alternative approach to adjusting for indigent care that would be subject to an inflation factor reduction[14] See Table 15a and 15b for results:[15]

Table 15a: Inefficient Hospitals as Determined by ICC & Geographic TCOC Rankings (inclusive of existing peer groups) – Efficiency Matrix

Hospital Name	Volume Adjusted ICC Result	ICC Rank (50%)	2018 Medicare TCOC Relative to Benchmark	2018 Medicare TCOC Rank (25%)	2018 Commercial TCOC Relative to Benchmark	2017 Commercial TCOC Rank (25%)	Total Rank Points (Low Score is Better)
MedStar Franklin Square Hospital Center	**-15.68%**	25	19.24%	34	-16.15%	34	59
Carroll Hospital Center	**-19.73%**	34	15.88%	27	-21.25%	24	60
University of Maryland Rehabilitation & Orthopedic Institute	**-24.80%**	41	16.60%	29	-26.77%	9	60
Sinai Hospital	**-15.74%**	26	20.99%	37	-14.56%	35	62
Western Maryland Regional Medical Center	**-14.31%**	23	24.36%	41	-12.05%	39	63
University of Maryland Shore Medical Center at Easton	**-21.35%**	36	11.60%	18	-12.07%	38	64
Harford Memorial Hospital	**-18.78%**	31	21.74%	39	-18.97%	28	65
University of Maryland Medical Center Midtown Campus	**-23.52%**	40	19.01%	33	-23.21%	17	65
MedStar Good Samaritan Hospital	**-19.03%**	32	20.32%	36	-9.88%	41	71
Northwest Hospital Center	**-21.69%**	37	23.86%	40	-16.30%	33	74
Union Hospital of Cecil County	**-24.87%**	42	15.43%	26	-3.56%	42	75

[14] As is always the case, a hospital has a legal opportunity to contest a rate order through the Full Rate Review process, pursuant to Health-General Article §19-222 and COMAR 10.37.10.03 et seq.

[15] For the complete array of hospitals based on ICC ranking and TCOC ranking, see Appendix 5

Table 15b: Inefficient Hospitals as Determined by ICC & Geographic TCOC Rankings (inclusive of alternative approach for indigent care) – Efficiency Matrix

Hospital Name	Volume Adjusted ICC Result	ICC Rank (50%)	2018 Medicare TCOC Relative to Benchmark	2018 Medicare TCOC Rank (25%)	2018 Commercial TCOC Relative to Benchmark	2017 Commercial TCOC Rank (25%)	Total Rank Points (Low Score is Better)
University of Maryland Shore Medical Center at Easton	-16.13%	33	11.60%	18	-12.07%	38	61
Johns Hopkins Bayview Medical Center	-14.51%	31	17.46%	31	-17.82%	30	62
Carroll Hospital Center	-18.33%	36	15.88%	27	-21.25%	24	62
Western Maryland Regional Medical Center	-12.73%	25	24.36%	41	-12.05%	39	65
University of Maryland Shore Medical Center at Chestertown	-17.67%	35	13.29%	20	-12.02%	40	65
Northwest Hospital Center	-13.99%	29	23.86%	40	-16.30%	33	66
University of Maryland Medical Center Midtown Campus	-22.31%	42	19.01%	33	-23.21%	17	67
Union Hospital of Cecil County	-17.65%	34	15.43%	26	-3.56%	42	68
Sinai Hospital	-23.96%	43	20.99%	37	-14.56%	35	79

Of these hospitals, one was removed from consideration because it already had a preexisting arrangement with the HSCRC to address its cost inefficiencies: University of Maryland Medical Center Midtown Campus. Also of note, seven of the eleven hospitals in Table 15a are deemed inefficient in Table 15b, suggesting rather strong alignment in the results. In fact, the correlation across all quartiles between both ICC assessments (without and without peer groups) is .70 and stronger still when the efficiency matrix scores inclusive of TCOC assessments are considered (R=.83).

For the remaining hospitals in Tables 15a and 15b, staff calculated a withholding from the RY 2022 Update Factor on a sliding scale basis. The withholding is calculated by multiplying the

inflationary factor of 2.15 percent [16] by the statewide share of hospital's revenue attributable to Medicare fee for service and commercial (73 percent) and then prorated by a hospital's point distance from the 3rd quartile. Under the peer group approach this would remove $16.6 million in inflation funding; the withhold increases slightly to $17.8 million under the alternative approach to adjusting for indigent care in lieu of peer groups.

Staff has included in the tables below a comparison between the new proposed scaling and the old scaling logic that removed the entire update factor for all hospitals in the worst quartile and worse than one standard deviation in the ICC..

Table 16a: RY 2022 Update Factor Withhold for Inefficient Hospitals inclusive of existing Peer Groups – Total Potential Withhold of 1.57% (2.15% Update Factor X 73% of Revenue Attributable to Medicare and Commercial Payer Mix)

Worst Quartile Hospitals	Total Points (Efficiency Matrix)	Prior Scaling Policy (No Sliding Scale & One Standard Deviation Rule)	Prior Policy % Withhold	Prior Policy Withhold as % of RY 2019 Margin	New Scaling Policy (Scaling Entire Worst Quartile with Sliding Scale)	New Policy % Withhold	New Policy Withhold as % of RY 2019 Margin
MedStar Franklin Square Hospital Center	59.0	$0	0%	0%	$497,732	0.09%	1%
Carroll Hospital Center	59.5	$0	0%	0%	$310,150	0.13%	1%
UMROI	60.0	$2,006,985	1.57%	57%	$222,998	0.17%	6%
Sinai Hospital	62.0	$0	0%	0%	$2,922,243	0.35%	4%
Western Maryland Regional Medical Center	63.0	$0	0%	0%	$1,476,407	0.44%	4%
Easton Hospital	64.0	$3,578,271	1.57%	8%	$1,192,757	0.52%	3%
Harford Memorial Hospital	64.5	$0	0%	0%	$615,294	0.57%	8%
Midtown Hospital	65.0	$0	0%	0%	$0	0.00%	0%
MedStar Good Samaritan Hospital	70.5	$0	0%	0%	$2,966,528	1.09%	60%
Northwest Hospital Center	73.5	$4,303,359	1.57%	11%	$3,705,670	1.36%	9%

[16] Current calculations for RY 2022 Update Factor indicate that general inflation for hospitals will be 2.14% and the Demographic Adjustment will be 0.01%.

Union Hospital of Cecil County	76.0	$2,652,373	1.57%	19%	$2,652,373	1.57%	19%
Total		**$12,540,988**			**$16,562,152**		

Table 16b: RY 2022 Update Factor Withhold for Inefficient Hospitals with Alternative Approach to Peer Groups – Total Potential Withhold of 1.57% (2.15% Update Factor X 73% of Revenue Attributable to Medicare and Commercial Payer Mix)

Worst Quartile Hospitals	Total Points (Efficiency Matrix)	Prior Scaling Policy (No Sliding Scale & One Standard Deviation Rule)	Prior Policy % Withhold	Prior Policy Withhold as % of RY 2019 Margin	New Scaling Policy (Scaling Entire Worst Quartile with Sliding Scale)	New Policy % Withhold	New Policy Withhold as % of RY 2019 Margin
University of Maryland Shore Medical Center at Easton	61.0	$0	0%	0%	$96,710	0.04%	0%
Johns Hopkins Bayview Medical Center	61.5	$0	0%	0%	$599,941	0.09%	14%
Carroll Hospital Center	61.5	$3,721,798	1.57%	17%	$201,178	0.09%	1%
Western Maryland Regional Medical Center	65.0	$0	0%	0%	$1,292,854	0.38%	4%
University of Maryland Shore Medical Center at Chestertown	65.0	$0	0%	0%	$195,309	0.38%	16%
Northwest Hospital Center	65.5	$0	0%	0%	$1,163,070	0.43%	3%
University of Maryland Medical Center Midtown Campus	67.0	$0	0%	0%	$0	0.00%	0%
Union Hospital of Cecil County	68.0	$0	0%	0%	$1,075,286	0.64%	8%
Sinai Hospital	79.0	$13,150,094	1.57%	16%	$13,150,094	1.57%	16%
Total		**$16,871,893**			**$17,774,443**		

Global Budget Revenue Enhancements

As noted above, this recommendation also outlines the process by which hospitals will be evaluated when GBR enhancement requests are submitted to HSCRC staff. Specifically, for a hospital to receive a GBR enhancement, it must be in the best quartile of performance as evaluated in the Efficiency Matrix; it must be better than one standard deviation from average Volume Adjusted ICC performance (1.05 times the ICC standard); and it must submit a formal request to HSCRC staff that outlines either: a) how a previous methodology disadvantaged the hospital; or b) a spending proposal that aligns with the aims of the Total Cost of Care Model.

Because this recommendation still requires hospitals to submit a formal proposal to successfully receive a GBR enhancement, staff will not outline the exact amounts a hospital may receive under such a policy. However, in Tables 17a and 17b below, staff does identify the hospitals that currently would be eligible for a GBR enhancement:

Table 17a: Hospitals Eligible for a GBR Enhancement in RY 2021 (with existing ICC peer groups)

Hospital Name	Volume Adjusted ICC Result	ICC Rank (50%)	2018 Medicare TCOC Relative to Benchmark	2018 Medicare TCOC Rank (25%)	2018 Commercial TCOC Relative to Benchmark	2017 Commercial TCOC Rank (25%)	Total Rank Points (Low Score is Better)
Suburban Hospital	-3.56%	4	-10.14%	1	-36.06%	1	5
Garrett County Memorial Hospital	4.14%	1	7.79%	15	3.01%	43	30
Mercy Medical Center	3.06%	2	17.56%	32	-19.96%	27	32
MedStar Union Memorial Hospital	-4.16%	5	13.87%	21	-13.68%	36	34

Table 17b: Hospitals Eligible for a GBR Enhancement in RY 2021 (with alternative proposal to adjusting for indigent care)

Hospital Name	Volume Adjusted ICC Result	ICC Rank (50%)	2018 Medicare TCOC Relative to Benchmark	2018 Medicare TCOC Rank (25%)	2018 Commercial TCOC Relative to Benchmark	2017 Commercial TCOC Rank (25%)	Total Rank Points (Low Score is Better)
Howard County General Hospital	-3.64%	6	-2.22%	5	-32.32%	3	10
Holy Cross Hospitals	-2.49%	4	2.89%	11	-28.02%	8	14
Fort Washington Medical Center	2.45%	2	-3.80%	4	-21.35%	23	16
University of Maryland Shore Medical Center at Dorchester	-2.92%	5	11.60%	18	-23.21%	17	23
Garrett County Memorial Hospital	6.76%	1	7.79%	15	3.01%	43	30

Stakeholder Comments and Staff Response

Following the first draft recommendation, staff received comment letters from five stakeholders and several verbal comments from Commissioners.

Maryland Hospital Association	**Luminis Health**
Johns Hopkins Health System	**CareFirst**
University of Maryland Medical System	

Following the second draft recommendation, staff received comment letters from twelve stakeholders.

Maryland Hospital Association	**Luminis Health**
Johns Hopkins Health System	**Greater Baltimore Medical Center**
University of Maryland Medical System	**Ascension Saint Agnes Hospital**
LifeBridge Health System	**Mercy Medical Center**
Medstar Health Inc.	**Tidal Health Peninsula Regional**
Western Maryland Medical Center	**Meritus Health**

The comments from stakeholders and Commissioners can be broadly categorized into 16 areas of concern.

Topics	MHA	JHHS	UMMS	Luminis	LB	GBMC	WMHC	St. Agnes	Mercy	Tidal	MedStar	Meritus	CareFirst	Commissioners
ICC Technical Adjustment (DSH)							✓							
ICC Peer Groups	✓	✓	✓	✓	✓		✓	✓	✓	✓		✓		
ICC Performance Improvement	✓												✓	
Allowed Interns & Residents	✓			✓						✓		✓		
Special Adjustments			✓								✓			
Initial TCOC Benchmarking Concerns	✓	✓	✓	✓			✓			✓	✓	✓		
Price in TCOC Benchmarking			✓	✓										
TCOC Attainment & Improvement		✓	✓	✓										
TCOC Attribution						✓			✓					
Implementation Timeline					✓						✓		✓	✓
Scaling Approach	✓	✓	✓	✓									✓	✓
Weighting of TCOC		✓		✓			✓		✓	✓	✓			
Diminished All-Payer Focus		✓		✓										✓
Revenue Neutrality	✓	✓											✓	✓
Rebasing Global Budget Volumes	✓	✓	✓									✓		
Revenue for Reform	✓		✓								✓	✓	✓	✓

Staff will address each category below:

Topic	WMHC
Modify Poor Share Variable in DSH Adjustment	The current measure [of poor share] is based on the percent of hospital revenue from Medicaid for inpatient and outpatient services for Maryland residents where Medicaid is either the primary or secondary payer. We ask that this measure be expanded to include out-of-state residents as well, given that the population served is still poor with the same general health characteristics as their Maryland counterparts. We would also ask the measure include patients with Medicare as a primary payer but charity as a secondary payer, reflecting the low-income status of these elderly patients who do not currently qualify for Medicaid.

Staff agrees with the first suggested technical adjustment of adding Medicaid out-of-state to the poor share variable that is being proposed as a means to calculate the direct risk adjustment of serving a lower socioeconomic population (in lieu of peer groups). This represents a similar population to the one staff aims to address through the DSH adjustment, which should be agnostic to patient's home residence.

By taking this approach, the DSH coefficient is reduced to $63.14 per case as opposed to the previously calculated value of $69.14 per case. The R^2 (explanatory power of poor share variable in ICC performance) is 50.8% versus 52.08%, and it has a limited impact on results: Correlation (R) = .9980

Staff does not concur with request to include Medicare as primary payer and charity as secondary payer, because this population does not necessarily represent a lower socioeconomic population, as reduced cost care can be provided to patients up to 500% of FPL. Moreover, staff's poor share variable is meant to serve as a proxy for indigent care. It will not capture all populations that are more expensive, hence the regression based approach. Finally, staff would note that CMS has not extended its stratifications/risk adjustments to include Medicare individuals outside of the dual eligible population

Topic	MHA	JHHS	UMMS	Luminis	Lifebridge	WMHC & Tidal	St. Agnes	Mercy	Meritus
ICC Peer Groups	The analysis focused on the cost factors peer groups were originally intended to address, including indigence of the patient population, urbanicity, and hospital teaching status. Although many cost factors and their associated variables were tested, additional elements have been posited to influence ICC performance. The Commission should further evaluate the efficacy of the alternative and peer group approaches by testing factors including, but not limited to, geography, technology, and case mix index.	JHHS would ask that HSCRC staff continue to work with hospitals to better understand these factors and delay the implementation of the peer groups until such analysis can be found.	While the Commission staff have put forward a very thorough and thoughtful proposal, we view this proposal as one possible solution out of many, and we do not yet know if it is the best solution. We therefore propose that a decision to move to a statewide peer group be delayed to allow time to explore alternative peer group options and adjustments.	Luminis believes a prudent approach would be to make the necessary, straightforward changes to the peer groups now (such as moving urban hospitals into the urban group and moving hospitals with newly established teaching programs into the teaching program, and dedicating more time to determining its handling of new teaching programs and vetting the proposed socioeconomic adjustor.	Because of the amount of variability the elimination of peer groups creates, and importance that ensuring a direct disproportionate share adjustment appropriately reflects the associated costs with providing care, we believe it would be prudent for the HSCRC to continue to explore alternatives before adopting no statewide peer groups.	While we understand HSCRC's rationale for the potential elimination of peer groups, any shift away from this historic policy needs to adequately account for socioeconomic factors inherent in measuring the relative efficiency of hospitals. These issues are particularly prevalent in more rural areas of the state that do not have the infrastructure and resources of more urbanized areas.	Eliminating peer groups entirely requires full confidence that direct adjustments to capture such issues as socioeconomic disparity are fully and precisely captured. Saint Agnes commends the work done by HSCRC staff to reintroduce a DSH-like measure as a thoughtful start to the necessary process of appropriately quantifying the impact of socioeconomic disparities on hospital costs.	Mercy's concern is the new regression does not adequately account for the direct and indirect cost of providing services in Baltimore.	Meritus agrees with this analysis and supports the elimination of the traditional peer grouping logic from the efficiency policy. However, we echo the comments of the MHA that further evaluation of additional cost factors and their influence on ICC performance is needed.

Staff agree with the concern expressed in many of the comment letters that a movement away from peer groups should evaluate cost elements that may influence ICC performance.

Staff would note though that the peer groups should chiefly adjust for their stated purpose: indigent care and teaching status. While peer groups accomplish these goals, staff's alternative approach is more effective.

Additional analysis of other cost factors have shown no material, statistically significant relationship between ICC Performance and factors for which hospitals should be held harmless.

Moreover, in nearly all cases the influence cost factors have on ICC performance was reduced by the introduction of the alternative approach of abandoning peer groups and directly risk adjusting for indigent care. For these reasons, staff recommends adopting the direct risk adjustment approach for indigent care.

Staff does not recommend waiting to make the transition until the "best solution" is developed, as it is not clear if one exists and all analyses indicate the alternative approach is methodologically superior to peer groups. Staff likewise disagree with idea of just transitioning hospitals from one peer group to another within the existing peer group framework, because a) it is not clearly evident what hospitals should transition, especially for the urban peer group, and b) these new peer group assignments will not effectively reduce risk adjust for indigent care with the same precision as a direct risk adjustment.

Topic	MHA	JHHS	CareFirst
ICC Performance Improvement	A guiding principle of the policy is HSCRC's statutory mandate to ensure hospital costs are reasonable and charges are reasonably related to costs. Under the Inter-hospital Cost Comparison (ICC) methodology, hospitals cannot make management decisions that will affect the policy outcome because revenues and adjustment factors are fixed. Under the "Revenue for Reform" proposal, hospitals could quantify, and possibly boost, resources they invest to transform care. The hospital field understands the statutory requirement. HSCRC might further opine on what hospitals can achieve to improve policy results.	JHHS believes that HSCRC staff should include clear policy goals and objectives for the efficiency policy. We believe for an efficiency policy to be effective, hospitals need to understand what actions a hospital can take in order to improve their positions in the rankings.	In the past, similar threshold policies [worst quartile and an outlier on price] created a "stuck hospital" phenomenon where there was little opportunity for hospitals to get to the next level. As part of an ongoing evaluation, Staff should consider whether this phenomenon is occurring under the new policy.

Staff agrees with stakeholder's concern regarding performance improvement, as any good policy must create clear incentives, and staff likewise appreciates MHA's acknowledgement that the Commission must still adhere to its statutory mandate to ensure hospital costs are reasonable and charges are reasonably related to costs. Staff would note there are several ways hospitals in a

fixed revenue environment can improve in the ICC while not compromising TCOC performance, including:

- Reducing Potentially Avoidable Utilization, which receives direct credit in the ICC
- Providing medically necessary care, often more acute in nature
- Repatriating volume lost to non-Maryland facilities
- Demonstrating performance as a center of excellence, which allows the exporting of Maryland hospital services to non-Maryland residents
- Reducing cost per case, which admittedly is partially offset by the ICC profit strip
- Repurposing retained revenue to care transformation initiatives, which admittedly is not yet eligible for credit in the ICC, i.e. Revenue for Reform
- The redistributive nature of the policy will also improve hospital's performance

Staff will continue to assess the degree to which hospitals are "stuck" under this policy and will modify the policy in the future if it continues to ensnare hospitals in perpetual inflation reductions that cannot be avoided by performance improvement in the ICC or TCOC.

Topic	MHA	Luminis	Tidal	Meritus
ICC Allowed Interns & Residents	Adjustments to hospital revenue for medical education costs are based on the number of interns and residents as of 2011. Since then, hospitals began new residency programs. HSCRC should periodically assess adjustments for medical education based on program changes.	The current measure of relative hospital cost efficiency, the ICC, does not account for the costs associated with newly established graduate medical education programs. This is particularly impactful at Anne Arundel Medical Center, where our program, with 48 residents for FY 22 and growing to 76 residents by FY 24 is unaccounted for in the calculation. This program carries a significant cost, with direct medical education (DME) and indirect medical education (IME) costs estimated to be $225,000 per resident. While we recognize that HSCRC staff has stated that it is evaluating its handling of new programs, an ICC that does not account for the DME and IME costs related to this program is not a comprehensive picture of AAMC's relative cost-efficiency position.	The current policy also does not adequately reflect the reality of teaching programs within the state and is inconsistent with CMS reimbursement policies or these programs. The current policy limits the number of residents to the amount included in the FY 2011 Efficiency Methodology and does not reflect residents associated with new programs. This has the effect of reducing the ability of hospitals to increase residency placements and expand teaching programs.	Investments by hospitals in establishing new teaching programs are effective in addressing identified physician shortages, improving access to care, and ultimately improving the health of the people of Maryland. We ask Commission staff to consider providing ICC adjustments to account for the costs of residency programs established since 2011 that are linked to addressing issues with access to care and physician shortages.

Staff agrees that the current cost associated with the residency program at AAMC is significant and that the current policy of not funding new residency programs in accordance with CMS' graduate medical education policy is inconsistent with CMS' reimbursement policies. However, staff would note that there is significant supply of physicians and funded residency slots relative to the rest of the nation. Moreover, retention of trained residents is low (~30%) and not all Maryland residency programs currently in existence receive IME and DME credit for each resident, e.g. 318 of UMMC's 843 residents are not recognized in the ICC.

Staff also notes that not all CMS reimbursement methodologies and their associated outcomes are desirable: a) Resident counts have been frozen since 1996 and only altered by various redistribution schemes - RY 2022 proposed IPPS rule does indicate 1,000 new slots will be added at 200 per year in RY 2023 b) "As an "entitlement" system… a community with no GME can build a very large multihospital GME system with a high cap fully funded by Medicare. The specialty mix of that system may have nothing to do with state/local needs for physicians. This is happening particularly in urban communities with new medical schools" – American Academy of Family Physicians

Finally, staff would note that it has completed a supply and demand analysis with its contractor Mathematica Policy Research and does plan to convene a workgroup in the Summer to develop an allowed residents policy that takes into account physician supply by region and specialty.

Topic	Medstar
Revenue for Reform Pilot	Given the importance of care management to the success of the Maryland GBR model, we support the "Revenue for Reform" Concept that would allow hospitals to retain funding to reinvest in approved reform efforts. To ensure transparency and equity, we recommend developing this policy before approving revenue for reform special adjustments.
Critical Access Hospital Adjustment	If the HSCRC removes peer groups, we would recommend not making any new special designations or adjustments until a formal process and policy is developed and approved that would evaluate other categories of cost that may be unique in certain types of providers

Staff agrees that all adjustments, specific to one hospital or broadly applied, should be evaluated in consultation with workgroups and then made available to all hospitals that meet the criteria for that adjustment.

Staff would note specific to the critical access hospital adjustment provided to Chestertown Hospital that the Maryland State Legislature authorized a report by the Maryland Health Care Commission and its contractor NORC that concluded that Chestertown is a unique rural healthcare delivery system in an otherwise urbanized state and that "rural hospitals require solutions that are tailored to community needs and built around sustainable services." Staff would further note that this critical access designation was discussed in 2 workgroup meetings and outlined in a public meeting for Commissioner consideration.

In terms of Revenue for Reform, Commissioners requested of staff during the November 2020 Commission meeting a pilot of the Revenue for Reform program, which staff extended to Chestertown, since the rural healthcare delivery reforms, including mobile integrated homes and the proposed Aging and Wellness Center, were outlined in the NORC Report.

Topic	MHA	JHHS	UMMS	WMHC & Tidal	MedStar	Luminis	Meritus
Appropriate Vetting of TCOC Benchmarks	Since March 2020, hospitals re-allocated resources and staff to respond to the COVID-19 pandemic. When the methodology was introduced in August 2020, key hospital stakeholders were unable to review and thoroughly vet the methodology. Acknowledging the burden on hospitals, Commissioners extended the vetting period until six months after the surge recedes. Unfortunately, hospitals were still responding to surge events as recently as the last half of April.	The benchmarking methodology needs further evaluation by the hospital industry and Commissioners, including the longer-term cost savings target proposed by staff.	We support MHA's proposal to vet the TCOC benchmarking methodology further. As stated in their letter, the ongoing COVID pandemic has continued to require a re-allocation of resources to support hospital operations and has resulted in few resources to evaluate changes in HSCRC methodologies. The on-going public health emergency has not allowed hospitals adequate time and resources to evaluate and understand such a complex analysis and feel that more time to vet the methodology is warranted		The Medicare and Commercial Total Cost of Care Benchmarking is a significant new measure that will most likely require adjustment over time as HSCRC and the hospitals continue to review and understand the results. Historically, when new measures of significance were introduced, the Commission often implemented a phased-in approach. We recommend increasing the weighting of this measure in stages over the next several years (i.e. 25% in FY22, 50% in FY23) given both the newness of the measure and to ensure that it aligns with the model and other policies.	The open and transparent workgroup process has eroded over time as much of the detail for developing and applying methodologies is not publicly documented and requires persistent discussion with the staff to obtain the details of relevant calculations when a hospital wishes to replicate the work	Meritus agrees with the Maryland Hospital Association's ("MHA") position that further vetting of the Commercial and Medicare benchmarking methodology is needed prior to the FY2023 policy recommendation.
Winners and Losers in TCOC Benchmarks			Hospitals located in wealthier jurisdictions tend to have better TCOC results while hospitals serving poor rural or urban jurisdictions perform poorly Border hospitals tend to perform better in the Medicare benchmarking due to the number of patients who seek care outside Maryland at lower payment rates	The staff presentation of the integrated efficiency policy notes the desire to redistribute resources within the system from poor performers to excellent performers. But the results of the policy appear to penalize small rural providers and reward hospitals in relatively affluent suburban areas.		This policy has clear winners (Montgomery, Howard, Anne Arundel County) and losers (Baltimore City/County, Eastern Shore, other rural areas). Hospitals that are primarily compared to counties and MSAs on the East or West coast do relatively well, while hospitals compared to those in the rest of the country fare far worse.	

Staff recognized that the release of the final benchmarks was delayed as part of the slowdown due to the COVID crisis. However, the fundamental process has been discussed for almost 2 years and peer groups and preliminary results were released in late 2019. Moreover, peer groups have not changed, and results were similar to those in the final version, which was released August 31, 2020 and included extensive supporting data and documentation.

Staff would also note that due to the delay in Integrated Efficiency policy, per Commissioners' directive, revenue adjustments based on this methodology will be made in July of 2021, giving hospitals sufficient time to understand the payment implications of the benchmarking.

Staff agrees that unintentionally punishing poorer areas is not a desirable outcome. However, the benchmarking methodology includes extensive risk / demographic adjustments. Claiming that the risk / demographic adjustment is insufficient because it results in an unfavorable comparison for some urban or rural hospitals is begging the question. Moreover, this concern is a broad criticism that does not recognize that urban hospitals and small rural hospitals are not monolithic entities with the same performance in the benchmarking analysis, e.g. St. Agnes, Calvert and Easton fare quite well.

Topic	University of Maryland Medical System	Luminis
Price Inclusion in TCOC Benchmarks	The inclusion of price in the benchmark analysis skews results and tends to place urban and suburban areas at a disadvantage. Utilization performance should be considered as an alternative to measuring performance to eliminate some of the price disparity caused by our all-payer model	The benchmark comparison should be limited to utilization variances since price is addressed through the ICC calculation. Measuring only utilization would eliminate priced differences due to the Maryland All Payer model. Limiting price considerations in the benchmarks may also eliminate some of the inequities resulting from the construction of the national peer groups.

Staff do not agree with the Luminis comment that price is addressed through the ICC calculation. While it is true that the ICC measures cost per hospital case and is therefore a good proxy for hospital prices, it does not address pricing variation for total cost of care.

Measuring price in the context of TCOC differentiates between good price inefficiency that lowers TCOC by reinvesting retained revenue in efforts to reduce TCOC and bad price inefficiency, which results from a failure to capture and reinvest costs released by lower volumes. The ICC methodology by itself does not differentiate between the two and risks rewarding the latter behavior.

Assessing just utilization as an efficiency outcome is fraught with issues as well because there is not currently an optimal level of utilization, especially for areas with lower socioeconomic populations.

Topic	University of Maryland Medical System	Johns Hopkins Health System	Luminis
TCOC Attainment and Improvement	TCOC measure should include both attainment and improvement, similar to the approach taken with the quality policies	Only measuring growth or only measuring attainment could disadvantage hospitals with very low TCOC relative to peers or hospitals that have shown reductions to TCOC but have not yet reached a benchmark.	Any benchmarking methodology needs to provide for both an attainment and improvement measure. This is consistent with the approach of other HSCRC programs such as the Readmissions Reduction Incentive Program

Staff remains concerned about the reliability of TCOC improvement statistics to determine relative efficiency for the following reasons:

- Improvement analysis is inappropriate in a relative efficiency analysis that redistributes revenue among hospitals
- Hospitals with smaller attributed TCOC dollars have very unstable growth statistics
- It adds additional complexity that may not differentiate hospitals rank order substantively
- Inclusion of TCOC growth would likely require additional, perhaps arbitrary weighting in the Efficiency Matrix

Staff would also note that penalties are scaled so a poor attainment hospital receives a penalty that is likely minimal versus their attainment shortfall, and as long as the hospital improves, they will have plenty of time to "escape" the penalty before the impact becomes material.

Topic	GBMC	Mercy
TCOC Attribution	GBMC is concerned that the broad nature of the county-based TCOC benchmarking metric, combined with GBMC's relatively low market share in a highly saturated market, means that the metric [TCOC based on PSAP] is neither reflective of GBMC's actual TCOC performance nor within GBMC's control to impact the result.	Mercy strives to reduce overall TCOC, specifically focused on patients seeking services at Mercy. Without a direct link between patients and the TCOC measurement, it is unclear how hospitals in urban settings are able to directly impact TCOC performance.

Staff acknowledge that it will be harder for hospitals in a "highly saturated market" to directly impact TCOC performance in isolation, but staff would note that there is strong correlation between TCOC performance as measured by a geographic attribution and the attribution outlined in the Medicare Performance Adjustment (MPA). Moreover, the MPA attribution is complicated and cannot be adopted for the commercial TCOC evaluation (25 percent of Integrated Efficiency Policy)

Staff would also note that the HSCRC has funded regional partnership grants to incentivize hospitals and other healthcare providers to collaborate on improving population health and TCOC outcomes across broader geographies and that 50 percent of the Integrated Efficiency Policy is ICC performance, which is hospital specific and allows hospitals in saturated markets to differentiate themselves by competing for medically necessary volume. For these reasons, staff does not support the use of an alternative attribution methodology

Topic	WHMC & Tidal
Labor Market Adjustment	Medicare payments are generally adjusted for the wage index to reflect differences in wages across areas. Without adjusting for the wage index, Maryland hospitals with patients in counties compared to low wage markets face a standard where Medicare prices may be as much as 35% below the national average while high wage markets may be 91% more.
Normalization Adjustments	The [demographic] normalization involves an adjustment from a regression model based on two measures: a measure of deep poverty level and the county's median income. The regression model explains only 13% of the variation in TCOC per Medicare fee-for-service beneficiary in the 650 counties used in the benchmark process (based on the model's adjusted R-Squared), but is nonetheless used for the normalization. The second adjustment, however, for median income also increase the comparison benchmark that results in a more favorable comparison for the hospital. Hence, the staff's proposed policy is to provide a more generous assessment of a hospital's relative efficiency because it's patients are in high-income areas. The result is a real redistribution of resources away from hospitals serving poor patients to those in affluent communities.

Staff note that Regional Price Parity, a measure of prices was used in selecting benchmark areas, and the Medicare Wage Indexes have been criticized by Maryland hospitals due to their dependence on reporting, which Maryland hospitals are not focused on.

Staff also disagree with notion that an adjustment for deep poverty and median income necessarily redistributes resources away from hospitals serving poor communities, as an adjustment for deep poverty purposefully attempts to account for the higher than anticipated costs in a lower socioeconomic area. Staff would also note that the likely reason the R^2 for deep poverty is low (but still statistically significant) is because staff first selected peer geographies and then ran a regression to normalize for residual cost variation. If no peer selection was performed, the R^2 would theoretically be much higher.

The adjustment for Median Income, at least to some degree, does what a wage index adjustment would do in favoring areas with higher wages and therefore incomes. Also, there is extensive evidence that higher income areas do experience higher utilization and prices, particularly in the commercial population, and therefore higher benchmarks would be expected.

Finally, a thorough review of the TCOC results does demonstrate that various low income parts of the State (e.g. Easton) are not adversely affected by the benchmarking methodology, but staff will continue to refine the methodology with stakeholders to ensure that it yields fair and reasonable results.

Topic	LifeBridge	MedStar	CareFirst
Implementation Timeline	The volume data used to calculate the ICC comparison is from fiscal year 2019. Understanding the inability to utilize data from fiscal year 2020 given the COVID pandemic, we believe facilities may be experiencing different levels of current volume activity when compared to fiscal year 2019 data, and that the changes in volume may be permanent moving forward as activities return to normal. Waiting for more current data will ultimately produce a more accurate result for any ICC methodology adopted. In the interim, the HSCRC maintains the ability to implement relative efficiency controls through control of volume-based corridors and associated restrictions to revenue	We recognize these recommendations include several material changes in historical methodology, such as removing peer groups, reducing IME credit for non- AMC's, and introducing a Medicare/Commercial TCOC benchmark. These methodological changes have created a significant change in hospital performance against the efficiency metric and may impact performance under other methodologies as well. As HSCRC and the hospitals continue to review and offer improvements to methodology, consideration should be given to phasing-in methodology changes to allow for monitoring and adjustment.	CareFirst noted that an efficiency methodology be implemented as soon as possible to ensure that individual hospital costs do not become unreasonable relative to their competitors.

Staff acknowledges that the proposed Integrated Efficiency policy for RY 2022 does incorporate several new modifications to the underlying methodologies and appreciates all the work industry has done to improve the policy while also heroically responding to the public health emergency. However, staff would note that with the exception of TCOC benchmarks, an alternative to ICC peer groups, special adjustments for Chestertown Hospital, and the alternative scaling approach, which was unanimously supported by stakeholders, these modifications, e.g. an updated indirect medical education risk adjustment, have been reviewed for more than one year and reflected in prior iterations of this policy. Also, all modifications brought forward in the last year have gone through extensive workgroup processes.

Staff would also note that while LifeBridge's comment that relative efficiency has been maintained through control of volume-based corridors is correct, these corridors have, in recent years, been more limited in incentivizing reductions in avoidable utilization because corridors are topping off. Furthermore, without implementing an efficiency policy that withholds inflation, thereby driving less variation in efficiency outcomes, staff would not support rebasing volumes in RY 2022 rate orders to CY 2019 volumes, as requested by numerous stakeholder comment letters.

Finally, staff would point out that while COVID will undoubtedly affect volumes for years to come and may yield a "new normal" that is different by hospital, there has not been an efficiency policy that scales inflation in the GBR era and there has been rather strong correlation in year over year ICC results (RY19-RY20 - R=.9072), suggesting that relative efficiency has been fairly stable as the Commission has not yet addressed divergences in efficiency in our Model(s).

Topic	MHA	JHHS	UMMS	Luminis	CareFirst	Commissioners
Scaling Approach	Removing the one standard deviation ICC threshold reduces the cliff effect observed in the previous approach. However, arraying hospitals into quartiles based on performance will always present some type of cliff effect for hospitals that are closely ranked. Hospitals that repeatedly fall within the worst quartile will have a portion of their inflation permanently removed each year, potentially leading to unintended adverse consequences. The Commission should periodically evaluate this impact, in addition to the sliding scale of withheld inflation.	The modified approach is consistent with other HSCRC measurement policies and helps minimize any "cliff" effects that a policy could cause. Additionally, it provides appropriate incentives by emphasizes TCOC performance and cost per case efficiency in determining a hospitals position and subsequent penalty	The previous proposal was an 'all or nothing' approach whereby hospitals were either penalized by the maximum amount or not at all, which created a cliff effect. The new approach aligns more consistently with the scaling approaches adopted within many other policies, such as the quality programs and MPA. We feel the revised scaling approach put forward by the staff provides the appropriate incentives and equally emphasizes both TCOC performance and cost per case efficiency in determining a hospital's penalty (or reward).	A continuous scaling logic (rather than just addressing outliers) may better address the apparent inequity between rural/urban hospitals, may reduce the extent to which this policy penalizes smaller hospitals that operate on thin margins, and more appropriately penalize hospitals with retained revenue that do not look inefficient largely due to geographic location, while also more aggressively addressing the variation in the system.	The approach of quartiles and one standard deviation on the ICC is called into question given the small size of the revenue withheld from hospitals in this policy. While the ICC distribution does represent a normal distribution, that does not imply that costs below the mean plus one standard deviation are reasonable. Therefore, CareFirst recommends that these thresholds continue to be evaluated over time to ensure that they are truly capturing the outlier hospitals.	Commissioners likewise share CareFirst's concerns that the policy does not remove more revenue and believe hospitals are inappropriately incentivized by the policy to maintain cost per case variation up to one standard deviation from average performance. Moreover, Commissioners expressed concerns about the cliff effect of using a one standard deviation rule and withholding the same revenue percentage among all outlier hospitals despite gradations in performance in the worst quartile.

Given Commissioners' concerns over the cliff effect and the lack of recognition of performance variation in the worst quartile, staff has put forward in the revised recommendation a continuous scaling approach that will withhold revenue for all hospitals in the worst quartile. This was unanimously supported by stakeholder comment letters. Staff will continue to review the appropriateness of this scaling logic in concert with all other methodological reviews required of this policy

Topic	WMHC & Tidal	Mercy	MedStar	JHHS	Luminis
50/50 Weighting of ICC & TCOC	Hospitals on average in Maryland contribute about half of the TCOC for Medicare beneficiaries. The remainder is out of the direct control of the hospital. While the model provides incentives to coordinate across the healthcare spectrum of services other providers are still largely paid on a fee-for-service basis… Hence, the use of 50% of the TCOC benchmarks for determining relative efficiency seems excessive. Hospital revenue is being placed at risk beyond the ability for the hospital to control the performance in the market	At 50%, the policy significantly over weights the share of TCOC relative to individual efficiency, far beyond national programs and commercial payers.	The Medicare and Commercial Total Cost of Care Benchmarking is a significant new measure that will most likely require adjustment over time as HSCRC and the hospitals continue to review and understand the results. Historically, when new measures of significance were introduced, the Commission often implemented a phased-in approach. We recommend increasing the weighting of this measure in stages over the next several years (i.e. 25% in FY22, 50% in FY23) given both the newness of the measure and to ensure that it aligns with the model and other policies.		
50/50 Weighting of Med/CO TCOC				Not considering the significant payor mix differences in Maryland's hospitals could have an unintended consequence of disadvantaging a hospital based on payor mix	Concerned that the policy assumes a 50/50 attainment measurement mix between Medicare and Commercial payers, not taking into account the significant payer mix differences in Maryland's hospitals.

Staff acknowledges various hospital's concern that weighting TCOC as 50% of the Integrated Efficiency policy is significant since hospitals are accountable for TCOC but not directly responsible for it. Staff would note though that emphasizing cost per case efficiency in a TCOC Model could lead to perverse outcomes that undermine the central incentive of the Model to improve the health of the population and reduce potentially avoidable utilization. Staff would

also note that hospitals have far greater influence on Medicare TCOC when associated professional claims are considered (~70 percent vs the frequently cited 55 percent)

Additionally, readjusting the weighting as outlined by Medstar in a phased in approach, i.e. 25 percent TCOC in RY 2022, would have limited effect on the Integrated Efficiency results: Correlation (R) between Efficiency Matrix with 50/50 weighting & 75 percent ICC / 25 percent TCOC = .918; and all but one hospital (WMHC) would remain in the penalty zone.

Finally, staff would be concerned moving beyond 75 percent ICC weighting given the incentives of the TCOC Model. Therefore, staff recommends maintaining the 50/50 weighting of the ICC and TCOC.

In terms of the weighting of Medicare and Commercial TCOC performance at 50 percent each for the 50 percent TCOC component of the policy (i.e. 25 percent for each TCOC assessment), staff notes that this was purposeful. Given the all-payer nature of Maryland hospital rate setting that advantages commercial payers relative to national peers, and disadvantages Medicare, AND the fact that price is not removed from the benchmarks, the 50/50 weighting for all hospitals ensures that no hospital has an advantage due to its unique payor mix in an all-payer state. Specifically, hospitals with larger commercial shares in richer areas are not artificially advantaged.

The potential downside to this approach is if a hospital has a low, unrepresentative share of an individual payer that then comprises 25 percent of the efficiency assessment. However, analysis of CY 2019 Hospital Payer Mix indicates that no hospitals fall below 2 standard deviations in Medicare or Commercial payer shares relative to the statewide average, and a very low coefficient of variation for Medicare (.28) and Commercial (.16) payer mix corroborate the idea that there is limited variation. Thus, staff does not support moving away from the equal weighting of Medicare and commercial TCOC.

Topic	Johns Hopkins Health System	Luminis	Commissioners
Diminished All Payer Focus	The goal of driving Medicare to national benchmarks while preserving Commercial rates that are nearly 25% below the nation is counter to the All Payer Model and reduces the value of the Waiver. Methodologies that would eliminate the difference would preserve the problems of the national Medicare fee-for-service system while constraining hospitals from charging rates to commercial payers in line with the nation.	The benchmarks focus on Medicare and not All Payer targets: The goal of driving Medicare to national benchmarks while preserving Commercial rates that are nearly 25% below the nation is counter to the All Payer Model and eliminates the value of the Waiver. Methodologies that would eliminate the difference would preserve the problems of the Medicare fee-for-service system (inpatient rates barely above breakeven and outpatient rates that do not cover costs) while constraining hospitals from charging rates to commercial payers in line with the nation.	Some Commissioners have noted generally that the all-payer aspect of the Model, which has been a hallmark of the hospital payment system in Maryland for over forty years, must be underscored in all policies.

Staff agrees that the Model and all its supporting methodologies/policies should reflect an all-payer perspective. Staff would note though that comparing hospitals to a TCOC benchmark average and then relatively ranking hospitals based on percentage variation from that benchmark in order to scale inflation does not eliminate the higher governmental reimbursement for hospitals in Maryland.

Future policies that use TCOC benchmark performance as a defined attainment standard will need additional scrutiny to ensure the all-payer tenets of the Model are not compromised. It should also be noted that currently it is not possible to create an all-payer total cost of care assessment due to the dearth of national Medicaid cost data.

Topic	Maryland Hospital Association	Johns Hopkins Health System	CareFirst	Commissioners
Revenue Neutrality	We agree that if revenues are reduced for high-cost hospitals (as HSCRC defines such), the full sum of this reduction should be available to be redistributed within the system. None should be withheld.	JHHS believes that the efficiency policy should be revenue neutral on a statewide basis. If high cost hospital's revenues are reduced, the full sum of this reduction should be available within the system and no portion should be withheld.	Dollars derived from withholding the update factor from poor performing outlier hospitals should be passed along as savings to purchasers of hospital care who have been paying more for those inefficient services.	Various Commissioners have noted that staff should consider using the efficiency assessments and the associated policy to accrue system savings.

Staff still holds that the policy is not the means by which system savings should be generated. Its purpose is to correct maldistribution of global budget revenue in the Model, i.e. to redistribute all revenue removed from inefficient hospitals to efficient hospitals.

Savings have been realized and should continue to be generated through the combination of the GBR incentives and the Annual Update Factor Policy, which on a statewide basis holds hospitals accountable for Medicare total cost of care and hospital affordability, while not upending the central incentive of the Model to reduce avoidable utilization.

Staff remain concerned about purchasers paying more for inefficient services but would note that the current cost sharing concern for purchasers is restricted to Medicare Outpatient coinsurance, as that is the only purchaser with cost sharing arrangements that incurs higher required payments relative to national peers.

Future policy development should focus on alleviating cost sharing concerns by revising reimbursement methodologies that do not upend the central incentive of the Model to reduce avoidable utilization. Staff, therefore, strongly recommend maintaining revenue neutrality in this policy. If Commissioners do not concur with staff's recommendation, staff would ask Commissioners to consider savings generated by this policy in the various total cost of care and affordability tests employed in the Annual Update Factor Policy.

Topic	MHA	JHHS	UMMS	Meritus
Rebasing Global Budget Volumes	MHA asks the HSCRC to set annual unit rates using volumes from the most recent 12-month period preceding the rate order, citing the complexity of measuring monthly rate compliance and adjusting unit rates, as well as the reduced need for maintaining 2013 volumes once the efficiency policy is implemented.	JHHS believes that if the staff recommendation is approved that staff should set annual unit rates using volumes from the most recent 12-month period preceding the rate order. We appreciate the need to hold hospitals accountable to GBR targets, and the efficiency policy will reduce overall GBR revenues for outlier hospitals	UMMS fully supports the Commission's proposal to rebase rate order volumes using FY19 data. GBR rate orders were first established in 2014 volume levels and those volumes have since only been adjusted for targeted policies and only by modest amounts. Continuing to utilize outdated volume levels creates an added level of administrative burden on both the hospitals and Commission staff in order to continually request corridor adjustments. Rate order volume was fixed in the beginning of the new model to ensure significant shifts in volume and pricing could be evaluated, as the Commission did not have another mechanism at the time to monitor such changes. Now that the Commission has an integrated efficiency model, we feel that it is no longer necessary to hold volume constant on hospital rate orders.	Meritus agrees with MHA's position, which is also supported by Commission staff, to re-base hospital volumes to the 2019 period to accurately reflect hospital price per unit in the ICC.

Staff are supportive of rebasing global budget volumes should an efficiency policy be implemented. Stakeholders are right about administrative concerns regarding corridor compliance and rebasing volumes will increase the incentive to reduce avoidable utilization, especially for hospitals that are or are approaching corridor limits. Thus, staff are advancing the following recommendation in the RY 2022 Integrated Efficiency Policy recommendation

If inflation is withheld in RY 2022 Update Factor based on relative efficiency policy, update volumes for RY 2022 rate orders to reflect CY 2019 volumes with 5 percent corridors. This limit may be extended to 10 percent at the discretion of the HSCRC staff if the Hospital presents satisfactory evidence that it would not otherwise be able to achieve its approved total revenue for the Rate Year.

Staff, however, does not support rebasing each year based on the most recent 12 month period, as requested by MHA and JHHS for the following reasons:

- The permanent effects of COVID have not yet been settled and the Commission should consider accruing savings to payers if utilization remains far below historical norms, which an annual rebasing policy will not allow.
- The Integrated Efficiency policy only makes negative adjustments to hospitals in the fourth quartile, i.e. it is not a broad based scaling policy, and so rebasing all hospitals' volumes each year seems inconsistent with the proposed reach of the efficiency policy
- Corridors are the Commission's best analytic to determine deregulation of services, which the Commission must defund in the GBR in order to avoid "double billing," and rebasing each year will make it difficult for staff to use this analytical tool

Delay provides benefits to policy development including: revised scaling approach; future removal of unreliable RY 2020 volume; and additional work on peer group and allowed medical residents in ICC methodology.

Topic	MHA	UMMS	CareFirst	Meritus	Commissioners
Revenue for Reform	HSCRC introduced the Revenue for Reform concept, proposing a safe harbor for care transformation investments and other spending expected to lower avoidable service use. Valuing the proposed interventions to compare among hospitals will require well-vetted criteria. It is imperative that HSCRC staff work with stakeholders	UMMS is committed to continued investments in community-based services through the utilization of safe harbored GBR revenue. The safe harbor revenue provides a pathway for Shore Health to improve cost efficiency, generate retained revenue, and redeploy that revenue to meet community needs without negatively impacting its position on the	The rapid growth in unregulated costs and losses over the course of the past five years is unsustainable and continues to be funded by increased regulated profits. Increased reporting requirements and transparency are critical so that HSCRC Staff can ascertain which unregulated operations are contributing to	Approval of [Revenue for Reform] interventions should not be limited to only inefficient hospitals. Meritus also stresses the need for well-vetted and uniform criteria that will be used in the HSCRC evaluation of proposed intervention. We also would like to express reservations in the HSCRC making value judgements on which hospital population health interventions will qualify for approval or not under the Revenue for Reform proposal. The patient population of a rural sole	Various Commissioners have expressed concerns that the largest source of unregulated losses, physician subsidies, are necessary to operate a hospital, and the current regulatory authority of the HSCRC has prevented the Commission from appropriately accounting for a key component of hospital operations. Other Commissioners have also expressed a desire to quantify what regulated margins are subsidizing, especially with regards to potential

	to implement a sound methodology. Allowing ample time for stakeholder recommendations will culminate in a formal recommendation to the Commission that will stand up in practice.	Integrated Efficiency Metric.	the goals of the model. Hospitals cannot be given credit for the work they are doing in their unregulated operations until the full picture is understood, especially since they are now a major cost driver in the system.	community provider may require drastically different interventions than the patient population of an urban regional hospital in order to maximize improvements in health. Meritus asks Commission staff to be cognizant of this in developing their criteria for approval to insure equity in the policy.	safe harbors in the Revenue for Reform concept. Finally, several Commissioners have urged staff to establish evaluations of appropriate levels of overhead.

Staff remain committed to establishing a reporting and auditing function for quantifying costs intrinsic to a hospital's operations and in line with the TCOC Model (both regulated and unregulated). The degree to which these costs are deemed appropriate and therefore eligible for credit in an efficiency assessment will need to need to be determined with industry input and with directives from Commissioners.

Staff have convened two workgroups to help facilitate the onboarding of Revenue for Reform: one to assess the process of reporting community health initiatives; one to assess how best to include Revenue for Reform safe harbors into the ICC

Staff believes that while establishing methodologies for capturing appropriate levels of overhead is necessary and important, it cannot be done "…until the full picture is understood."

Future Policy Considerations

While staff believes the efficiency methodologies and implementation proposal are sound, staff acknowledges that additional work could further refine the ICC and total cost of care analyses. Staff describes below various work streams to improve the efficiency methodologies.

1) Medium term - Staff will work to include national analyses that were completed for inpatient efficiency evaluations of the State's two major academic medical centers. Staff

plans to complement these analyses by incorporating them into an outpatient-only ICC that will effectively evaluate the State's two academics both on a national level for inpatient services and on a Maryland peer group level for outpatient services. Completion of this task is contingent upon submission from Johns Hopkins Hospital and University of Maryland Medical Center, per the agreement proposed in the Innovation Policy and prior Update Factor recommendations.

2) Medium term – Staff is also engaging an outside contractor to review the adequacy of current physician supply by specialty by region. This analysis will incorporate out year demand projections, inclusive of Maryland's role as a net exporter of medical professionals, and will be used to determine the allowed residents in the ICC analysis.

3) Long term - Staff will continue the work to quantify the investments hospitals are making in unregulated settings that are in line with the incentives of the Total Cost of Care Model, thereby providing a path for hospitals to acquire credit in the ICC evaluation when retained revenues are used to improve health outcomes.

In terms of total cost of care, staff will focus on maintaining the total cost of care analyses and updating them each year with new data. Additionally, staff will explore developing Medicaid benchmark analyses, but it should be noted that data nationally on Medicaid total cost of care is far less robust than Medicare and commercial data.

Short and medium term adjustments to the ICC may have effects on hospitals' current efficiency rankings and whether a hospital is eligible for revenue adjustments in the Integrated Efficiency policy, although it should be noted that prior modernization efforts, such as the overhaul of the casemix methodology, did not substantially alter results. Nevertheless, Commissioners should consider this when determining the implementation date for the Integrated Efficiency policy.

Recommendations

1) Formally adopt policies to
    a. Determine hospitals that are relatively inefficient;
    b. Evaluate Global Budget Revenue enhancement requests using the criteria identified above;
2) Use the Inter-Hospital Cost Comparison, including its supporting methodologies to compare relative cost-per-case for the above evaluations;
    b. Abandon ICC peer groups and adopt a direct regression based risk adjustment for indigent care cost variation that will be applied to all efficiency policies
3) Use Total Cost of Care measures with a geographic attribution to evaluate per capita cost performance for the above evaluations;
4) Withhold the Medicare and Commercial portion of the Annual Update Factor for relatively inefficient hospitals based on criteria described herein
5) Use set aside outlined in the Annual Update Factor and funding secured from withholds from outlier hospitals to fund potential Global Budget Revenue enhancement requests.
6) If inflation is withheld in RY 2022 Update Factor based on relative efficiency policy, update volumes for RY 2022 rate orders to reflect CY 2019 volumes with 5 percent corridors. This limit may be extended to 10 percent at the discretion of the HSCRC staff if the Hospital presents satisfactory evidence that it would not otherwise be able to achieve its approved total revenue for the Rate Year.

Appendix 1: Revised Casemix Methodology Discussion

Fundamental to a sound efficiency methodology is a reliable volume statistic that accounts for acuity and expected cost differences, as not all services require the same level of care and resources. The HSCRC historically has had a reliable inpatient casemix adjusted volume statistic that outputs relative weights to measure the relative cost or resources needed to treat a mix of patients at a given Maryland hospital using specific APR-DRG/severity of illness levels.[17]

The calculation of relative weights used by Maryland hospitals, which in many respects is just creating ratios based on average charges (adjusted for price differences among hospitals), has been the following since the adoption of the APR-DRG Grouper in 2004 for all hospitals:

1) Use the outlier trim methodology to adjust charges for outlier cases so that the maximum charge equals the trim limit.
2) Calculate an average charge per case in each APR-DRG/severity category.
3) Calculate a statewide average charge per case (CPC).
4) Divide the cell average by the statewide average to generate the cell weight.
5) Calculate hospital-specific relative weights as follows:
    a) For each hospital i, calculate the average charge per case-mix adjusted discharge: C(i).
    b) For the state as a whole, calculate the average charge per case-mix adjusted discharge: C.
    c) For each hospital, calculate a standardizing factor: S(i) = C(i) / C.
    d) For each hospital, adjust its charges to the state level by dividing by S(i).
    e) Recalculate the case-mix weights using the standardized charges.

[17] At a summary level, the case-mix index (CMI), which is the average value of the relative weights for the patients at a given hospital, identifies how resource needs vary across groups of patients and hospitals.

f) Go back to step 6a and repeat until the changes in weights are minimal or non-existent.

7) Calculate the average weight per APR-DRG/severity category.

8) Adjust the weights in low volume cells (cells with less than 30 cases) by blending the average weight per APR-DRG/severity category in step 7 with the 3M National Relative Weights.

9) Adjust the weights to be monotonically increasing by severity of illness.

10) Normalize the weights to a statewide CMI of 1.00.

Despite the general consensus that the inpatient casemix methodology is sufficient, the HSCRC historically has had a less reliable outpatient casemix methodology. The first reason for this is because of cycle billed claims where unique hospital billing practices created inconsistent data for determining relative weights across hospitals. Additionally, procedures that can occur in multiple outpatient settings and are different in service intensity[18] were not separated from one another in weight development, thereby creating weights not indicative of the intensity of resources that must be applied in an emergency room versus a clinic..

These concerns mattered less for the first few years of the All-Payer model because the principal use of outpatient weights in HSCRC methodologies was the Market Shift Adjustment, a methodology that evaluates growth. If the inconsistent measurement were present in both the base and performance period for the Market Shift, the issue was of less concern as long as the billing method did not change at a hospital. However, because efficiency methodologies evaluate a single period of time and inter-hospital comparisons, the concerns over inconsistent and unreliable outpatient weights became more pressing once the moratorium on rate reviews was lifted in November of 2017.

[18] In the past, HSCRC applied special weighting differences on the coded severity levels 1 through 5 of an emergency room visits. However, multiple studies have documented coding variations and upcoding in the emergency room. As a result, HSCRC is using the standard method included in the outpatient grouper, which takes into account diagnoses and other coded information to assign emergency room cases to an EAPG. The EAPG grouper assigns medical cases based on diagnosis. In the most recent casemix iteration, HSCRC has separated emergency room and clinic cases to provide higher weights to emergency room cases given the higher resources that must be provided to patients presenting in the emergency room.

The Commission prioritized the need to develop a sufficient outpatient methodology for purposes of evaluating hospital cost efficiency and evaluating ongoing volume changes. Staff worked with industry and additional stakeholders to create a new outpatient weighting approach that utilized a similar methodology to the inpatients weighting system but also did the following:

(1) All claims, including cycle-billed claims (i.e., accounts where patients are billed monthly) were parsed out into visits, which allows accurate and consistent visit weights to be applied to oncology services, clinics, outpatient psychiatry, and physical therapy;

(2) Emergency room and clinic visits were given different weights, with higher weights allotted to emergency room patients, replacing an approach that used the same weight regardless of hospital site of service;

(3) All coded claims lines (i.e., all claims lines with a CPT or HCPCS code) were used to ensure more accurate weight development, replacing an approach where only 45 claim lines were used in weight development and Enhanced Ambulatory Patient Grouping ("EAPG")[19] assignment – possible because of enhanced computing power;

(4) Outpatient services within 5 days of one another that had similar care profiles were repackaged into visit episodes to ensure that all charges associated with an episode of care (e.g., supply charges for surgery) were not weighted independently of one another.

(5) Oncology and infusion drugs were removed from the oncology services portion of the claim, allowing oncology services to be weighted independent of oncology drugs, thereby allowing oncology services to be evaluated through Market Shift and oncology and infusion drugs to continue be evaluated through the CDS-A process.[20]

During the process of assessing the construct validity of new casemix methodology, the HSCRC employed Mathematica Policy Research (MPR). MPR concluded that improvements to the

[19] EAPGs are a 3M product, which results from the assignment of encounters to clinically meaningful outpatient groupings, similar to inpatient DRG groupings.

[20] The CDS-A accounts for usage changes in high cost oncology and infusion drugs, and provides a hospital specific adjustment based on 50 percent of estimated growth. The remainder of drug cost growth is provided through a targeted inflation adjustment. For additional detail on the new casemix methodology, please see Appendix 2.

casemix methodology resulted in better recognition of clinical severity, as evidenced by improved monotonicity and goodness of fit.

Specifically, to evaluate monotonicity, which means services of increasing complexity are assigned weights of increasing magnitude, MPR employed a clinical expert to conduct a review of the 564 EAPGs. The EAPGs were categorized and combined into 25 different clinically compatible service areas such as general medicine, gastroenterology, general surgery, and oncology. Within each service area, the EAPGs were then ranked by level of clinical complexity on a scale of 1 to 5, where 1 is least complex and 5 is most complex. For example, in the category of general medicine, a level one ranking includes vaccine administration and a level 5 ranking includes the treatment of AIDS. The rankings in each service area were then reviewed by another clinical expert to reach consensus. Then using a fixed effects regression, MPR evaluated the weighting difference from level 5 to level 1. Table A below demonstrates that for each level the weight is significantly higher than the weight in the level below:[21]

Table A. Regression results for association between procedure groups and severity levels of ECMADs on EAPG weight (all ECMADs)

EAPG Weight	Number of EAPGs	Coefficient	Std Err	t	Difference	T of difference
Level 5 (omitted)	79	-	-	-	-	-
Level 4	110	-0.435*	0.133	3.27	-0.435*	3.27
Level 3	149	-0.936*	0.127	7.36	-0.501*	4.09
Level 2	179	-1.506*	0.125	12.02	-0.570*	4.66
Level 1	189	-1.873*	0.123	15.20	-0.367*	3.28

EAPG = enhanced ambulatory patient grouping; ECMAD = equivalent casemix adjusted discharge; Std Err = standard error; T = T-statistic

* Significantly different than 0, p<.05

Finally, to evaluate goodness of fit or the predictive accuracy of the outpatient weights, MPR evaluated Winsorized charges, i.e., removing charges below the 5th percentile and above the 95th

[21] MPR also estimated the proportion of EAPGs with weights within the range predicted by their severity level (1-5). The weight falls in the correct range when the ECMAD for a given EAPG is within the bounds of the predicted severity level. They found that 45.5 percent of EAPG high type combinations were within those bounds. They found that 70.7 percent were within the ECMAD range including EAPGs one level lower and one level higher.

percentile, and determined that the R2 was .726, suggesting that the new weighting system had a very high degree of explanatory power.

Appendix 2. Outpatient Casemix Methodology Steps

A. Group and Assign Outpatient Records a Principal EAPG Type & APG High Type

- ☐ ***Step 1: Group Data***
  - ☐ Outpatient data grouped using the EAPG grouper version 3.12 (change from the EAPG grouper version 3.8 previously used)
    - ☐ An EAPG is identified for every CPT that is coded in the record
    - ☐ Medical visits also use ICD-10 diagnosis codes for grouping
    - ☐ Each record can contain hundreds of EAPGs

- ☐ ***Step 2: Exclude Observation Cases***
  - ☐ If the Observation Rate Center units in any outpatient visit record are greater than 23 hours, the entire record is excluded from the outpatient weight assignment calculation.
  - ☐ Future consideration may be given to maintaining outpatient visits greater than 23 hours in the outpatient data set when developing weights for purposes of the ICC

- ☐ ***Step 3: Assign Principal Record Type***
  - ☐ A principal EAPG Type is assigned to all records
    - ☐ HSCRC applies a hierarchy based on EAPG Type
      - ▫ Each CPT code is linked to an EAPG, and each EAPG is linked to an EAPG Type
  - ☐ The records are categorized by APG High Type and assigned in hierarchy as follows:
    - ☐ Type 2: Oncology Related Services
    - ☐ Type 8: Oncology Drugs
    - ☐ Type 5: Rehab and Therapy
    - ☐ Type 6: Psychiatric Visits
    - ☐ Type 4: ED Visits
    - ☐ Type 1: Significant Procedures

- ☐ Type 3: Non-ED Visits
- ☐ Type 7: Other Visits

☐ ***Step 4: Consolidating cases into records - for APG High Type Oncology Related Services (ORS)***

- ☐ All aggregated outpatient records per APG High Type are unbundled and parsed out by service dates
  - ☐ Each identified EAPG within the APG High Type has its own service date
  - ☐ Visits with a length of stay (LOS) 5 days or less are assigned the same service date as their corresponding APG High Type
- ☐ Consolidate into one record all EAPGs associated with ORS occurring on the same service date
- ☐ Determine the EAPG with the highest weight within the record (Previously calculated weights are used as the preliminary weight for assigning the high weight)
- ☐ The high weight EAPG is the High Weight EAPG (HIWTAPG)
- ☐ Consolidate into the record any ancillary EAPGs occurring on the same service date as the EAPG with the highest weight within the ORS
- ☐ Any ancillary EAPGs not occurring within the same service date as the high weight EAPG within the ORS is appended back into the outpatient records

☐ ***Step 5: Calculate the total charge***

- ☐ The sum of all EAPG charges in the ORS record
- ☐ The HIWTAPG assumes all charges associated with that record i.e. the total charge

☐ **Step 6: Apply the Trim Logic to the APG High Type by HIWTAPG (Expected Charge)**

- ☐ Trim logic = (the statewide average expected charge by HIWTAPG * 2) or the (the statewide average expected charge by HIWTAPG + 10,000); whichever is greater
- ☐ The expected charge is usually the total charge except where a trim is applied, then the trim charge becomes the expected charge
- ☐ (Step 1-6 is repeated for each APG High Type)

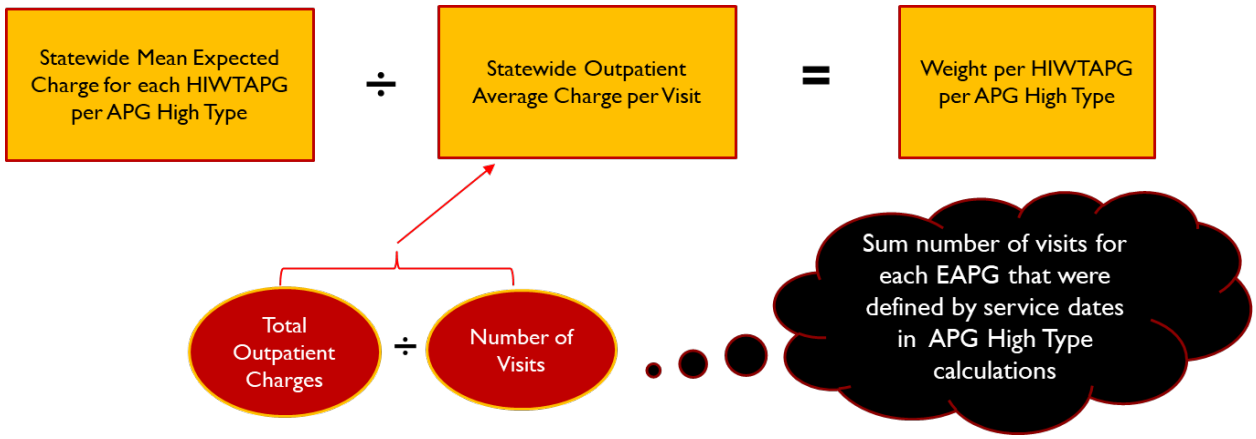
B. Merge all datasets and Calculate expected charges to outpatient categories

☐ ***Step 7: Merge all eight APG High Types and begin the iterative process of determining weights***

- ☐ **Step a: Calculate the statewide average charge per visit**
  - ☐ The mean of all trimmed charges as determined by the trim logic

- ☐ ***Step b: Calculate the Mean Statewide Expected Charge by APG High Type and HIWTAPG***
  - ☐ The mean of expected charges across all hospitals by APG High Type and HIWTAPG

☐ ***Step 8: Calculate initial weights for each APG High Type and HIWTAPG***



☐ ***Step 9: Normalize the Hospital HIWTAPG Expected Charge about the Mean Expected Charge Per Hospital***

- ☐ ***Calculate Hospital Specific Average charge and casemix index (CMI) and hospital specific charge adjustment factor***
  - ***Hospital Specific average charge divided by the hospital specific average CMI = Hospital specific expected charge***
  - ***Hospital specific expected charge divided by the statewide average charge (as determined in step 7a) = Hospital Specific adjustment factor***
  - ***Recalculate the total charge by dividing the initial trim charge by the hospital charge adjustment factor***
- ☐ Perform 31 Iterations as shown above until convergence (hospital specific adjustment factor equals1.00)
- ☐ The final iteration determines the statewide expected charge (as described in step 7b) used for the **final weight calculation** (repeat step 8)

☐ ***Step 10: Assign Principal Record Type by High Weighted EAPG***

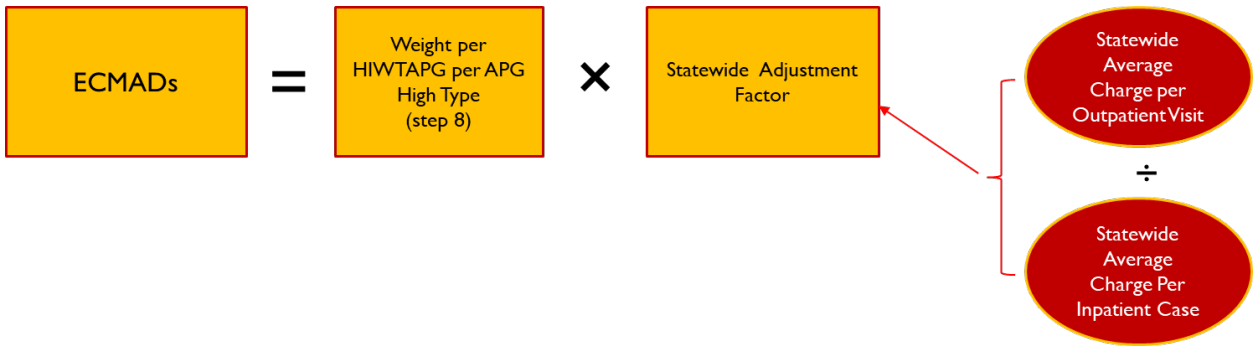
- ☐ This overrides step number 3 because in many instances lower acuity services or ancillaries will garner all of the charges associated with that record, most notably within the Significant Procedures High Type.

- ☐ Because weights are reassigned, they have to be checked again for monotonicity and normalized to 1.0.

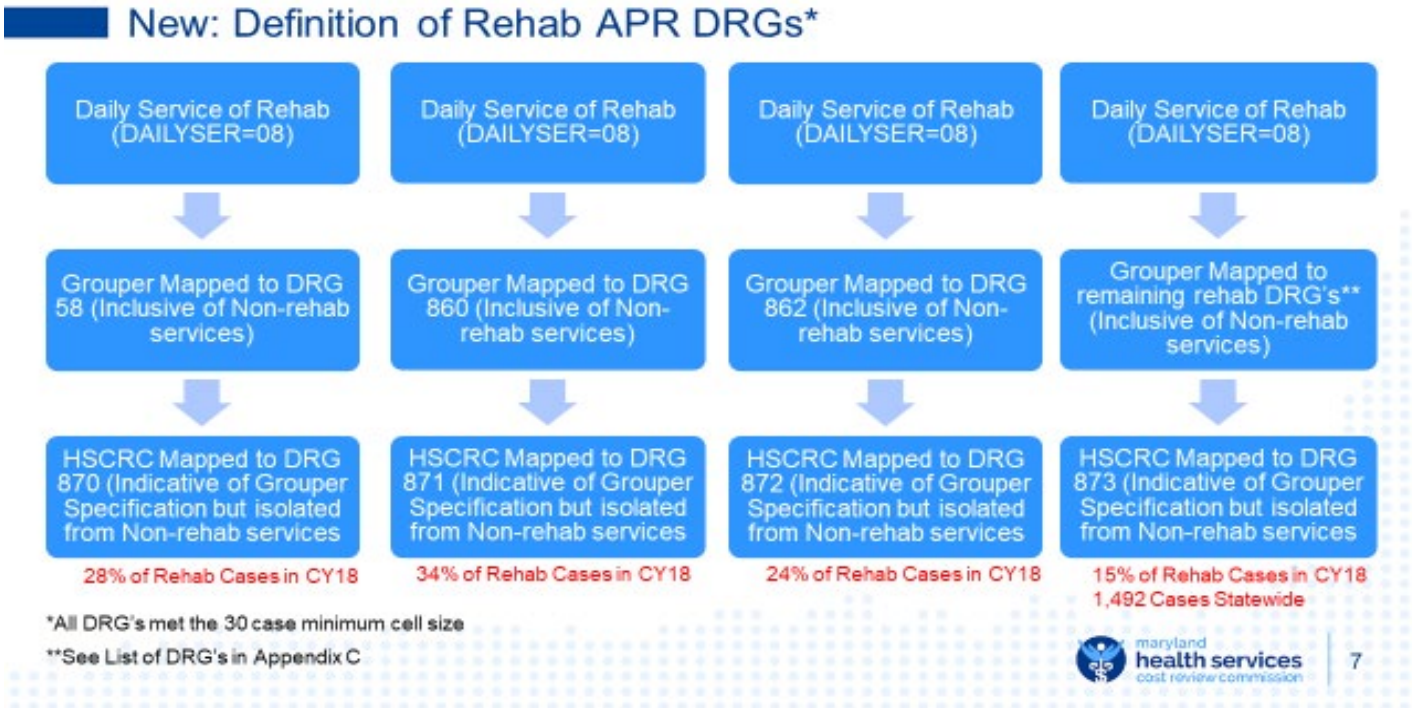
C. Calculate ECMAD

☐ ***Step 11: Calculate the Statewide Adjustment Factor*** **= Outpatient Charge per visit divided by Average charge per Inpatient case**

- ☐ ECMAD is defined as the normalized weight from Step 16 multiplied by the Statewide Charge Ratio Adjustment Factor



Appendix 3: Rehab Casemix Mapping and Reliability Results



DRG	Severity Level	# of Cases	Average LOS	Average Charge	Coefficient of Variation
58 - OTHER DISORDERS OF NERVOUS SYSTEM	1	354	12	$24,147	0.52
58 - OTHER DISORDERS OF NERVOUS SYSTEM	2	1,331	14	$28,866	0.57
58 - OTHER DISORDERS OF NERVOUS SYSTEM	3	958	17	$35,309	0.61
58 - OTHER DISORDERS OF NERVOUS SYSTEM	4	93	18	$40,232	0.74
860 - REHABILITATION	1	214	8	$18,310	0.51
860 - REHABILITATION	2	1,403	9	$20,070	0.54
860 - REHABILITATION	3	1,376	13	$28,295	0.71
860 - REHABILITATION	4	340	19	$41,478	0.84
862 - OTHER AFTERCARE & CONVALESCENCE	1	404	11	$21,732	0.46
862 - OTHER AFTERCARE & CONVALESCENCE	2	1,197	12	$26,037	0.59
862 - OTHER AFTERCARE & CONVALESCENCE	3	657	13	$30,003	0.71
862 - OTHER AFTERCARE & CONVALESCENCE	4	77	15	$35,958	0.64

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Appendix 5a. Efficiency Matrix with Existing ICC Peer Groups

Hospital Name	Volume Adjused ICC Result	ICC Rank (50%)	2018 Medicare TCOC Relative to Benchmark	2018 Medicare TCOC Rank (25%)	2018 Commercial TCOC Relative to Benchmark	2017 Commercial TCOC Rank (25%)	Total Rank Points (Low Score is Better)
Suburban Hospital	-3.56%	4	-10.14%	1	-36.06%	1	5
Howard County General Hospital	-5.87%	9	-2.22%	5	-32.32%	3	13
Anne Arundel Medical Center	-5.76%	8	-1.33%	7	-31.15%	5	14
Fort Washington Medical Center	-5.73%	7	-3.80%	4	-21.35%	23	21
Holy Cross Hospitals	-6.43%	12	2.89%	11	-28.02%	8	22
Garrett County Memorial Hospital	4.14%	1	7.79%	15	3.01%	43	30
University of Maryland Baltimore Washington Medical Center	-8.50%	15	10.19%	16	-24.27%	15	31
Mercy Medical Center	3.06%	2	17.56%	32	-19.96%	27	32
MedStar Union Memorial Hospital	-4.16%	5	13.87%	21	-13.68%	36	34
MedStar Harbor Hospital Center	-5.73%	6	27.59%	42	-25.13%	13	34
Shady Grove Adventist Hospital	-18.30%	29	-2.05%	6	-31.64%	4	34
Johns Hopkins Hospital	-6.22%	11	14.42%	24	-20.79%	25	36
Frederick Memorial Hospital	-11.97%	21	10.22%	17	-25.04%	14	37
Greater Baltimore Medical Center	-7.32%	13	14.37%	23	-20.28%	26	38
Doctors Community Hospital	-19.32%	33	-4.86%	3	-31.06%	6	38
University of Maryland Medical Center	-10.74%	18	16.60%	29	-25.70%	12	39
Atlantic General Hospital	-0.95%	3	29.41%	43	-17.29%	31	40
University of Maryland Charles Regional Medical Center	-13.62%	22	6.02%	14	-21.83%	22	40
Johns Hopkins Bayview Medical Center	-6.12%	10	17.46%	31	-17.82%	30	41
MedStar St. Mary's Hospital	-9.24%	16	5.28%	12	-13.24%	37	41
St. Agnes Hospital	-15.38%	24	14.13%	22	-23.55%	16	43
Peninsula Regional Medical Center	-7.66%	14	21.47%	38	-21.99%	21	44
Prince Georges Hospital Center	-16.96%	27	5.39%	13	-22.23%	20	44
Washington Adventist Hospital	-19.89%	35	2.03%	8	-26.22%	11	45
MedStar Montgomery Medical Center	-22.51%	39	2.69%	9	-32.46%	2	45
Meritus Medical Center	-9.35%	17	14.45%	25	-16.75%	32	46
Upper Chesapeake Medical Center	-11.30%	19	19.30%	35	-22.89%	19	46
University of Maryland Shore Medical Center at Dorchester	-18.43%	30	11.60%	18	-23.21%	17	48
Calvert Memorial Hospital	-22.39%	38	2.86%	10	-26.77%	9	48
MedStar Southern Maryland Hospital Center	-25.56%	43	-6.70%	2	-28.54%	7	48
University of Maryland St. Joseph Medical Center	-11.37%	20	16.58%	28	-18.03%	29	49
University of Maryland Shore Medical Center at Chestertown	-18.01%	28	13.29%	20	-12.02%	40	58
MedStar Franklin Square Hospital Center	-15.68%	25	19.24%	34	-16.15%	34	59
Carroll Hospital Center	-19.73%	34	15.88%	27	-21.25%	24	60
University of Maryland Rehabilitation & Orthopaedic Institute	-24.80%	41	16.60%	29	-26.77%	9	60
Sinai Hospital	-15.74%	26	20.99%	37	-14.56%	35	62
Western Maryland Regional Medical Center	-14.31%	23	24.36%	41	-12.05%	39	63
University of Maryland Shore Medical Center at Easton	-21.35%	36	11.60%	18	-12.07%	38	64
Harford Memorial Hospital	-18.78%	31	21.74%	39	-18.97%	28	65
University of Maryland Medical Center Midtown Campus	-23.52%	40	19.01%	33	-23.21%	17	65
MedStar Good Samaritan Hospital	-19.03%	32	20.32%	36	-9.88%	41	71
Northwest Hospital Center	-21.69%	37	23.86%	40	-16.30%	33	74
Union Hospital of Cecil County	-24.87%	42	15.43%	26	-3.56%	42	76

Appendix 5b. Efficiency Matrix with Alternative Proposal to Adjust for Indigent Care