

**Final Recommendation on Integrated Efficiency Policy
for RY 2020: Withholding Inflation for Relative
Efficiency Outliers and Potential Global Budget Revenue
Enhancements**

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Health Services Cost Review Commission

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Key Methodology Concepts and Definitions

1. Equivalent Casemix Adjusted Discharges (ECMADS) – Often referred to as casemix, 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 hospital’s 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 ranging from 0 percent to 4.5 percent depending on the peer group. The term “Relative efficiency” is the difference between a hospital’s actual revenue base and the ICC calculated cost base]
3. Quality Adjusted Inter-hospital Cost Comparison (ICC) – A version of the ICC that incorporates hospitals’ Quality revenue adjustments, both negative and positive, to amend a hospital’s evaluated revenue and therefore the peer group cost standard as well as the hospital’s position relative to the ICC Cost Standard.
4. 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.
5. Efficiency Matrix – A combined ranking of a hospital’s performance in the Inter-hospital Cost Comparison and Medicare Total Cost of Care growth rates. Both measures are weighting equally and hospitals are arrayed into quintiles to determine overall efficiency.

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Recommendations

Since December of 2017, staff has been working with Commissioners and stakeholders to develop a formulaic and transparent methodology that identifies and addresses relative efficiency outliers in order to bring those outlier hospitals closer to peer average standards over time by measuring both cost per case and a per capita Medicare total cost of care growth performance. The purpose of this exercise is to update the HSCRC's efficiency measures to be in line with the per capita goals of Maryland's Total Cost of Care (TCOC) Model. Subsequently, in July 2019, a staff draft recommendation was brought before the Commission and for public comment that recommended the following policy components:

- Formally adopt policies to
 - a. Determine relative efficiency outliers;
 - b. Evaluate Global Budget Revenue enhancement requests
- Use the Inter-Hospital Cost Comparison, including its supporting methodologies to compare relative cost per case for the above evaluations;
- Use Total Cost of Care measures with a geographic attribution to evaluate per capita cost performance for the above evaluations;
- Withhold the Medicare portion of the Annual Update Factor for efficiency outlier hospitals based on criteria described herein, effective January 1, 2020; and
- Use set aside outlined in the Annual Update Factor (.1% in RY 2020) and funding secured from withhold from outlier hospitals to fund potential Global Budget Enhancement Requests.

However, during the course of review following the publication of the July draft recommendation, a number of outstanding concerns were identified by staff, Commissioners, and stakeholders regarding the casemix adjustment for rehabilitation cases, use of a growth calculation in lieu of a benchmark attainment analysis for total cost of care performance, and general concerns that the policy should identify larger amounts of retained revenue. In light of these concerns, staff is recommending delaying the implementation of this policy until RY 2021. Instead, staff will bring a revised final recommendation in Spring 2020 that would affect the Annual Update Factor for RY 2021, which will incorporate a new cost per case analysis based on updated data using the Inter-Hospital Cost Comparison tool and total cost of care benchmarks for both commercial and Medicare costs for a more comprehensive efficiency analysis.

Introduction

In response to Commissioner directives to incorporate per capita efficiency measures into overall efficiency analyses in line with the TCOC Model, staff developed an integrated efficiency methodology that uses and equally weights Volume Adjusted Interhospital Cost Comparisons (ICC) and Medicare Total Cost of Care growth calculations, together referred to as the Efficiency Matrix. Incorporating the traditional cost per case analysis with total cost of care growth analyses ensures that the HSCRC still adheres to its statutory mandate to ensure that costs are reasonable and charges are reasonably related to costs, while at the same time incorporating

new population based measures of reasonable cost in line with the per capita tests of both the All-Payer Model initiated in 2014 and the successor Total Cost of Care Model initiated in 2019.

While much work has been done to improve the Commission's efficiency methodologies, staff has not deployed them in an integrated and formulaic fashion across all hospitals. To date, the HSCRC has addressed efficiency concerns that excess revenues were being inappropriately retained by hospitals by making \$80 million in adjustments for services that shifted to unregulated settings, including adjustments for oncology and infusion drugs shifted to unregulated settings. This figure also includes the first year of a negotiated revenue reduction plan for one outlier hospital, whose cost performance had been affected by service discontinuation and deregulation. Staff will continue to make adjustments for shifts to deregulated settings based on hospital disclosures and annual reviews. However, in order to expedite the process of adjusting revenues for high cost outlier hospitals, the HSCRC staff proposed a more formulaic approach to reduce excessive revenue by limiting rate updates for all cost efficiency outliers.

To implement formulaic revenue reductions, staff proposed, in the Draft Recommendation released in July 2019, to withhold the Medicare portion of the RY 2020 Update Factor, on the basis of the combined Volume Adjusted ICC cost-per-case results and Medicare Total Cost of Care growth performance, as evaluated through the Efficiency Matrix. Only Medicare fee-for-service data was to be used in this evaluation as equivalent total cost of care data is not currently available for other payers. In acknowledgement of this limitation, any impact from this policy was to be limited to the Medicare portion of a hospital's revenue, but the modification to a hospital's global revenue was to be shared among all payers. Staff would have also limited reductions only to hospitals that exceeded one standard deviation of average Volume Adjusted ICC performance (1.21 times the ICC cost standard), which is in keeping with the UMMC Midtown revenue reduction agreement put in place during RY 2019 that brought the hospital's revenue down to a level of approximately 1.2 times the ICC cost standard. Over time, this policy, which is envisioned to be implemented each year in concert with the Annual Update Factor Recommendation, would bring outlier hospitals to a level at or below 1.21 times the ICC cost standard.

Finally, in response to concerns about requests for GBR modifications, staff also proposed in the policy to outline the metrics by which GBR enhancement requests will be evaluated. Specifically, staff proposed to similarly utilize the Efficiency Matrix to identify hospitals that perform best in a combined evaluation of cost-per-case and Medicare total cost of care growth. Moreover, staff also proposed that hospitals will only be deemed eligible for potential GBR enhancements outside of a full rate review if they perform better than one standard deviation from average Volume Adjusted ICC performance (1.06 times the ICC Standard) and are in the best quintile of performance in the Efficiency Matrix. In this capacity, the HSCRC will create a symmetric policy that clearly and prospectively outlines the standards by which hospitals may potentially receive additional funding outside of a full rate review when deemed a positive performance outlier and guaranteed negative adjustments for poor performance.

This report outlines the changes to the ICC methodology and the proposed approach to expediting formulaic revenue reductions for outliers as well as identifying hospitals eligible for potential GBR enhancements. However, as noted in the Recommendation section, staff is recommending to delay implementation of this policy until RY 2021 when additional efficiency tools can be incorporated, including an improved casemix methodology for rehab cases and incorporation of total cost of care benchmarks for Medicare and commercial payers.

Future policy recommendations will address the processes for full and partial rate applications as well as the incorporation of additional efficiency tools.

Background

Efficiency Tools

In November 2015, full rate reviews were suspended to allow development of tools and methodologies consistent with the new All-Payer Model. Regulations were introduced at the September 2017 Commission meeting that updated filing requirements for full rate reviews and the moratorium on full rate reviews was lifted in November of 2017. At the November 2017 Commission meeting, staff put forward a final recommendation to the cost-per-case and per visit analysis - the Inter-hospital Cost Comparison (ICC) methodology, a tool that HSCRC staff proposes to continue using in evaluating hospitals' cost-per-case or per visit efficiency. At that time, staff recommended that the Commission defer formal adoption of an efficiency methodology because more work was required to develop additional efficiency tools, namely total cost of care analyses. Also, staff set out, with support of a technical workgroup, to refine the casemix methodology that serves as the basis for the volume statistic used in the ICC to evaluate cost-per-case efficiency, in accordance with Commission priorities.

While staff has utilized the ICC and various total cost of care growth analyses to support Commission proposals to modify hospitals' global revenues,¹ thereby implicitly approving these efficiency tools through adjudication, no formal policies 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 places hospitals into peer groups based on geography/urbanicity 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

¹ Anne Arundel Medical Center, Garret Regional Medical Center, UMMC Midtown Hospital

calculated from the ICC cost standard is the measure of a hospital's relative cost-per-case efficiency.

As aforementioned, one of the principal changes to the ICC evaluation was the modification to the casemix methodology, a methodology that provides more weights to services that are greater in clinical intensity and serves as the basis for the volume statistic used in the ICC. Prior iterations of the HSCRC casemix methodology had two major problems in the development of outpatient weights. First, the methodology did not account for differences in hospital billing behavior, for example cycle billing once a month versus billing for each patient visit. This led to unreliable weights for services that had a higher proportion of recurring visits (oncology, clinic, rehabilitation). The second flaw was that emergency room visits were given the same weights as clinic visits, even though emergency room visits are more costly. As a result of these concerns, 12.75 percent of revenue statewide was excluded from the RY 2018 ICC evaluation – the range for individual hospitals was 0.6 percent to 24.6 percent.

During the course of the summer of 2018, staff engaged stakeholders to address both of these problems with the casemix methodology. Staff decided to parse out all outpatient visits and associated Current Procedural Terminology (CPT) codes, rather than continuing to bundle all of the services contained in each patient bill. By unbundling cycle billed claims into visits, the HSCRC moved away from bundling claims based on unique hospital billing practices in favor of standard fixed length episodes. Furthermore, staff created additional summary categories by which ubiquitous CPT's were evaluated and weighted, i.e., CPT's that occur in multiple settings were separated based both on rate center charges and 3M categories and were weighted independent of one another.² This ensured greater homogeneity of weight development. As a result of the improvements in the reliability of the casemix methodology, the excluded outpatient revenue was reduced from over 12.75 percent to 4.88 percent of total revenue - oncology drug revenue is still excluded statewide from the RY 2019 ICC evaluation. The range for individual hospitals is 0 percent to 11 percent.³

Additional modifications to the November 2017 ICC include 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 resident, updating the input values to reflect RY 2019 revenue and RY 2018 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.

In terms of Medicare total cost of care, staff currently has 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. There are pros and cons to each of these approaches in definitively determining per

² For more details on the revised casemix methodology see Appendix 1 and Appendix 2.

³ Please note that due to a staff proposed modification to the ICC methodology to include drug overhead costs in the ICC permanent revenue, which is discussed in the *Overview of ICC Calculation* subsection, the percentage of revenue excluded declines to 2.8%.

capita hospital performance efficiency because both are dependent upon the date by which growth is evaluated, i.e., the base year. The geographic attribution does not fully take into account the unique provider relationships a patient, physician, and hospitals have regardless of geography, especially in dense, competitive hospitals markets. On the other hand, the MPA cannot effectively go back to the start of the All-Payer Model, which is important because reductions in utilization that are contributing to hospital cost efficiency may have occurred before the MPA was implemented. For these reasons, staff proposed using the matrix of Volume Adjusted ICC cost-per-case results together with Medicare Total Cost of Care growth performance from 2013, as measured by the geographic attribution methodology, and work to incorporate total cost of care “attainment” benchmarks calculations into final efficiency determinations. However, given the recommendation to delay implementation of this policy until RY 2021, staff will likely transition to using benchmarks in lieu of growth calculations for the Efficiency Matrix.

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 costs 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 Total Cost of Care 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, 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 continue to focus on outliers in the revised future recommendation for the Integrated Efficiency Policy and recommended that high cost outliers 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 growth calculations. Based on updated analysis and recommendations, hospitals in the worst quintile of performance and in excess of one standard

deviation of average Volume Adjusted ICC performance or 1.21 times the ICC standard could be deemed outliers.

Staff notes that this policy would be the first incremental step towards creating a formulaic use of efficiency methodologies in the per capita and global revenue era. Over time this policy will bring outlier hospitals in line with 1.21 times the ICC standard cost-per-case maximum.

Global Budget Revenue Enhancements

Staff's original efficiency outlier proposal was to limit 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 has 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 total cost of care growth, as measured by a geographic attribution. This evaluation will mirror 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 quintile of performance as evaluated in the Efficiency Matrix, they must be better than one standard deviation from average Volume Adjusted ICC performance (1.06 times the ICC standard) and they 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 Model. All 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 (.1% or ~\$17 million in RY 2020) and the funding derived from withholding inflation from poor performing outliers. While staff is proposing to delay the implementation of this policy until RY 2021, internally staff will use a similar approach for evaluating RY 2020 GBR enhancement requests.

This process and proposed budget cap does not restrict hospitals from submitting a formal rate application request, which will be evaluated at this time by using total cost care growth, as measured by a geographic attribution, and the ICC that does not adjust for volume performance. Future policy recommendations will outline more precisely the ways in which hospitals will be evaluated in a full rate application once work has concluded on developing per capita benchmarks. Until such a policy is formally adopted, staff will continue using the tools that have been implicitly approved through adjudication.

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 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)
4. There are two additional steps to convert revenues to cost. The first additional adjustment is to remove profits (profit strip throughout) from regulated services from the adjusted revenues. 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, please see Tables 1a and 1b.

Table 1a: Overview of ICC Cost Comparison Calculation Determining Peer Group Cost per Case (Stripping Down)

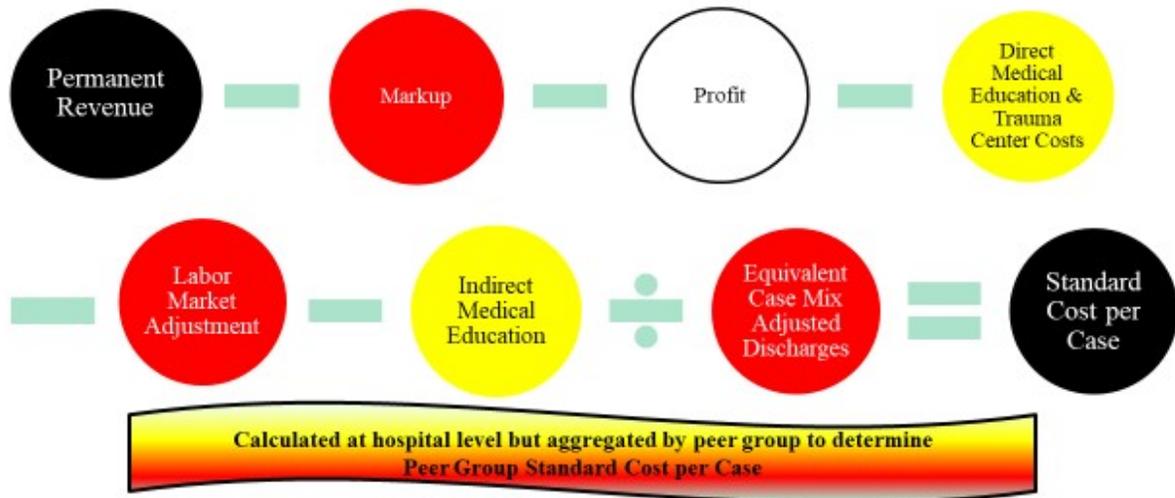


Table 1b: Overview of ICC Cost Comparison Calculation Determining Total Revenue (Building Back Up)



Proposed Changes to ICC Methodology

The staff will now discuss its considerations in proposing 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.⁴

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 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 2018 annual filing was \$121, 771.

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

⁴ 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.

medical education costs versus the IME costs per resident of other teaching hospitals.⁵ The criteria staff used for defining these two peer groups were as follows:

Table 2 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 System⁶ and a regression that controlled for the other factors commonly associated with costs, such as hospitals’ average patient severity and indigent care burden⁷, 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 2019 dollars.

Table 3 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

⁵ 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.

⁶ 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.

⁷ 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.

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 is \$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 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, excluding various border hospitals located in isolated or rural areas.

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 poor patients. Prior calculations utilized the percentage of Medicaid, charity pay, and self-pay to determine this cost burden.

Medicaid expansion has dramatically increased the number of individuals with coverage. First, the expansion was extended to children, then was extended to childless adults and those with higher incomes through the ACA expansion, rendering the prior definitions of limited use.

Additionally, with increased payments available to physicians for hospital and community based services and reductions in hospitals' uncompensated care, the financial reasons for potentially continuing this policy are more limited. To evaluate the need for this adjustment, HSCRC staff compared the case-mix adjusted inpatient charges of potentially poor patients at each hospital (Medicaid, a new category of dually-eligible for Medicare and Medicaid, and self-pay and charity) to the case-mix adjusted charges of all other patients. A weighted comparison using the more sensitive severity adjusted APR-DRG's showed a small higher adjusted charge-per-case for Medicaid and dually-eligible persons and a lower charge-per-case for charity and self-pay patients. This leads staff to conclude that this adjustment is no longer needed, although staff does believe that the retention of peer groups helps to adjust for other costs that might not otherwise be well accounted for, such as security costs in inner city settings.

While Medicare has retained a DSH adjustment, it has been split into two parts. One part is for uncompensated care, which the HSCRC addresses through the uncompensated care pool. The other part of the adjustment may help Medicare continue to address a concentration of governmental payers, as Medicare and Medicaid typically reimburse hospitals at a reduced rate. Given Maryland's unique All-Payer Model, which eliminates the cross subsidization between governmental payers and private payers as seen in other states, there appears to be a limited need for a DSH adjustment, and the charge comparisons do not support it.

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

Staff recommends an alternative approach to calculate the productivity adjustment. In 2011, the methodology used a productivity adjustment of two percent that was applied across the board to all hospitals in all peer groups. Staff is recommending an 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. The adjustment varies by peer group.

- Peer Group 1 (Non-Urban Teaching) – 1.73 percent
- Peer Group 3 (Suburban/Rural Non-Teaching) – 2.94 percent
- Peer Group 4 (Urban Hospitals) – 4.46 percent
- Peer Group 5 (Academic Medical Center Virtual) – 0 percent

Due to concerns raised by stakeholders during the workgroup process, staff is modifying its original proposal such that all peer groups will be assessed a minimum threshold productivity adjustment of 2%. While staff still believes it is important to assess excess fixed costs in the system when determining hospital efficiency, thereby creating differentiation between desired levels of productivity improvement for each peer group, staff concurs that each peer group should have a minimum level of productivity improvement built into its ICC analysis. Thus, the productivity adjustment for Peer Group 1 will increase from 1.73% to 2% and Peer Group 5 from 0% to 2%.

Step 4- Building Up a Hospital's Permanent Revenue

A. Volume Adjustment

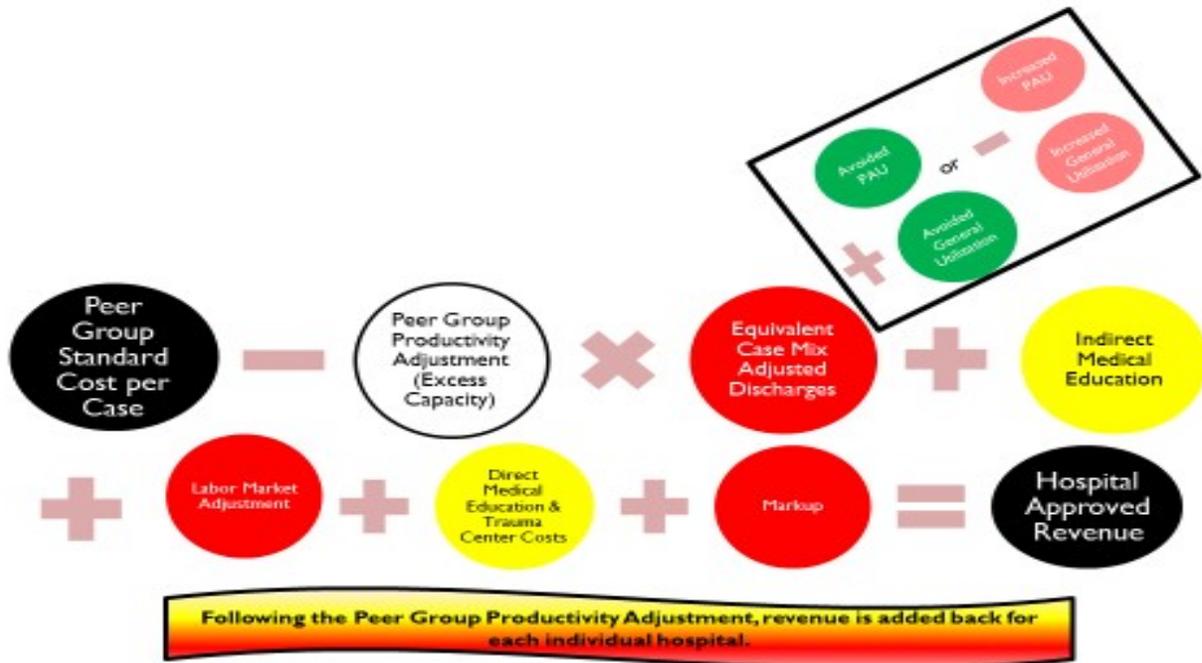
In iterations of the ICC that relatively rank hospitals for the purpose of identifying efficiency outliers, staff proposes to volume adjust the ICC. Specifically, growth rates for potentially avoidable utilization, as defined by the PAU Shared Savings program,⁸ and various types of medical services that represent additional proxies for avoidable utilization and have not been deregulated or shifted through the Market Shift methodology,⁹ will be assessed from CY 2013 to RY 2018. The inverse of PAU 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.

For volume not identified as PAU, staff will incorporate utilization changes from 2013 by enumerating the ECMADS not recognized by the Market Shift methodology and similarly adding or subtracting the volume from the ICC evaluation. For a visual display of this calculation see table 4:

Table 4: Overview of ICC Cost Comparison Calculation Determining Total Revenue (Building Back Up) with Volume Adjustment

⁸ 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).

⁹ Included in the analysis of potentially avoidable utilization not incorporated in the PAU Shared Savings program are the following service lines: Cardiology, Dental, Dermatology, Diabetes, ED, Endocrinology, Electrophysiology/Chronic Rhythm Management, Gastroenterology, General Medicine, Gynecology, Hematology, HIV, Infectious Disease, Nephrology, Neurology, Inpatient Oncology, Ophthalmology, Orthopedics, Otolaryngology, Pulmonary, Rheumatology, Substance Abuse, and Urology. One exception to this list is CY 2016 Gastroenterology volume, which experienced large utilization declines due to the conversion from ICD-9 to ICD-10 and therefore is not a good proxy for avoided utilization.



Overview of Medicare Total Cost of Care Calculations

Currently, staff is proposing to use the Medicare Fee-for-Service (FFS) per capita total cost of care growth (TCOC Growth) of a hospital's geographic attributed beneficiaries from CY 2013 to CY 2018 as the measure of growth in the efficiency evaluation. However, in future revised policy recommendations for RY 21 and beyond, a different approach may be used for Medicare total cost of care performance calculation. Additionally, as commercial benchmarks are identified, calculation of commercial total cost of care will be evaluated as well.

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 growth will be ranked from least growth to most growth. The score from this ranking will be added to the ranking from the ICC. The worst performing quintile of hospitals will be subject to a revenue adjustment.

Geographic Attribution Approach

For the purpose of this calculation, a hospital's attributed beneficiaries will be determined based on the PSA-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 it 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.

Efficiency Assessment

Withholding Inflation from Outlier Hospitals

In this section, staff provides the results of the Volume Adjusted ICC for RY 2019 permanent revenue as well as results for Medicare Total Cost of Care growth from 2013 to 2018 as measured by a geographic attribution. Using these two statistics and weighting each equally (50/50), hospitals are arrayed into quintiles such that hospitals in the bottom quintile will be considered to be the most costly relative to hospital peers. Staff will furthermore remove hospitals that have a ratio of less than 1.21 of revenue versus the ICC cost standard, as 1/3 of hospitals are in excess of this standard and any larger representation of hospitals may run afoul of the intended outlier intention of this proposed efficiency policy. Based on this analysis, staff ultimately recommended that the remaining hospitals that are in worst quintile of performance, as outlined above, and are in excess of the 1.21 times the ICC cost standard, should have their Medicare portion of the RY 2020 update factor withheld, effective January 1, 2020. However, given staff's recommendation to delay implementation of this policy until RY 2021, the results below are merely representative of current efficiency analyses.

Global Budget Revenue Enhancements

In this section, the best performing quintile for Volume Adjusted ICC and Medicare Total Cost of Care growth from 2013 to 2018 are listed. Staff removed hospitals that are not better than one standard deviation from average Volume Adjusted ICC performance or 1.06 times the ICC Cost Standard. The remaining hospitals will be considered favorably when submitting requests for GBR enhancements.

ICC Results

As aforementioned, the difference between the Quality and Volume Adjusted ICC evaluated revenue figure, the revenue that was actually inputted into the ICC methodology, and the Quality and Volume Adjusted ICC calculated value is a hospital's measure of efficiency relative to the ICC cost standard. Table 5 below demonstrates this measure of efficiency as both a dollar value and a percentage. The table is ranked in order of most favorable to least favorable.

Table 5: RY 2019 Volume Adjusted ICC Efficiency Rankings (Percentage and Dollar)*

	<u>Relative Efficiency to ICC Standard %</u>	<u>Relative Efficiency to ICC Standard \$</u>		<u>Relative Efficiency to ICC Standard \$</u>	<u>Relative Efficiency to ICC Standard \$</u>
Mercy Medical Center	-2.19%	-\$11,288,883	St. Joseph Medical Center	-14.57%	-\$56,788,405
Suburban Hospital	-2.54%	-\$8,127,767	Washington Adventist Hospital	-15.22%	-\$41,302,814
Harbor Hospital Center	-3.70%	-\$6,825,228	Frederick Memorial Hospital	-16.80%	-\$57,988,040
Atlantic General Hospital	-4.24%	-\$4,358,123	Upper Chesapeake Medical Center	-17.36%	-\$57,211,574
Union Memorial Hospital	-4.87%	-\$20,661,344	Harford Memorial Hospital	-17.55%	-\$18,399,756
Fort Washington Medical Center	-5.57%	-\$2,797,648	Good Samaritan Hospital	-19.25%	-\$49,654,103
Anne Arundel Medical Center	-5.87%	-\$34,088,705	Shore Medical Dorchester	-19.85%	-\$9,253,880
Holy Cross Hospitals	-7.55%	-\$45,538,748	Sinai Hospital	-20.17%	-\$148,485,449
Garrett County Memorial Hospital	-7.95%	-\$4,724,540	Carroll Hospital Center	-21.07%	-\$47,838,037
Johns Hopkins Hospital	-9.59%	-\$209,049,933	Western Maryland Regional Medical Center	-21.21%	-\$65,948,381
Meritus	-10.12%	-\$33,371,254	Doctors Community Hospital	-21.65%	-\$53,538,054

Bayview Medical Center	-10.21%	-\$62,755,143	Shore Medical Easton	-21.79%	-\$44,137,936
Howard County General Hospital	-10.26%	-\$30,732,035	Calvert Memorial Hospital	-22.19%	-\$30,926,176
Baltimore Washington Medical Center	-10.46%	-\$43,082,040	Montgomery General Hospital	-22.71%	-\$38,439,675
Charles Regional	-11.04%	-\$16,846,026	Southern Maryland Hospital Center	-23.15%	-\$62,410,124
Greater Baltimore Medical Center	-12.13%	-\$53,363,143	Chester River Hospital Center	-24.29%	-\$12,792,890
St. Agnes Hospital	-12.39%	-\$51,601,147	Northwest Hospital Center	-24.36%	-\$62,863,446
Peninsula Regional Medical Center	-12.85%	-\$54,736,005	Laurel Regional Hospital	-25.31%	-\$22,939,071
Shady Grove Adventist Hospital	-12.88%	-\$49,843,375	Bon Secours Hospital	-26.22%	-\$28,484,930
Prince Georges Hospital	-13.06%	-\$38,568,811	UMMC Midtown	-26.49%	-\$54,623,493
Franklin Square Hospital Center	-13.54%	-\$68,187,882	UMROI	-27.00%	-\$27,746,448
St. Mary's Hospital	-13.68%	-\$24,242,314	McCready Memorial Hospital	-27.27%	-\$4,217,179
University Medical Center	-13.70%	-\$174,446,050	Union of Cecil	-30.59%	-\$48,083,592

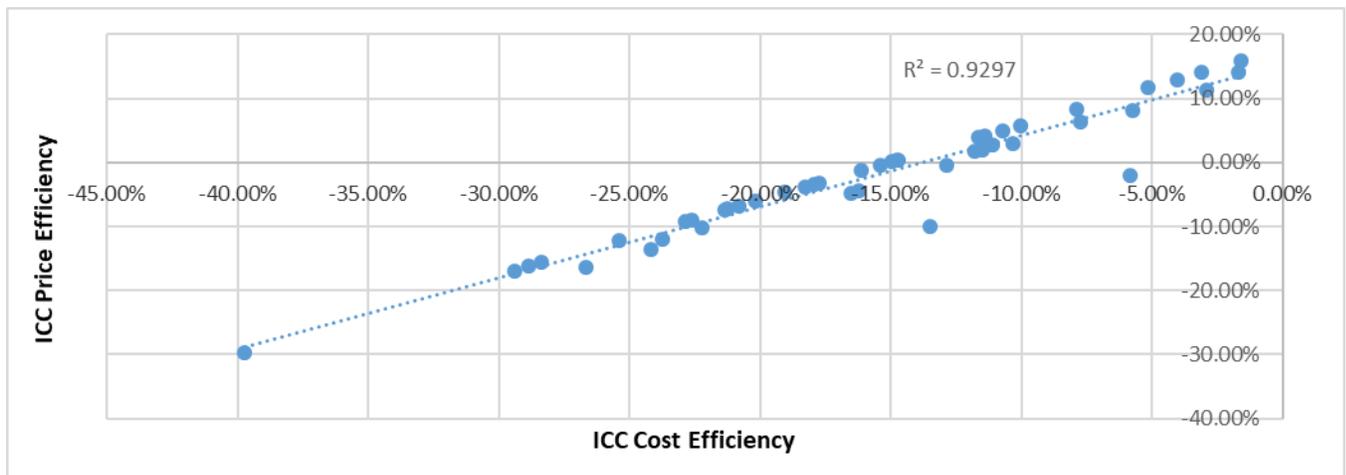
*Highlighted values represent hospitals that have an ICC calculated value in excess of standard deviation of average performance.

As shown, no hospitals are deemed more efficient than the ICC cost standard, 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. This would not preclude the best performing hospitals from qualifying for a GBR enhancement.

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 addresses outliers. Regardless of any imprecision in the ICC methodology, hospital prices per case grew rapidly in the global revenue era as volumes have declined or not risen. 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 too high, especially given the proliferation of high deductible plans that consumers face, staff recommends using the combination of cost-per-case analyses and total cost of care to identify outliers. Moreover, staff notes that there is a high degree of correlation between high priced hospitals and high cost hospitals, as determined by the ICC ($R=0.96$, $R^2=0.93$). 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 6 below for the correlation analysis).

Table 6: Correlation between Hospital ICC Cost Efficiency and ICC Price Efficiency with no Productivity Adjustment



TCOC Growth Results

Using the geographic attribution described in the *Efficiency: Overview of Medicare Total Cost of Care Calculations* section, staff has determined that 20 hospitals had Medicare total cost of care growth from CY 2013 to CY 2018 less than or equal to the statewide average of 7.31%, and 26 hospitals had Medicare total cost of care growth in excess of this figure. Table 7 below shows the growth results for each performance year, compared to the base year of CY 2013. The final column showing the growth from CY 2013 to CY 2018 is used in the determination of efficiency cost outliers for RY 2020. Table 7 below shows the Medicare total cost of care growth attributed to each hospital, ranked from best to the worst total cost of care performance for CY 2018:

Table 7: Hospital Attributed Total Cost of Care Growth Performance

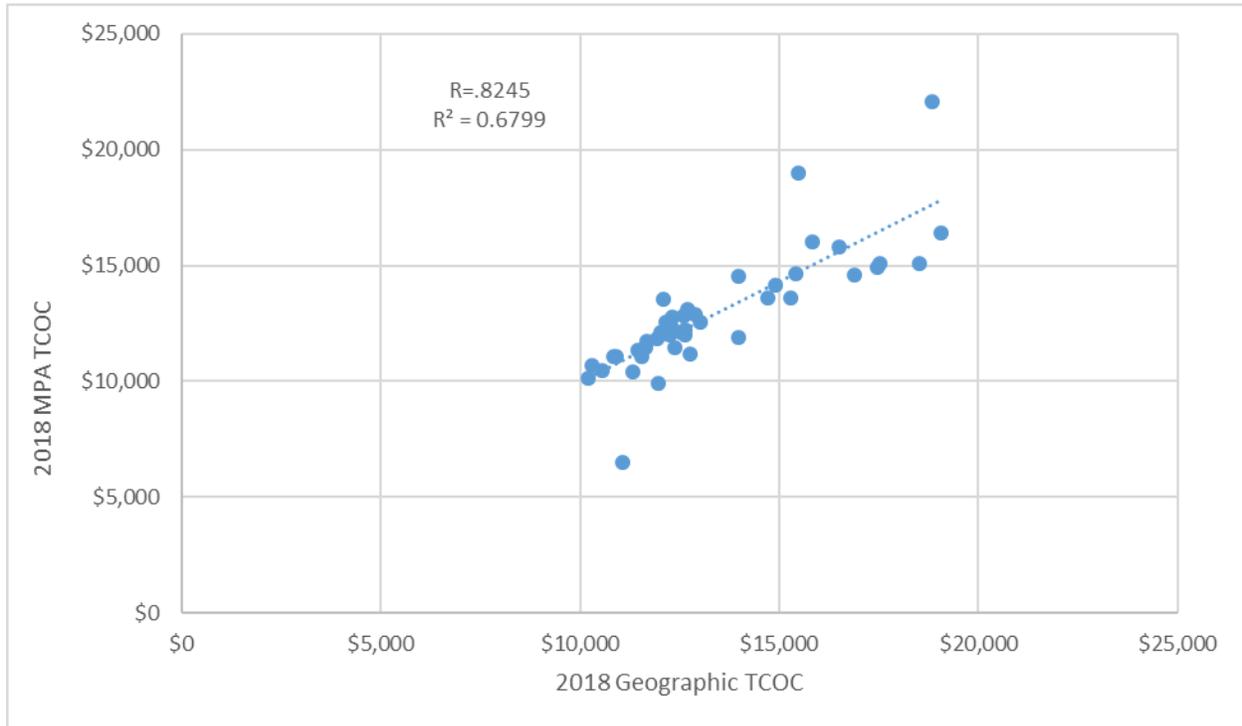
Hospital Name	2013 TCOC per Capita	2018 TCOC per Capita	14 vs 13	15 vs 13	16 vs 13	17 vs 13	18 vs 13
Greater Laurel Hospital	\$11,870	\$12,236	-4.09%	0.41%	-0.15%	6.62%	3.09%
Harford Memorial	\$12,201	\$12,621	-3.20%	-5.62%	0.04%	2.18%	3.44%
Anne Arundel Medical Center	\$10,173	\$10,533	-3.86%	0.12%	-1.55%	0.75%	3.53%
MedStar Southern Maryland	\$11,560	\$11,998	-0.85%	1.08%	0.35%	3.72%	3.79%
Johns Hopkins	\$16,842	\$17,483	-4.48%	-0.16%	-2.00%	2.24%	3.81%
Saint Agnes Hospital	\$13,418	\$13,968	-2.01%	-0.90%	0.55%	2.34%	4.10%
Washington Adventist	\$11,839	\$12,354	-1.47%	1.11%	1.18%	2.36%	4.35%
Doctors' Community Hospital	\$11,771	\$12,303	-3.29%	0.44%	3.55%	3.16%	4.52%
Atlantic General	\$10,805	\$11,346	-1.42%	-0.31%	-3.79%	3.81%	5.01%
UM Shore Medical Center at Easton	\$11,639	\$12,298	1.52%	2.22%	0.17%	2.70%	5.67%
UM Baltimore Washington Medical Center	\$11,885	\$12,596	0.04%	1.82%	1.59%	3.38%	5.98%
McCready	\$12,052	\$12,779	-8.28%	-4.48%	-4.04%	0.73%	6.03%
Johns Hopkins Bayview Acute Care	\$14,939	\$15,849	-1.18%	3.54%	3.76%	5.84%	6.09%
Meritus Medical Center	\$11,233	\$11,928	-4.03%	-1.09%	0.10%	3.38%	6.18%
Frederick Memorial	\$10,877	\$11,625	-2.35%	-0.20%	-0.49%	3.03%	6.88%
Western MD Health System	\$12,057	\$12,900	-2.54%	-0.56%	3.08%	3.68%	7.00%
Northwest Hospital	\$13,755	\$14,719	1.44%	2.33%	1.24%	6.10%	7.01%
Sinai Hospital	\$14,374	\$15,402	-0.07%	1.76%	1.49%	5.85%	7.15%
UM Shore Medical Center at Chestertown	\$11,668	\$12,504	5.22%	4.98%	2.52%	9.52%	7.16%
Levindale	\$14,242	\$15,283	-0.24%	1.42%	1.31%	5.63%	7.31%
Holy Cross Hospital	\$10,678	\$11,500	-0.51%	1.55%	1.26%	4.38%	7.69%
Calvert Memorial	\$10,763	\$11,607	-3.09%	2.40%	0.01%	2.74%	7.84%
Carroll County General	\$11,243	\$12,126	-2.50%	-0.58%	-1.75%	5.73%	7.85%
MedStar Franklin Square	\$13,827	\$14,917	-1.17%	0.87%	1.82%	6.17%	7.88%
Howard General Hospital	\$10,034	\$10,828	1.97%	0.49%	3.80%	4.49%	7.92%
Peninsula Regional	\$11,191	\$12,139	0.62%	1.09%	0.95%	7.68%	8.48%
MedStar Saint Mary's Hospital	\$11,028	\$12,008	-1.92%	0.99%	1.79%	6.81%	8.89%
Upper Chesapeake Medical Center	\$11,209	\$12,219	2.52%	2.99%	0.96%	6.40%	9.01%
Mercy Medical Center	\$16,046	\$17,526	-0.13%	2.31%	2.21%	7.42%	9.23%
MedStar Union Memorial	\$15,067	\$16,504	1.22%	7.46%	3.00%	9.32%	9.53%
Bon Secours	\$17,271	\$19,052	-2.89%	-2.62%	0.33%	4.50%	10.31%
Prince George's Hospital Center	\$12,624	\$13,937	4.64%	5.23%	7.14%	9.93%	10.40%
Fort Washington	\$10,788	\$11,911	7.30%	7.03%	7.07%	5.44%	10.42%
Shady Grove Adventist	\$9,833	\$10,887	-0.38%	4.77%	3.47%	5.92%	10.71%
Union of Cecil	\$11,467	\$12,722	3.95%	-0.28%	3.46%	10.02%	10.94%
University of Maryland	\$16,692	\$18,533	1.24%	0.77%	3.45%	6.93%	11.03%
Holy Cross Germantown Hospital	\$9,967	\$11,071	0.93%	7.45%	6.52%	5.98%	11.08%

Greater Baltimore Medical Center	\$11,417	\$12,691	-0.53%	3.98%	3.51%	8.86%	11.15%
UM Saint Joseph Medical Center	\$11,701	\$13,006	-0.56%	3.01%	3.36%	8.85%	11.16%
UM Charles Regional Medical Center	\$11,286	\$12,610	-4.10%	3.77%	3.79%	5.29%	11.72%
Suburban Hospital	\$9,131	\$10,260	0.84%	4.85%	2.00%	5.49%	12.37%
MedStar Montgomery General	\$10,149	\$11,425	1.98%	3.65%	3.15%	9.14%	12.57%
UM Medical Center Midtown Campus	\$16,708	\$18,820	3.19%	2.89%	4.79%	9.95%	12.64%
MedStar Good Samaritan	\$13,723	\$15,496	3.43%	6.62%	7.20%	12.75%	12.93%
MedStar Harbor Hospital	\$14,315	\$16,897	-1.11%	7.44%	10.00%	12.61%	18.04%
Garrett County	\$8,503	\$10,201	-1.60%	8.34%	5.33%	11.58%	19.96%
Maryland Statewide	\$11,767	\$12,627	-0.58%	1.84%	1.57%	5.02%	7.31%

As aforementioned, staff has concerns about the geographic attribution versus the provider driven attribution in the Medicare Performance Adjustment (MPA). However staff recommends using the geographic attribution because it is important to evaluate total cost of care growth relative to the beginning of the All-Payer Model. If hospital utilization from a hospital's primary service area was successfully avoided prior to the implementation of the MPA and was not substituted elsewhere, the use of total cost of care performance helps mitigate a hospital's perceived ICC cost inefficiency within the hospital.

Regardless, staff felt it was still important to test correlation between results in the MPA and the geographic attribution to assuage concerns that efficiency rankings could potentially be very different. As shown in Table 8, there is a strong relationship between CY 2018 total cost of care performance based on the MPA and geographic attributions, suggesting the attributions yields similar results:

Table 8: Correlation between Total Cost of Care Attainment as measured by Geographic and MPA attributions



Staff cannot run similar analyses to determine similarity between 2013 geographic and MPA attainment due to data limitations and, therefore, cannot definitively determine if the growth calculations are similar under both methodologies. However, staff notes the similarity in the 2018 results and supports the geographic attribution to enable the measurement of performance back to 2013. As previously noted, completion of attainment benchmarks will provide an important enhancement to total cost of care growth comparisons.

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 outliers. Moreover, a central limitation in these analyses is that the total cost of care tools are Medicare only.

Therefore, staffs recommends weighting equally the two rankings from the Volume Adjusted ICC and geographic total cost of care growth calculations to array hospitals into quintiles such that hospitals in the bottom quintile will be considered the least efficient and hospitals in the top quintile will be considered the most efficient relative to hospital peers. Staff furthermore recommends removing hospitals that have an index of revenue to the ICC cost standard of less

than 1.21 from the revenue reduction proposal, to ensure that the HSCRC limits revenue reductions to outliers. Finally, staff recommends that the remaining hospitals, deemed outliers as outlined above, should have the Medicare portion of their RY 2020 update factor withheld, because the total cost of care analyses were limited to Medicare. Over time this policy will bring hospitals in line within the standard proposed for the spend-down limit.

In looking at the array of hospitals according to a 50/50 ranking of Quality and Volume Adjusted ICC and geographic total cost of care growth ranking, staff identified nine hospitals that met the initial categorization of outliers. See Table 9 for results:¹⁰

Table 9: Outlier Hospitals as Determined by ICC & Geographic TCOC Rankings – Efficiency Matrix

Hospital Name	ICC Result	ICC Rank	2013-2018 TCOC per Capita Growth Rate	TCOC Rank	Total Rank Points (Low Score is Better)
University of Maryland Medical Center	-13.70%	23	11.03%	36	59
University of Maryland Shore Medical Center at Chestertown	-24.29%	39	7.16%	20	59
University of Maryland Rehabilitation & Orthopaedic Institute	-27.00%	44	11.03%	36	80
University of Maryland St. Joseph Medical Center	-14.57%	24	11.16%	39	63
MedStar Good Samaritan Hospital	-19.25%	29	12.93%	44	73
Bon Secours Hospital	-26.22%	42	10.31%	31	73
MedStar Montgomery Medical Center	-22.71%	37	12.57%	42	79
Union Hospital of Cecil County	-30.59%	46	10.94%	35	81
University of Maryland Medical Center Midtown Campus	-26.49%	43	12.64%	43	86

Of these hospitals, two were removed from consideration because they already have preexisting arrangements with the HSCRC to address their cost inefficiencies, University of Maryland Medical Center Midtown Campus and Bon Secours Hospital. Staff also removed University of

¹⁰ For the complete array of hospitals based on ICC ranking and TCOC ranking, see Appendix 4

Maryland St. Joseph Medical Center, University of Maryland Medical Center, and MedStar Good Samaritan Hospital because these hospitals had an index of relative efficiency that was better than the 1.21 maximum level staff proposes for the application of formulaic revenue adjustments. Again, it is important to note that the ICC standard already removes 9 to 13 percent of revenue depending on the peer group.

Of the remaining hospitals, staff calculated that withholding the Medicare portion of the RY 2020 Update Factor, which is measured by multiplying a hospital’s Medicare fee for service share of total hospital revenue estimated for RY 2020, would remove \$7.1 million. In light of the recommended delay of this policy until RY 2021, this calculation is for illustrative purposes only.

Table 10: RY 2020 Medicare Update Factor Withhold for Outlier Hospitals

Hospital Name	RY 2019 Permanent Revenue	Utilized Medicare FFS %	Medicare Portion of RY 2019 Permanent Revenue Base	Update Factor	Potential Cap on Withhold per Efficiency Matrix	Mid-Year Implementation
<i>Algebra</i>	<i>A</i>	<i>B</i>	<i>C=A*B</i>	<i>D</i>	<i>E=D*C</i>	<i>F=E/2</i>
University of Maryland Shore Medical Center at Chestertown	\$53,535,766	54%	\$28,741,656	3.35%	\$962,845	\$481,423
University of Maryland Rehabilitation & Orthopedic Institute	\$120,383,835	32%	\$39,032,073	3.35%	\$1,307,574	\$653,787
Montgomery General Hospital	\$176,329,979	46%	\$81,160,559	3.35%	\$2,718,879	\$1,359,439
Union Hospital of Cecil County	\$160,537,054	39%	\$63,405,655	3.35%	\$2,124,089	\$1,062,045
Total	\$510,786,634	42%	\$212,339,943		\$7,113,388	\$3,556,694

Global Budget Revenue Enhancements

As aforementioned, this recommendation also outlines the process by which hospitals will be evaluated when GBR enhancement requests are submitted to the HSCRC. Specifically, for a hospital to receive a GBR enhancement, it must be in the best quintile of performance as evaluated in the Efficiency Matrix, it must be better than one standard deviation from average Volume Adjusted ICC performance (1.06 times the ICC standard) and it 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 Model.

Because this proposal still requires hospitals to submit a formal proposal to the HSCRC in order to successfully receive a GBR enhancement, staff will not outline the exact amounts a hospital may receive under such a policy. However, in Table 11 below staff does outline the hospitals that currently would be eligible for a GBR enhancement:

Table 11: Hospitals Eligible for a GBR Enhancement in RY 2020

Hospital Name	ICC Result	ICC Rank	2013-2018 TCOC per Capita Growth Rate	TCOC Rank	Total Rank Points (Low Score is Better)
Anne Arundel Medical Center	-5.87%	7	3.53%	3	10
Atlantic General Hospital	-4.24%	4	5.01%	9	13
Mercy Medical Center	-2.19%	1	9.23%	29	30

Future Policy Considerations

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

For the ICC, staff will endeavor to modify the casemix methodology to better account for the differing acuity levels of rehab cases while also working to create a new labor market adjustment, which requires both methodological development work, as well as revised data submission and auditing protocols. Additionally, 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. Finally, 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 completing total of care benchmarks. The enhanced total cost of care benchmark approach¹¹ will rely on three primary components.

¹¹ See Appendix 5 for more detail on Total Cost of Care Benchmark Calculations

Currently these components are all associated with Medicare fee-for-service costs only; results for other payers will be considered in the future. The components are:

- (1) Average per capita Medicare fee-for-service total cost of care growth for each hospital based on the beneficiaries attributed to that hospital by the MPA attribution approach approved by the Commission in November 2017. Under this approach, Medicare fee-for-service beneficiaries are attributed to hospitals in a tiered fashion with the higher tiers reflecting relationships established between beneficiaries and primary care providers and hospitals. These relationships are established via a mapping similar to that used by the Maryland Primary Care Program or via an ACO. Beneficiaries not assigned on this basis are assigned based on historical utilization patterns and for beneficiaries with limited or no historic utilization, based on geography.
- (2) Cost benchmarks established for each Maryland County, based on costs for demographically similar counties throughout the country. Similar counties were identified in two steps (1) narrowing possible benchmark counties for each Maryland county to those of a similar population size and density and (2) from the narrowed list selecting the counties with the closest match to the Maryland county in terms of four demographic characteristics: level of deep poverty, median income, price parities and clinical risk as measured by the CMS Hierarchical Condition Category Score (HCC). For the five largest Maryland counties, where there are less possible comparable counties, the benchmark cohort was made up of the 20 most similar national counties, for all other Maryland counties the benchmark cohort has 50 members.
- (3) Hospital relative total cost of care performance, which is the ratio of the Hospital's total cost of care for its MPA attributed beneficiaries to a risk-adjusted benchmark derived by blending the relevant county benchmarks in proportion to the counties of residence of the hospital's MPA attributed beneficiaries and then adjusting to normalize to the hospital's demographics.

Responses to Stakeholder Comments

Staff received responses from the Maryland Hospital Association (MHA), Johns Hopkins Health System, (JHHS) University of Maryland Medical System (UMMS), MedStar Health, and CareFirst.

UMMS and MedStar offered support of MHA's comments along with a few additional technical comments. JHHS did not formally endorse MHA's comments but did echo many of the technical points made by MHA as well as larger conceptual arguments. CareFirst supported two of MHA's comments and offered several comments that were at odds with the hospital industry.

All comments and staff responses will be discussed herein.

Unanimous Agreement

All stakeholder comment letters expressed support for making adjustments based on evaluations of efficiency, for adjusting efficiency analyses by improvement or lack thereof in Potentially Avoidable Utilization, and for maintaining revenue neutrality for efficiency adjustments, albeit for differing reasons:

- a) Hospital industry did not support scoring efficiency adjustments as savings to payers and asked that funding be made available to efficient hospitals
- b) CareFirst was concerned about the small size of the efficiency policy and that enhancement rewards could eclipse efficiency rate reductions

Staff Response: Staff supports some redistribution as a means to allow efficient hospitals to obtain additional funding that would not require the rigor of a full rate application. Staff also supports employing a transparent process with clear incentives that would cease GBR adjustments made without analysis of efficiency. Finally, staff would note that all GBR enhancements would be capped by efficiency adjustments made through the Integrated Efficiency Policy and the annual set aside voted on by Commissioners in the Annual Update Factor Policy.

Larger Conceptual Concerns

All hospital stakeholder letters expressed concern about the lack of a stated goal and objective in the Draft Integrated Efficiency Policy. Comments also made mention of potential applications of the tools discussed in the Integrated Efficiency Policy, specifically scaling the update factor for efficiency, rate applications, GBR enhancements and negotiated spenddowns

Staff Response: The principal aim of the Integrated Efficiency Policy is to formulaically penalize and reward hospital efficiency while 1) maintaining the Model's incentive to reduce avoidable utilization and 2) keeping fidelity to the Commission's statutory mandate to ensure costs are reasonable and charges are reasonably related to costs.

Specifically, staff incorporated the Inter-Hospital Cost Comparison (ICC) methodology because it ensures costs are reasonable by using peer groups average costs to determine a hospital's revenue base and it ensures hospital charges are reasonably related to costs, as profits are removed from the evaluation. There is no statutory mandate to ensure that there is more limited price variation in hospital charges and the Federal government no longer requires Maryland hospitals to maintain charges at a rate lower than national growth

Staff would also note that any cost or charge per case analysis is a counter incentive to reducing avoidable utilization further. By capping the extent of the ICC score to hospitals above one standard deviation from average performance, staff ensures that efficiency adjustments are only levied on "outliers."

As staff has mentioned in several workgroup meetings and in the Draft Integrated Efficiency Policy, this policy will only be used for identifying outliers. It will not be used for rate applications or negotiated spenddowns. Future policy recommendations will address these applications of the Efficiency tools.

All hospitals also expressed a desire to maintain transparency and opportunities for further methodology review, including, additional review of indirect medical education cost calculations and the new casemix methodology, which requires patient identifiers.

Staff Response: *Over the past 20 months, public workgroups have met to discuss and develop the individual aspects of the efficiency methodologies and the larger conceptual framework (ICC, ECMAD, Efficiency Subgroups). Moving forward, staff will continue to convene efficiency workgroups to review and potentially refine methodologies, but notes that all the methodologies mentioned as issues for future review were discussed at length during these meetings.*

For the casemix methodology, staff is working on creating a deidentified dataset so that industry can run the new methodology independent of the HSCRC. Expected delivery date- November 30, 2019.

MHA asked staff to revisit unit rate compliance once an efficiency measure is in place.

Staff Response: *Staff is not supportive of this request. The Integrated Efficiency Policy is intended to penalize and reward efficiency outliers. Unit rate compliance, i.e. ensuring charges do not fluctuate with volume changes more than the standard amount of 5%, is assessed across all hospitals.*

CareFirst expressed concern over the small size of the revenue adjustments for poor performing outlier hospitals and posited that an alternative efficiency methodology could provide stronger incentives to hospitals to control TCOC.

Staff Response:

Staff welcomes any suggestions to better improve the efficiency methodologies, which are attempting to navigate two competing policy goals of incentivizing further reductions in avoidable utilization and maintaining charges reasonably related to costs.

Also, staff believes it is important to consider the proposed efficiency methodologies in the context of the other efficiency adjustments and in terms of the revenue of the individual hospitals affected. See chart:

Table 11: RY 2020 Integrated Efficiency Policy Recommendation Sizing Comparisons

Hospital Name	RY 2020 Staff Proposed Efficiency Adjustment	RY 2020 Annual PAU Reduction*	Regulated Profit Margin RY 2018	Staff Proposed Efficiency Adjustment as a Percentage of Regulated Profit Margin	Efficiency Adjustment with Full Year Implementation	Efficiency Adjustment with Full Year Implementation on All-Payer Basis	Efficiency Adjustment with Full Year Implementation on All-Payer Basis as a Percentage of Regulated Profit Margin
University of Maryland Shore Medical Center at Chestertown	\$481,423	\$101,718	\$10,412,434	5%	\$962,845	\$1,793,448	17%

University of Maryland Rehabilitation & Orthopedic Institute	\$653,787	\$0	\$4,643,810	14%	\$1,307,574	\$4,032,858	87%
Montgomery General Hospital	\$1,359,439	\$599,522	\$23,716,788	6%	\$2,718,879	\$5,907,054	25%
Union Hospital of Cecil County	\$1,062,045	\$497,665	\$8,625,180	12%	\$2,124,089	\$5,377,991	62%
Total	\$3,556,694	\$1,198,905	\$47,398,212	8%	\$7,113,388	\$17,111,352	36%
Bon Secours	\$591,340	\$541,365	\$16,704,617	4%	\$1,182,680	\$3,778,279	23%
Midtown Hospital	\$1,253,873	\$870,993	\$30,917,722	4%	\$2,507,745	\$7,481,604	24%
Total with Hospitals not Exempted due to Prior Efficiency Arrangements	\$5,401,907	\$2,611,263	\$95,020,551	6%	\$10,803,814	\$28,371,236	30%

**PAU Reduction is approximately \$50 million annually across the entire State.*

Staff will continue to evaluate the appropriateness of the efficiency adjustment as it considers the incorporation of additional efficiency tools for the more comprehensive implementation of this policy in RY 2021.

MHA and members of the hospital industry expressed a desire to eliminate the regulated profit strip in the Integrated Efficiency Policy and to utilize a total operating profit strip in a full rate application. CareFirst disagreed with inclusion of unregulated losses in HSCRC efficiency methodologies.

Staff Response: There are no directives from the contract with the Federal Government nor from State statute to eliminate the profit strip when determining efficiency. Moreover, if a hospital follows the fundamental incentive of the Model to reduce avoidable utilization, which is a constant incentive across multiple policies (RRIP, PAU, Market Shift), then the charges of the hospital will increase. Penalizing hospitals for price inefficiency and not cost inefficiency is a direct counter incentive to the Model. The ICC, which does include a profit strip, does comport with State statute to ensure that charges are reasonably related to costs. Therefore, staff does not recommend eliminating the profit strip in the Integrated Efficiency Policy.

Staff is working on creating a mechanism by which unregulated losses in line with the Model earn credit in HSCRC efficiency methodologies. Credit will require proven return on investments and will be reported and audited through annual filings. Workgroups will have a chance to review and refine staff's proposal on this matter.

Technical Considerations

The hospital industry recommended eliminating Quality Adjustments in the ICC.

Staff Response: Staff concurs with this request.

The hospital industry with the exception of MedStar Health recommended eliminating general volume adjustment in the ICC.

Staff Response: Staff believes it is important that all avoidable utilization is accounted for in the efficiency methodologies but recognizes that determining all inpatient Medical DRG's and emergency room utilization is potentially too broad. Staff will therefore work to include additional avoidable utilization in the PAU and ICC programs, most notably avoidable ED utilization, but in the interim will continue to use general utilization analyses to adjust the results of the ICC.

The hospital industry recommended eliminating the productivity adjustment in the ICC for the Integrated Efficiency Policy.

Staff Response: Staff understands the industry's argument but disagrees with its conclusion, as the productivity adjustment does not just have bearing on peers within a peer group. If a productivity adjustment for one peer group is larger than another peer group and all hospitals are then relatively ranked, it will have a material impact.

The hospital industry expressed concern over the 2010 basis for the productivity adjustment or excess capacity calculation.

Staff Response: Staff has made several adjustments to ensure that any substitution of lost volume/capacity from 2010 has been appropriately accounted for in its excess capacity calculation, including the growth of observation stays greater than 24 hours and outpatient surgery cases with a length of stay greater than 1. Staff therefore does not have concern about quantifying excess capacity from 2010, especially as there have been limited efficiency reductions since this time period.

The hospital industry expressed a desire to revisit the peer groups in the ICC.

Staff Response: Staff has reviewed the peer groups due to various questions raised in negotiations with hospitals and has found that the basis for the peer groups, i.e. to group hospitals with teaching costs, similar geographic costs, and similar patient populations, has remained relatively reliable. Moreover, the additional adjustments such as IME, DME, and casemix adjust for many of the concerns raised by industry. Staff does welcome the opportunity to review peer groups if Commissioners and stakeholders believe this to be a pressing priority.

Industry expressed concern that Indirect Medical Education calculated costs are based off of 2015 data.

Staff Response: Staff would note that the last time Medicare made an adjustment to IME payments was in 2008 and therefore believes its calculations is current.

The hospital industry expressed a desire for staff to continue to study calculations for DSH. CareFirst supported staff's conclusion that there was not empirical evidence to support the need

for a DSH calculation, especially as the Commission has a refined all-payer casemix methodology and have retained peer groups.

Staff Response: Staff will continue to consider DSH calculations.

The hospital industry supports using Medicare wage data to improve the accuracy of the labor market adjustment but cautions about cliffs created by narrowly defined geographic labor markets.

Staff Response: Staff concurs with this concern and will work with industry this upcoming year to refine the LMA with this concern in mind.

MHA expressed a concern that the Commission strive for consistency in TCOC attribution and Johns Hopkins suggested it would appropriate to include TCOC attainment.

Staff Response: Staff will try to maintain consistency but notes that the growth rate dating back to 2013 requires the primary service area attribution in lieu of the MPA attribution. Once staff completes the TCOC benchmark analyses, it is likely that the Integrated Efficiency Model could abandon the growth rate calculation and solely rely on attainment, which would remove the concern about consistency in attribution logic.

Recommendations

In light of concerns identified by staff, Commissioners, and stakeholders regarding the casemix adjustment for rehabilitation cases, use of a growth calculation in lieu of a benchmark attainment analysis for total cost of care performance, and general concerns that the policy should identify larger amounts of inappropriately retained revenue, staff is recommending delaying the implementation of this policy until RY 2021. Instead, staff will bring a revised final recommendation in Spring 2020 that would affect the Annual Update Factor for RY 2021, which will incorporate a new cost per case analysis based on updated data using the Inter-Hospital Cost Comparison tool and total cost of care benchmarks for both commercial and Medicare costs for a more comprehensive efficiency analysis.

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.¹²

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.
 - 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.

¹² 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.

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 intensity¹³ 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.

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”)¹⁴ assignment – possible because of enhanced computing power;

¹³ 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.

¹⁴ EAPGs are a 3M product, which results from the assignment of encounters to clinically meaningful outpatient groupings, similar to inpatient DRG groupings.

(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.¹⁵

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 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.¹⁶ 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:¹⁷

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

¹⁵ 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.

¹⁶ Please see Appendix 3 for clinical severity listings.

¹⁷ 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.

* 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 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

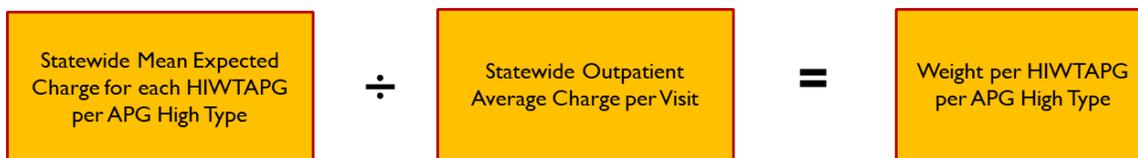
- ▶ **Step 3: Assign Principal Record Type**
 - ▶ A principal EAPG Type is assigned to all records
 - ▶ HSCRC applies a hierarchy based on EAPG Type
 - Each CPT code is linked to an EAPG, and each EAPG is linked to an EAPG Type
 - ▶ The records are categorized by APG High Type and assigned in hierarchy 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 Expected Charge Per Hospital

Mean

- ▶ **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 equals 1.00)
 - ▶ 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: Clinical Severity Listings (EAPGs Service Type and Severity Classification)

Severity	EAPG	EAPG Description	Service	Service Description
1	315	COUNSELLING OR INDIVIDUAL BRIEF PSYCHOTHERAPY	1	Behavioral Health
1	322	MEDICATION ADMINISTRATION & OBSERVATION	1	Behavioral Health
1	323	MENTAL HYGIENE ASSESSMENT	1	Behavioral Health
1	324	MENTAL HEALTH SCREENING & BRIEF ASSESSMENT	1	Behavioral Health
1	825	ADJUSTMENT DISORDERS & NEUROSES EXCEPT DEPRESSIVE DIAGNOSES	1	Behavioral Health
2	320	CASE MANAGEMENT & TREATMENT PLAN DEVELOPMENT - MENTAL HEALTH OR SUBSTANCE ABUSE	1	Behavioral Health
2	426	PSYCHOTROPIC MEDICATION MANAGEMENT	1	Behavioral Health
2	820	SCHIZOPHRENIA	1	Behavioral Health
2	821	MAJOR DEPRESSIVE DIAGNOSES & OTHER/UNSPECIFIED PSYCHOSES	1	Behavioral Health
2	822	PERSONALITY & IMPULSE CONTROL DIAGNOSES	1	Behavioral Health
2	823	BIPOLAR DISORDERS	1	Behavioral Health
2	824	DEPRESSION EXCEPT MAJOR DEPRESSIVE DIAGNOSES	1	Behavioral Health
2	826	ACUTE ANXIETY & DELIRIUM STATES	1	Behavioral Health
2	827	ORGANIC MENTAL HEALTH DISTURBANCES	1	Behavioral Health
2	831	OTHER MENTAL HEALTH DIAGNOSES	1	Behavioral Health
2	829	CHILDHOOD BEHAVIORAL DIAGNOSES	1	Behavioral Health
2	840	OPIOID ABUSE & DEPENDENCE	1	Behavioral Health
2	841	COCAINE ABUSE & DEPENDENCE	1	Behavioral Health
2	842	ALCOHOL ABUSE & DEPENDENCE	1	Behavioral Health
2	843	OTHER DRUG ABUSE & DEPENDENCE	1	Behavioral Health
2	317	FAMILY PSYCHOTHERAPY	1	Behavioral Health
2	318	GROUP PSYCHOTHERAPY	1	Behavioral Health
3	316	INDIVIDUAL COMPREHENSIVE PSYCHOTHERAPY	1	Behavioral Health
3	319	ACTIVITY THERAPY	1	Behavioral Health
3	310	DEVELOPMENTAL & NEUROPSYCHOLOGICAL TESTING	1	Behavioral Health
3	828	MENTAL RETARDATION	1	Behavioral Health
4	321	CRISIS INTERVENTION	1	Behavioral Health
4	314	HALF DAY PARTIAL HOSPITALIZATION FOR MENTAL ILLNESS	1	Behavioral Health
4	328	DAY TREATMENT - HALF DAY	1	Behavioral Health
4	830	EATING DISORDERS	1	Behavioral Health
4	313	HALF DAY PARTIAL HOSPITALIZATION FOR SUBSTANCE ABUSE	1	Behavioral Health
5	312	FULL DAY PARTIAL HOSPITALIZATION FOR MENTAL ILLNESS	1	Behavioral Health
5	327	INTENSIVE OUTPATIENT TREATMENT	1	Behavioral Health
5	329	DAY TREATMENT - FULL DAY	1	Behavioral Health
5	311	FULL DAY PARTIAL HOSPITALIZATION FOR SUBSTANCE ABUSE	1	Behavioral Health
1	487	MINOR CARDIAC MONITORING	2	Cardiology
1	592	LEVEL I CARDIOVASCULAR DIAGNOSES	2	Cardiology
1	596	PERIPHERAL & OTHER VASCULAR DIAGNOSES	2	Cardiology
1	597	PHLEBITIS	2	Cardiology
1	598	ANGINA PECTORIS & CORONARY ATHEROSCLEROSIS	2	Cardiology
1	599	HYPERTENSION	2	Cardiology
1	600	CARDIAC STRUCTURAL & VALVULAR DIAGNOSES	2	Cardiology
1	601	LEVEL I CARDIAC ARRHYTHMIA & CONDUCTION DIAGNOSES	2	Cardiology

Severity	EAPG	EAPG Description	Service	Service Description
2	593	LEVEL II CARDIOVASCULAR DIAGNOSES	2	Cardiology
2	602	ATRIAL FIBRILLATION	2	Cardiology
2	603	LEVEL II CARDIAC ARRHYTHMIA & CONDUCTION DIAGNOSES	2	Cardiology
2	418	MINOR CARDIAC AND VASCULAR TESTS	2	Cardiology
2	413	CARDIOGRAM	2	Cardiology
3	80	EXERCISE TOLERANCE TESTS	2	Cardiology
3	81	ECHOCARDIOGRAPHY	2	Cardiology
3	604	CHEST PAIN	2	Cardiology
3	605	SYNCOPE & COLLAPSE	2	Cardiology
4	93	CARDIOVERSION	2	Cardiology
4	420	PACEMAKER AND OTHER ELECTRONIC ANALYSIS	2	Cardiology
4	594	HEART FAILURE	2	Cardiology
5	82	CARDIAC ELECTROPHYSIOLOGIC TESTS AND MONITORING	2	Cardiology
5	591	ACUTE MYOCARDIAL INFARCTION	2	Cardiology
5	595	CARDIAC ARREST OR OTHER CAUSES OF MORTALITY	2	Cardiology
1	435	CLASS I PHARMACOTHERAPY	3	Chemoinfusion
1	436	CLASS II PHARMACOTHERAPY	3	Chemoinfusion
1	496	MINOR PHARMACOTHERAPY	3	Chemoinfusion
1	430	CLASS I CHEMOTHERAPY DRUGS	3	Chemoinfusion
1	495	MINOR CHEMOTHERAPY DRUGS	3	Chemoinfusion
1	117	HOME INFUSION	3	Chemoinfusion
1	1090	USER CUSTOMIZABLE 340B DRUGS	3	Chemoinfusion
2	431	CLASS II CHEMOTHERAPY DRUGS	3	Chemoinfusion
2	437	CLASS III PHARMACOTHERAPY	3	Chemoinfusion
2	438	CLASS IV PHARMACOTHERAPY	3	Chemoinfusion
2	432	CLASS III CHEMOTHERAPY DRUGS	3	Chemoinfusion
3	433	CLASS IV CHEMOTHERAPY DRUGS	3	Chemoinfusion
3	439	CLASS V PHARMACOTHERAPY	3	Chemoinfusion
3	434	CLASS V CHEMOTHERAPY DRUGS	3	Chemoinfusion
3	111	PHARMACOTHERAPY EXCEPT BY EXTENDED INFUSION	3	Chemoinfusion
3	110	PHARMACOTHERAPY BY EXTENDED INFUSION	3	Chemoinfusion
4	440	CLASS VI PHARMACOTHERAPY	3	Chemoinfusion
4	441	CLASS VI CHEMOTHERAPY DRUGS	3	Chemoinfusion
4	444	CLASS VII PHARMACOTHERAPY	3	Chemoinfusion
4	443	CLASS VII CHEMOTHERAPY	3	Chemoinfusion
5	460	CLASS VIII - COMBINED CHEMOTHERAPY AND PHARMACOTHERAPY	3	Chemoinfusion
5	461	CLASS IX COMBINED CHEMOTHERAPY AND PHARMACOTHERAPY	3	Chemoinfusion
5	462	CLASS X COMBINED CHEMOTHERAPY AND PHARMACOTHERAPY	3	Chemoinfusion
5	463	CLASS XI COMBINED CHEMOTHERAPY AND PHARMACOTHERAPY	3	Chemoinfusion
5	464	CLASS XII COMBINED CHEMOTHERAPY AND PHARMACOTHERAPY	3	Chemoinfusion
5	465	CLASS XIII COMBINED CHEMOTHERAPY AND PHARMACOTHERAPY	3	Chemoinfusion
1	350	LEVEL I ADJUNCTIVE GENERAL DENTAL SERVICES	4	Dental
1	351	LEVEL II ADJUNCTIVE GENERAL DENTAL SERVICES	4	Dental
1	371	LEVEL I ORTHODONTICS	4	Dental
1	372	SEALANT	4	Dental
1	373	LEVEL I DENTAL FILM	4	Dental
1	376	DIAGNOSTIC DENTAL PROCEDURES	4	Dental
1	377	PREVENTIVE DENTAL PROCEDURES	4	Dental
2	352	LEVEL I PERIODONTICS	4	Dental

Severity	EAPG	EAPG Description	Service	Service Description
2	374	LEVEL II DENTAL FILM	4	Dental
2	379	LEVEL II ORTHODONTICS	4	Dental
2	353	LEVEL I PROSTHODONTICS, FIXED	4	Dental
2	356	LEVEL I PROSTHODONTICS, REMOVABLE	4	Dental
3	359	LEVEL I MAXILLOFACIAL PROSTHETICS	4	Dental
3	361	LEVEL I DENTAL RESTORATIONS	4	Dental
3	364	LEVEL I ENDODONTICS	4	Dental
3	375	DENTAL ANESTHESIA	4	Dental
3	378	LEVEL II PERIODONTICS	4	Dental
3	354	LEVEL II PROSTHODONTICS, FIXED	4	Dental
3	357	LEVEL II PROSTHODONTICS, REMOVABLE	4	Dental
4	360	LEVEL II MAXILLOFACIAL PROSTHETICS	4	Dental
4	362	LEVEL II DENTAL RESTORATIONS	4	Dental
4	365	LEVEL II ENDODONTICS	4	Dental
4	366	LEVEL III ENDODONTICS	4	Dental
4	367	LEVEL I ORAL AND MAXILLOFACIAL SURGERY	4	Dental
4	368	LEVEL II ORAL AND MAXILLOFACIAL SURGERY	4	Dental
4	381	LEVEL I DENTAL IMPLANTS	4	Dental
4	382	LEVEL II DENTAL IMPLANTS	4	Dental
4	355	LEVEL III PROSTHODONTICS, FIXED	4	Dental
4	358	LEVEL III PROSTHODONTICS, REMOVABLE	4	Dental
5	363	LEVEL III DENTAL RESTORATION	4	Dental
5	369	LEVEL III ORAL AND MAXILLOFACIAL SURGERY	4	Dental
5	370	LEVEL IV ORAL AND MAXILLOFACIAL SURGERY	4	Dental
1	674	CONTUSION, OPEN WOUND & OTHER TRAUMA TO SKIN & SUBCUTANEOUS TISSUE	5	Dermatology
2	1	PHOTOCHEMOTHERAPY	5	Dermatology
3	670	SKIN ULCERS	5	Dermatology
4	671	MAJOR SKIN DIAGNOSES	5	Dermatology
4	861	PARTIAL THICKNESS BURNS W OR W/O SKIN GRAFT	5	Dermatology
5	676	DECUBITUS ULCER	5	Dermatology
5	860	EXTENSIVE 3RD DEGREE OR FULL THICKNESS BURNS W/O SKIN GRAFT	5	Dermatology
1	452	DIABETES SUPPLIES	6	DME
1	453	MOTORIZED WHEELCHAIR	6	DME
1	456	MOTORIZED WHEELCHAIR ACCESSORIES	6	DME
1	1001	DURABLE MEDICAL EQUIPMENT AND SUPPLIES - LEVEL 1	6	DME
1	1002	DURABLE MEDICAL EQUIPMENT AND SUPPLIES - LEVEL 2	6	DME
1	1003	DURABLE MEDICAL EQUIPMENT AND SUPPLIES - LEVEL 3	6	DME
1	1004	DURABLE MEDICAL EQUIPMENT - LEVEL 4	6	DME
1	1005	DURABLE MEDICAL EQUIPMENT - LEVEL 5	6	DME
1	1006	DURABLE MEDICAL EQUIPMENT - LEVEL 6	6	DME
1	1007	DURABLE MEDICAL EQUIPMENT - LEVEL 7	6	DME
1	1008	DURABLE MEDICAL EQUIPMENT - LEVEL 8	6	DME
1	1009	DURABLE MEDICAL EQUIPMENT - LEVEL 9	6	DME
2	1010	DURABLE MEDICAL EQUIPMENT - LEVEL 10	6	DME
2	1011	DURABLE MEDICAL EQUIPMENT - LEVEL 11	6	DME
2	1012	DURABLE MEDICAL EQUIPMENT - LEVEL 12	6	DME
2	1013	DURABLE MEDICAL EQUIPMENT - LEVEL 13	6	DME
2	1014	DURABLE MEDICAL EQUIPMENT - LEVEL 14	6	DME
2	1015	DURABLE MEDICAL EQUIPMENT - LEVEL 15	6	DME
2	1016	DURABLE MEDICAL EQUIPMENT - LEVEL 16	6	DME
2	1017	DURABLE MEDICAL EQUIPMENT - LEVEL 17	6	DME
2	1018	DURABLE MEDICAL EQUIPMENT - LEVEL 18	6	DME
2	1019	DURABLE MEDICAL EQUIPMENT - LEVEL 19	6	DME

Severity	EAPG	EAPG Description	Service	Service Description
2	1020	DURABLE MEDICAL EQUIPMENT - LEVEL 20	6	DME
3	454	TPN FORMULAE	6	DME
3	498	PEN FORMULAE	6	DME
1	560	EAR, NOSE, MOUTH, THROAT, CRANIAL/FACIAL MALIGNANCIES	7	Otolaryngology
1	562	INFECTIONS OF UPPER RESPIRATORY TRACT & OTITIS MEDIA	7	Otolaryngology
1	563	DENTAL & ORAL DIAGNOSES & INJURIES	7	Otolaryngology
1	564	LEVEL I OTHER EAR, NOSE, MOUTH, THROAT & CRANIAL/FACIAL DIAGNOSES	7	Otolaryngology
2	561	VERTIGINOUS DIAGNOSES EXCEPT FOR BENIGN VERTIGO	7	Otolaryngology
2	251	OTORHINOLARYNGOLOGIC FUNCTION TESTS	7	Otolaryngology
2	565	LEVEL II OTHER EAR, NOSE, MOUTH, THROAT & CRANIAL/FACIAL DIAGNOSES	7	Otolaryngology
2	252	LEVEL I FACIAL AND ENT PROCEDURES	7	Otolaryngology
2	257	AUDIOMETRY	7	Otolaryngology
3	62	LEVEL I ENDOSCOPY OF THE UPPER AIRWAY	7	Otolaryngology
3	253	LEVEL II FACIAL AND ENT PROCEDURES	7	Otolaryngology
3	256	TONSIL AND ADENOID PROCEDURES	7	Otolaryngology
4	63	LEVEL II ENDOSCOPY OF THE UPPER AIRWAY	7	Otolaryngology
4	254	LEVEL III FACIAL AND ENT PROCEDURES	7	Otolaryngology
5	255	LEVEL IV FACIAL AND ENT PROCEDURES	7	Otolaryngology
5	250	COCHLEAR DEVICE IMPLANTATION	7	Otolaryngology
1	624	LEVEL I GASTROINTESTINAL DIAGNOSES	8	Gastroenterology
1	639	LEVEL I HEPATOBILIARY DIAGNOSES	8	Gastroenterology
2	621	PEPTIC ULCER & GASTRITIS	8	Gastroenterology
2	623	ESOPHAGITIS	8	Gastroenterology
2	625	LEVEL II GASTROINTESTINAL DIAGNOSES	8	Gastroenterology
2	630	CONSTIPATION	8	Gastroenterology
2	631	HERNIA	8	Gastroenterology
2	627	NON-BACTERIAL GASTROENTERITIS, NAUSEA & VOMITING	8	Gastroenterology
3	637	GALLBLADDER & BILIARY TRACT DIAGNOSES	8	Gastroenterology
3	640	LEVEL II HEPATOBILIARY DIAGNOSES	8	Gastroenterology
3	632	IRRITABLE BOWEL SYNDROME	8	Gastroenterology
3	628	ABDOMINAL PAIN	8	Gastroenterology
3	633	ALCOHOLIC LIVER DISEASE	8	Gastroenterology
3	130	ALIMENTARY TESTS AND SIMPLE TUBE PLACEMENT	8	Gastroenterology
3	131	ESOPHAGEAL DILATION WITHOUT ENDOSCOPY	8	Gastroenterology
3	132	ANOSCOPY WITH BIOPSY AND DIAGNOSTIC PROCTOSIGMOIDOSCOPY	8	Gastroenterology
3	133	PROCTOSIGMOIDOSCOPY WITH EXCISION OR BIOPSY	8	Gastroenterology
3	626	INFLAMMATORY BOWEL DISEASE	8	Gastroenterology
3	629	MALFUNCTION, REACTION & COMPLICATION OF GI DEVICE OR PROCEDURE	8	Gastroenterology
3	638	CHOLECYSTITIS	8	Gastroenterology
4	134	DIAGNOSTIC UPPER GI ENDOSCOPY OR INTUBATION	8	Gastroenterology
4	136	DIAGNOSTIC LOWER GASTROINTESTINAL ENDOSCOPY	8	Gastroenterology
4	620	DIGESTIVE MALIGNANCY	8	Gastroenterology
4	635	PANCREAS DIAGNOSES EXCEPT MALIGNANCY	8	Gastroenterology
4	636	HEPATITIS WITHOUT COMA	8	Gastroenterology
5	149	SCREENING COLORECTAL SERVICES	8	Gastroenterology
5	135	THERAPEUTIC UPPER GI ENDOSCOPY OR INTUBATION	8	Gastroenterology

Severity	EAPG	EAPG Description	Service	Service Description
5	137	THERAPEUTIC COLONOSCOPY	8	Gastroenterology
5	138	ERCP AND MISCELLANEOUS GI ENDOSCOPY PROCEDURES	8	Gastroenterology
5	634	MALIGNANCY OF HEPATOBILIARY SYSTEM & PANCREAS	8	Gastroenterology
1	695	OBESITY	9	Endocrinology
2	713	DIABETES WITHOUT COMPLICATIONS	9	Endocrinology
2	692	LEVEL I ENDOCRINE DIAGNOSES	9	Endocrinology
3	693	LEVEL II ENDOCRINE DIAGNOSES	9	Endocrinology
3	691	INBORN ERRORS OF METABOLISM	9	Endocrinology
4	711	DIABETES WITH OTHER MANIFESTATIONS & COMPLICATIONS	9	Endocrinology
4	710	DIABETES WITH OPHTHALMIC MANIFESTATIONS	9	Endocrinology
4	712	DIABETES WITH NEUROLOGIC MANIFESTATIONS	9	Endocrinology
4	714	DIABETES WITH RENAL MANIFESTATIONS	9	Endocrinology
5	690	MALNUTRITION, FAILURE TO THRIVE & OTHER NUTRITIONAL DIAGNOSES	9	Endocrinology
5	694	ELECTROLYTE DISORDERS	9	Endocrinology
1	425	LEVEL I OTHER MISCELLANEOUS ANCILLARY PROCEDURES	10	General Medicine
1	427	BIOFEEDBACK AND OTHER TRAINING	10	General Medicine
1	449	ADDITIONAL UNDIFFERENTIATED MEDICAL VISIT/SERVICES	10	General Medicine
1	457	VENIPUNCTURE	10	General Medicine
1	458	ALLERGY THERAPY	10	General Medicine
1	459	VACCINE ADMINISTRATION	10	General Medicine
1	490	INCIDENTAL TO MEDICAL VISIT OR SIGNIFICANT PROCEDURE	10	General Medicine
1	491	MEDICAL VISIT INDICATOR	10	General Medicine
1	497	TELEHEALTH FACILITATION	10	General Medicine
1	663	PAIN	10	General Medicine
1	411	BLOOD AND URINE DIPSTICK TESTS	10	General Medicine
1	414	LEVEL I IMMUNIZATION	10	General Medicine
1	415	LEVEL II IMMUNIZATION	10	General Medicine
1	429	PATIENT EDUCATION, GROUP	10	General Medicine
1	809	OTHER INFECTIOUS & PARASITIC DISEASES	10	General Medicine
1	810	H. PYLORI INFECTION	10	General Medicine
2	808	VIRAL ILLNESS	10	General Medicine
2	488	MINOR DEVICE EVALUATION & ELECTRONIC ANALYSIS	10	General Medicine
2	116	ALLERGY TESTS	10	General Medicine
2	424	DRESSINGS AND OTHER MINOR PROCEDURES	10	General Medicine
4	489	LEVEL II OTHER MISCELLANEOUS ANCILLARY PROCEDURES	10	General Medicine
2	675	OTHER SKIN, SUBCUTANEOUS TISSUE & BREAST DIAGNOSES	10	General Medicine
2	392	PAP SMEARS	10	General Medicine
2	416	LEVEL III IMMUNIZATION	10	General Medicine
2	428	PATIENT EDUCATION, INDIVIDUAL	10	General Medicine
2	451	SMOKING CESSATION TREATMENT	10	General Medicine
3	807	FEVER	10	General Medicine
3	417	MINOR REPRODUCTIVE PROCEDURES	10	General Medicine
3	421	TUBE CHANGE	10	General Medicine
3	118	NUTRITION THERAPY	10	General Medicine
3	673	CELLULITIS & OTHER BACTERIAL SKIN INFECTIONS	10	General Medicine
3	875	CONTRACEPTIVE MANAGEMENT	10	General Medicine
3	806	POST-OPERATIVE, POST-TRAUMATIC, OTHER DEVICE INFECTIONS	10	General Medicine
3	852	OTHER COMPLICATIONS OF TREATMENT	10	General Medicine

Severity	EAPG	EAPG Description	Service	Service Description
4	510	MAJOR SIGNS, SYMPTOMS AND FINDINGS	10	General Medicine
4	423	INTRODUCTION OF NEEDLE AND CATHETER	10	General Medicine
4	448	EXPANDED HOURS ACCESS	10	General Medicine
4	450	OBSERVATION	10	General Medicine
4	853	OTHER INJURY, POISONING & TOXIC EFFECT DIAGNOSES	10	General Medicine
4	854	TOXIC EFFECTS OF NON-MEDICINAL SUBSTANCES	10	General Medicine
4	876	ADULT PREVENTIVE MEDICINE	10	General Medicine
4	877	CHILD PREVENTIVE MEDICINE	10	General Medicine
4	878	GYNECOLOGICAL PREVENTIVE MEDICINE	10	General Medicine
4	879	PREVENTIVE OR SCREENING ENCOUNTERS	10	General Medicine
4	882	GENETIC COUNSELING	10	General Medicine
4	880	HIV INFECTION	10	General Medicine
5	850	ALLERGIC REACTIONS	10	General Medicine
5	92	RESUSCITATION	10	General Medicine
5	672	MALIGNANT BREAST DIAGNOSES	10	General Medicine
5	851	POISONING OF MEDICINAL AGENTS	10	General Medicine
5	805	SEPTICEMIA & DISSEMINATED INFECTIONS	10	General Medicine
5	881	AIDS	10	General Medicine
1	3	LEVEL I SKIN INCISION AND DRAINAGE	11	General Surgery
1	5	NAIL PROCEDURES	11	General Surgery
1	6	LEVEL I SKIN DEBRIDEMENT AND DESTRUCTION	11	General Surgery
1	9	LEVEL I EXCISION AND BIOPSY OF SKIN AND SOFT TISSUE	11	General Surgery
1	12	LEVEL I SKIN REPAIR	11	General Surgery
1	90	SECONDARY VARICOSE VEINS AND VASCULAR INJECTION	11	General Surgery
1	455	IMPLANTED TISSUE OF ANY TYPE	11	General Surgery
2	61	NEEDLE AND CATHETER BIOPSY, ASPIRATION, LAVAGE AND INTUBATION	11	General Surgery
2	2	SUPERFICIAL NEEDLE BIOPSY AND ASPIRATION	11	General Surgery
2	4	LEVEL II SKIN INCISION AND DRAINAGE	11	General Surgery
2	7	LEVEL II SKIN DEBRIDEMENT AND DESTRUCTION	11	General Surgery
2	13	LEVEL II SKIN REPAIR	11	General Surgery
2	30	LEVEL I MUSCULOSKELETAL PROCEDURES EXCLUDING HAND AND FOOT	11	General Surgery
3	380	ANESTHESIA	11	General Surgery
3	10	LEVEL II EXCISION AND BIOPSY OF SKIN AND SOFT TISSUE	11	General Surgery
3	145	LEVEL I LAPAROSCOPY	11	General Surgery
3	20	LEVEL I BREAST PROCEDURES	11	General Surgery
3	8	LEVEL III SKIN DEBRIDEMENT AND DESTRUCTION	11	General Surgery
3	11	LEVEL III EXCISION AND BIOPSY OF SKIN AND SOFT TISSUE	11	General Surgery
3	14	LEVEL III SKIN REPAIR	11	General Surgery
3	91	VASCULAR LIGATION AND RECONSTRUCTION	11	General Surgery
3	141	LEVEL I ANAL AND RECTAL PROCEDURES	11	General Surgery
4	15	LEVEL IV SKIN REPAIR	11	General Surgery
4	21	LEVEL II BREAST PROCEDURES	11	General Surgery
4	115	DEEP LYMPH STRUCTURE AND THYROID PROCEDURES	11	General Surgery
4	139	LEVEL I HERNIA REPAIR	11	General Surgery
4	142	LEVEL II ANAL AND RECTAL PROCEDURES	11	General Surgery
4	143	LEVEL I GASTROINTESTINAL PROCEDURES	11	General Surgery
4	146	LEVEL II LAPAROSCOPY	11	General Surgery
5	147	LEVEL III LAPAROSCOPY	11	General Surgery
5	22	LEVEL III BREAST PROCEDURES	11	General Surgery
5	140	LEVEL II HERNIA REPAIR	11	General Surgery
5	144	LEVEL II GASTROINTESTINAL PROCEDURES	11	General Surgery

Severity	EAPG	EAPG Description	Service	Service Description
5	148	LEVEL IV LAPAROSCOPY	11	General Surgery
1	780	OTHER HEMATOLOGICAL DIAGNOSES	12	Hematology
1	785	ANEMIA EXCEPT FOR IRON DEFICIENCY ANEMIA AND SICKLE CELL ANEMIA	12	Hematology
1	786	IRON DEFICIENCY ANEMIA	12	Hematology
2	781	COAGULATION & PLATELET DIAGNOSES	12	Hematology
2	782	CONGENITAL FACTOR DEFICIENCIES	12	Hematology
2	784	SICKLE CELL ANEMIA	12	Hematology
3	112	PHLEBOTOMY	12	Hematology
4	113	LEVEL I BLOOD AND BLOOD PRODUCT EXCHANGE	12	Hematology
4	783	SICKLE CELL ANEMIA CRISIS	12	Hematology
5	114	LEVEL II BLOOD AND BLOOD PRODUCT EXCHANGE	12	Hematology
1	83	PLACEMENT OF TRANSVENOUS CATHETERS	13	Interventional Cardiology
1	95	THROMBOLYSIS	13	Interventional Cardiology
2	88	LEVEL I CARDIOTHORACIC PROCEDURES	13	Interventional Cardiology
3	89	LEVEL II CARDIOTHORACIC PROCEDURES	13	Interventional Cardiology
3	84	DIAGNOSTIC CARDIAC CATHETERIZATION	13	Interventional Cardiology
4	86	PACEMAKER INSERTION AND REPLACEMENT	13	Interventional Cardiology
4	87	REMOVAL AND REVISION OF PACEMAKER AND VASCULAR DEVICE	13	Interventional Cardiology
4	85	PERIPHERAL TRANSCATHETER AND REVASCULARIZATION PROCEDURES	13	Interventional Cardiology
4	96	ATRIAL AND VENTRICULAR RECORDING AND PACING	13	Interventional Cardiology
4	99	CORONARY ANGIOPLASTY	13	Interventional Cardiology
5	97	AICD IMPLANT	13	Interventional Cardiology
1	394	LEVEL I IMMUNOLOGY TESTS	14	Laboratory
1	396	LEVEL I MICROBIOLOGY TESTS	14	Laboratory
1	398	LEVEL I ENDOCRINOLOGY TESTS	14	Laboratory
1	400	LEVEL I CHEMISTRY TESTS	14	Laboratory
1	402	BASIC CHEMISTRY TESTS	14	Laboratory
1	404	TOXICOLOGY TESTS	14	Laboratory
1	406	LEVEL I CLOTTING TESTS	14	Laboratory
1	408	LEVEL I HEMATOLOGY TESTS	14	Laboratory
1	410	URINALYSIS	14	Laboratory
1	390	LEVEL I PATHOLOGY	14	Laboratory
2	385	LEVEL I MOLECULAR PATHOLOGY AND GENETIC TESTS	14	Laboratory
2	395	LEVEL II IMMUNOLOGY TESTS	14	Laboratory
2	397	LEVEL II MICROBIOLOGY TESTS	14	Laboratory
2	399	LEVEL II ENDOCRINOLOGY TESTS	14	Laboratory
2	401	LEVEL II CHEMISTRY TESTS	14	Laboratory
2	403	ORGAN OR DISEASE ORIENTED PANELS	14	Laboratory
2	405	THERAPEUTIC DRUG MONITORING	14	Laboratory
2	407	LEVEL II CLOTTING TESTS	14	Laboratory
2	409	LEVEL II HEMATOLOGY TESTS	14	Laboratory
2	486	BASIC BLOOD TYPING	14	Laboratory
2	393	BLOOD AND TISSUE TYPING	14	Laboratory
3	386	LEVEL II MOLECULAR PATHOLOGY AND GENETIC TESTS	14	Laboratory
3	391	LEVEL II PATHOLOGY	14	Laboratory

Severity	EAPG	EAPG Description	Service	Service Description
4	387	LEVEL III MOLECULAR PATHOLOGY AND GENETIC TESTS	14	Laboratory
1	770	NORMAL NEONATE	15	Neonatology
2	771	LEVEL I NEONATAL DIAGNOSES	15	Neonatology
2	873	NEONATAL AFTERCARE	15	Neonatology
3	772	LEVEL II NEONATAL DIAGNOSES	15	Neonatology
1	520	SPINAL DIAGNOSES & INJURIES	16	Neurology
1	524	LEVEL I CNS DIAGNOSES	16	Neurology
1	526	TRANSIENT ISCHEMIA	16	Neurology
1	527	PERIPHERAL NERVE DIAGNOSES	16	Neurology
1	530	HEADACHES OTHER THAN MIGRAINE	16	Neurology
1	531	MIGRAINE	16	Neurology
1	533	AFTEREFFECTS OF CEREBROVASCULAR ACCIDENT	16	Neurology
1	534	NONSPECIFIC CVA & PRECEREBRAL OCCLUSION W/O INFARC	16	Neurology
1	522	DEGENERATIVE NERVOUS SYSTEM DIAGNOSES EXC MULT SCLEROSIS	16	Neurology
2	525	LEVEL II CNS DIAGNOSES	16	Neurology
2	211	ELECTROENCEPHALOGRAM	16	Neurology
2	212	ELECTROCONVULSIVE THERAPY	16	Neurology
2	213	NERVE AND MUSCLE TESTS	16	Neurology
2	214	LEVEL I NERVOUS SYSTEM INJECTIONS, STIMULATIONS OR CRANIAL TAP	16	Neurology
2	521	NERVOUS SYSTEM MALIGNANCY	16	Neurology
2	529	SEIZURE	16	Neurology
2	532	HEAD TRAUMA	16	Neurology
2	536	CEREBRAL PALSY	16	Neurology
3	523	MULTIPLE SCLEROSIS & OTHER DEMYELINATING DISEASES	16	Neurology
3	219	SPINAL TAP	16	Neurology
3	210	EXTENDED EEG STUDIES	16	Neurology
3	222	SLEEP STUDIES	16	Neurology
3	220	LEVEL II NERVOUS SYSTEM INJECTIONS, STIMULATIONS OR CRANIAL TAP	16	Neurology
3	215	LEVEL I REVISION OR REMOVAL OF NEUROLOGICAL DEVICE	16	Neurology
3	216	LEVEL II REVISION OR REMOVAL OF NEUROLOGICAL DEVICE	16	Neurology
4	528	NONTRAUMATIC STUPOR & COMA	16	Neurology
4	535	CVA & PRECEREBRAL OCCLUSION W INFARCT	16	Neurology
4	217	LEVEL I NERVE PROCEDURES	16	Neurology
4	218	LEVEL II NERVE PROCEDURES	16	Neurology
5	221	LAMINOTOMY AND LAMINECTOMY	16	Neurology
5	223	LEVEL III NERVE PROCEDURES	16	Neurology
5	224	LEVEL IV NERVE PROCEDURES	16	Neurology
1	761	POSTPARTUM & POST ABORTION DIAGNOSES W/O PROCEDURE	17	Obstetrics and Gynecology
1	764	FALSE LABOR	17	Obstetrics and Gynecology
1	765	OTHER ANTEPARTUM DIAGNOSES	17	Obstetrics and Gynecology
1	766	ROUTINE PRENATAL CARE	17	Obstetrics and Gynecology
1	752	LEVEL I MENSTRUAL AND OTHER FEMALE DIAGNOSES	17	Obstetrics and Gynecology
2	191	LEVEL I FETAL PROCEDURES	17	Obstetrics and Gynecology
2	762	THREATENED ABORTION	17	Obstetrics and Gynecology

Severity	EAPG	EAPG Description	Service	Service Description
				Gynecology
2	763	ABORTION W/O D&C, ASPIRATION CURETTAGE OR HYSTEROTOMY	17	Obstetrics and Gynecology
2	751		17	Obstetrics and Gynecology
		FEMALE REPRODUCTIVE SYSTEM INFECTIONS		
2	753	LEVEL II MENSTRUAL AND OTHER FEMALE DIAGNOSES	17	Obstetrics and Gynecology
3	190		17	Obstetrics and Gynecology
		ARTIFICIAL FERTILIZATION		
3	192		17	Obstetrics and Gynecology
		LEVEL II FETAL PROCEDURES		
3	750		17	Obstetrics and Gynecology
		FEMALE REPRODUCTIVE SYSTEM MALIGNANCY		
3	196		17	Obstetrics and Gynecology
		LEVEL I FEMALE REPRODUCTIVE PROCEDURES		
3	201		17	Obstetrics and Gynecology
		COLPOSCOPY		
3	760		17	Obstetrics and Gynecology
		VAGINAL DELIVERY		
4	193		17	Obstetrics and Gynecology
		TREATMENT OF INCOMPLETE ABORTION		
4	194		17	Obstetrics and Gynecology
		THERAPEUTIC ABORTION		
4	197		17	Obstetrics and Gynecology
		LEVEL II FEMALE REPRODUCTIVE PROCEDURES		
4	199		17	Obstetrics and Gynecology
		DILATION AND CURETTAGE		
4	200		17	Obstetrics and Gynecology
		HYSTEROSCOPY		
5	195		17	Obstetrics and Gynecology
		VAGINAL DELIVERY		
5	198		17	Obstetrics and Gynecology
		LEVEL III FEMALE REPRODUCTIVE PROCEDURES		
1	483	RADIATION THERAPY MANAGEMENT	18	Oncology
1	484	THERAPEUTIC RADIOLOGY TREATMENT PLANNING	18	Oncology
1	800	ACUTE LEUKEMIA	18	Oncology
1	801	LYMPHOMA, MYELOMA & NON-ACUTE LEUKEMIA	18	Oncology
1	804	LYMPHATIC & OTHER MALIGNANCIES & NEOPLASMS OF UNCERTAIN BEHAVIOR	18	Oncology
2	347	HIGH ENERGY NEUTRON RADIATION TREATMENT DELIVERY	18	Oncology
2	476	LEVEL I THERAPEUTIC RADIATION TREATMENT PREPARATION	18	Oncology
2	478	MEDICAL RADIATION PHYSICS	18	Oncology
2	480	TELETHERAPY/BRACHYTHERAPY CALCULATION	18	Oncology
3	343	RADIATION TREATMENT DELIVERY	18	Oncology
3	344	INSTILLATION OF RADIOELEMENT SOLUTIONS	18	Oncology
3	341	RADIATION THERAPY AND HYPERTHERMIA	18	Oncology
3	477	LEVEL II THERAPEUTIC RADIATION TREATMENT PREPARATION	18	Oncology
3	479	TREATMENT DEVICE DESIGN AND CONSTRUCTION	18	Oncology
3	481	THERAPEUTIC RADIOLOGY SIMULATION FIELD SETTING	18	Oncology
3	802	RADIOTHERAPY	18	Oncology
3	803	CHEMOTHERAPY	18	Oncology
4	342	AFTERLOADING BRACHYTHERAPY	18	Oncology
4	345	HYPERTHERMIC THERAPIES	18	Oncology
5	346	RADIOSURGERY	18	Oncology
5	348	PROTON TREATMENT DELIVERY	18	Oncology

Severity	EAPG	EAPG Description	Service	Service Description
5	349	LEVEL II AFTERLOADING BRACHYTHERAPY	18	Oncology
5	482	RADIOELEMENT APPLICATION	18	Oncology
1	231	FITTING OF CONTACT LENSES	19	Ophthalmology
1	422	PROVISION OF VISION AIDS	19	Ophthalmology
1	550	ACUTE MAJOR EYE INFECTIONS	19	Ophthalmology
1	551	CATARACTS	19	Ophthalmology
1	552	GLAUCOMA	19	Ophthalmology
1	553	LEVEL I OTHER OPHTHALMIC DIAGNOSES	19	Ophthalmology
1	555	CONJUNCTIVITIS	19	Ophthalmology
2	230	MINOR OPHTHALMOLOGICAL TESTS AND PROCEDURES	19	Ophthalmology
2	419	MINOR OPHTHALMOLOGICAL INJECTION, SCRAPING AND TESTS	19	Ophthalmology
2	554	LEVEL II OTHER OPHTHALMIC DIAGNOSES	19	Ophthalmology
3	485	CORNEAL TISSUE PROCESSING	19	Ophthalmology
3	232	LASER EYE PROCEDURES	19	Ophthalmology
4	233	CATARACT PROCEDURES	19	Ophthalmology
4	234	LEVEL I ANTERIOR SEGMENT EYE PROCEDURES	19	Ophthalmology
4	237	LEVEL I POSTERIOR SEGMENT EYE PROCEDURES	19	Ophthalmology
4	240	LEVEL I REPAIR AND PLASTIC PROCEDURES OF EYE	19	Ophthalmology
5	235	LEVEL II ANTERIOR SEGMENT EYE PROCEDURES	19	Ophthalmology
5	236	LEVEL III ANTERIOR SEGMENT EYE PROCEDURES	19	Ophthalmology
5	238	LEVEL II POSTERIOR SEGMENT EYE PROCEDURES	19	Ophthalmology
5	239	STRABISMUS AND MUSCLE EYE PROCEDURES	19	Ophthalmology
5	241	LEVEL II REPAIR AND PLASTIC PROCEDURES OF EYE	19	Ophthalmology
1	650	FRACTURE OF FEMUR	20	Orthopedics
1	652	FRACTURES & DISLOCATIONS EXCEPT FEMUR, PELVIS & BACK	20	Orthopedics
1	655	CONNECTIVE TISSUE DIAGNOSES	20	Orthopedics
1	656	BACK & NECK DIAGNOSES EXCEPT LUMBAR DISC DIAGNOSES	20	Orthopedics
1	657	LUMBAR DISC DIAGNOSES	20	Orthopedics
1	660	LEVEL I OTHER MUSCULOSKELETAL SYSTEM & CONNECTIVE TISSUE DIAGNOSES	20	Orthopedics
1	662	OSTEOPOROSIS	20	Orthopedics
1	658	LUMBAR DISC DIAGNOSES WITH SCIATICA	20	Orthopedics
1	39	REPLACEMENT OF CAST	20	Orthopedics
1	40	SPLINT, STRAPPING AND CAST REMOVAL	20	Orthopedics
2	49	ARTHROCENTESIS AND LIGAMENT OR TENDON INJECTION	20	Orthopedics
2	651	FRACTURE OF PELVIS OR DISLOCATION OF HIP	20	Orthopedics
2	653	MUSCULOSKELETAL MALIGNANCY & PATHOLOGICAL FRACTURES	20	Orthopedics
2	654	OSTEOMYELITIS, SEPTIC ARTHRITIS & OTHER MUSCULOSKELETAL INFECTIONS	20	Orthopedics
2	659	MALFUNCTION, REACTION, COMPLIC OF ORTHOPEDIC DEVICE OR PROCEDURE	20	Orthopedics
2	661	LEVEL II OTHER MUSCULOSKELETAL SYSTEM & CONNECTIVE TISSUE DIAGNOSES	20	Orthopedics
3	41	CLOSED TREATMENT FX & DISLOCATION OF FINGER, TOE & TRUNK	20	Orthopedics
3	42	CLOSED TREATMENT FX & DISLOCATION EXC FINGER, TOE & TRUNK	20	Orthopedics
3	33	LEVEL I HAND PROCEDURES	20	Orthopedics
3	35	LEVEL I FOOT PROCEDURES	20	Orthopedics
3	37	LEVEL I ARTHROSCOPY	20	Orthopedics
4	48	HAND AND FOOT TENOTOMY	20	Orthopedics

Severity	EAPG	EAPG Description	Service	Service Description
4	32	LEVEL III MUSCULOSKELETAL PROCEDURES EXCLUDING HAND AND FOOT	20	Orthopedics
4	34	LEVEL II HAND PROCEDURES	20	Orthopedics
4	36	LEVEL II FOOT PROCEDURES	20	Orthopedics
4	38	LEVEL II ARTHROSCOPY	20	Orthopedics
4	45	BUNION PROCEDURES	20	Orthopedics
4	46	LEVEL I ARTHROPLASTY	20	Orthopedics
5	31	LEVEL II MUSCULOSKELETAL PROCEDURES EXCLUDING HAND AND FOOT	20	Orthopedics
5	43	OPEN OR PERCUTANEOUS TREATMENT OF FRACTURES	20	Orthopedics
5	44	BONE OR JOINT MANIPULATION UNDER ANESTHESIA	20	Orthopedics
5	47	LEVEL II ARTHROPLASTY	20	Orthopedics
1	575	ASTHMA	21	Pulmonary
1	578	PNEUMONIA EXCEPT FOR COMMUNITY ACQUIRED PNEUMONIA	21	Pulmonary
1	412	SIMPLE PULMONARY FUNCTION TESTS	21	Pulmonary
1	576	LEVEL I OTHER RESPIRATORY DIAGNOSES	21	Pulmonary
2	572	BRONCHIOLITIS & RSV PNEUMONIA	21	Pulmonary
2	573	COMMUNITY ACQUIRED PNEUMONIA	21	Pulmonary
2	574	CHRONIC OBSTRUCTIVE PULMONARY DISEASE	21	Pulmonary
2	571	RESPIRATORY MALIGNANCY	21	Pulmonary
2	570	CYSTIC FIBROSIS - PULMONARY DISEASE	21	Pulmonary
2	577	LEVEL II OTHER RESPIRATORY DIAGNOSES	21	Pulmonary
3	60	PULMONARY TESTS	21	Pulmonary
3	65	RESPIRATORY THERAPY	21	Pulmonary
4	64	ENDOSCOPY OF THE LOWER AIRWAY	21	Pulmonary
5	579	STATUS ASTHMATICUS	21	Pulmonary
5	67	VENTILATION ASSISTANCE AND MANAGEMENT	21	Pulmonary
1	470	OBSTETRICAL ULTRASOUND	22	Radiology and Nuclear Medicine
1	471	PLAIN FILM	22	Radiology and Nuclear Medicine
1	472	ULTRASOUND GUIDANCE	22	Radiology and Nuclear Medicine
1	473	CT GUIDANCE	22	Radiology and Nuclear Medicine
1	286	MAMMOGRAPHY & OTHER RELATED PROCEDURES	22	Radiology and Nuclear Medicine
2	475	MRI GUIDANCE	22	Radiology and Nuclear Medicine
2	283	MAGNETIC RESONANCE ANGIOGRAPHY - OTHER SITES	22	Radiology and Nuclear Medicine
2	285	MISCELLANEOUS RADIOLOGICAL PROCEDURES WITH CONTRAST	22	Radiology and Nuclear Medicine
2	287	DIGESTIVE RADIOLOGY	22	Radiology and Nuclear Medicine
2	288	DIAGNOSTIC ULTRASOUND EXCEPT OBSTETRICAL AND VASCULAR OF LOWER EXTREMITIES	22	Radiology and Nuclear Medicine
2	289	VASCULAR DIAGNOSTIC ULTRASOUND OF LOWER EXTREMITIES	22	Radiology and Nuclear Medicine
2	291	BONE DENSITOMETRY	22	Radiology and Nuclear Medicine
2	293	MRI- JOINTS	22	Radiology and Nuclear Medicine
2	296	MRI- OTHER	22	Radiology and Nuclear Medicine
2	298	CAT SCAN BACK	22	Radiology and

Severity	EAPG	EAPG Description	Service	Service Description
				Nuclear Medicine
2	301	CAT SCAN - OTHER	22	Radiology and Nuclear Medicine
3	281	MAGNETIC RESONANCE ANGIOGRAPHY - HEAD AND/OR NECK	22	Radiology and Nuclear Medicine
3	282	MAGNETIC RESONANCE ANGIOGRAPHY - CHEST	22	Radiology and Nuclear Medicine
3	292	MRI- ABDOMEN	22	Radiology and Nuclear Medicine
3	294	MRI- BACK	22	Radiology and Nuclear Medicine
3	295	MRI- CHEST	22	Radiology and Nuclear Medicine
3	297	MRI BRAIN AND MAGNETOENCEPHALOGRAPHY	22	Radiology and Nuclear Medicine
3	299	CAT SCAN - BRAIN	22	Radiology and Nuclear Medicine
3	300	CAT SCAN - ABDOMEN	22	Radiology and Nuclear Medicine
3	330	LEVEL I DIAGNOSTIC NUCLEAR MEDICINE	22	Radiology and Nuclear Medicine
4	474	RADIOLOGICAL GUIDANCE FOR THERAPEUTIC OR DIAGNOSTIC PROCEDURES	22	Radiology and Nuclear Medicine
4	302	ANGIOGRAPHY, OTHER	22	Radiology and Nuclear Medicine
4	303	ANGIOGRAPHY, CEREBRAL	22	Radiology and Nuclear Medicine
4	331	LEVEL II DIAGNOSTIC NUCLEAR MEDICINE	22	Radiology and Nuclear Medicine
4	340	THERAPEUTIC NUCLEAR MEDICINE	22	Radiology and Nuclear Medicine
4	290	PET SCANS	22	Radiology and Nuclear Medicine
5	284	MYELOGRAPHY	22	Radiology and Nuclear Medicine
5	280	VASCULAR RADIOLOGY EXCEPT VENOGRAPHY OF EXTREMITY	22	Radiology and Nuclear Medicine
5	332	LEVEL III DIAGNOSTIC NUCLEAR MEDICINE	22	Radiology and Nuclear Medicine
1	871	SIGNS, SYMPTOMS & OTHER FACTORS INFLUENCING HEALTH STATUS	23	Rehabilitation
1	874	JOINT REPLACEMENT	23	Rehabilitation
2	275	SPEECH THERAPY & EVALUATION, GROUP	23	Rehabilitation
2	274	OCCUPATIONAL/PHYSICAL THERAPY, GROUP	23	Rehabilitation
3	872	OTHER AFTERCARE & CONVALESCENCE	23	Rehabilitation
3	273	MANIPULATION THERAPY	23	Rehabilitation
3	870	REHABILITATION	23	Rehabilitation
4	270	OCCUPATIONAL THERAPY	23	Rehabilitation
4	271	PHYSICAL THERAPY	23	Rehabilitation
4	272	SPEECH THERAPY AND EVALUATION	23	Rehabilitation
5	66	PULMONARY REHABILITATION	23	Rehabilitation
5	94	CARDIAC REHABILITATION	23	Rehabilitation
5	993	INPATIENT ONLY PROCEDURES	24	Unassigned
5	994	USER CUSTOMIZABLE INPATIENT PROCEDURES	24	Unassigned
1	999	UNASSIGNED	24	Unassigned
1	727		25	Urology and Nephrology
1	741	ACUTE LOWER URINARY TRACT INFECTIONS MALE REPRODUCTIVE SYSTEM DIAGNOSES EXCEPT MALIGNANCY	25	Urology and Nephrology

Severity	EAPG	EAPG Description	Service	Service Description
1	743	PROSTATITIS	25	Urology and Nephrology
1	744	MALE REPRODUCTIVE INFECTIONS	25	Urology and Nephrology
1	726	OTHER KIDNEY & URINARY TRACT DIAGNOSES, SIGNS & SYMPTOMS	25	Urology and Nephrology
2	181	CIRCUMCISION	25	Urology and Nephrology
2	161	URINARY STUDIES AND PROCEDURES	25	Urology and Nephrology
2	742	NEOPLASMS OF THE MALE REPRODUCTIVE SYSTEM	25	Urology and Nephrology
2	724	URINARY STONES & ACQUIRED UPPER URINARY TRACT OBSTRUCTION	25	Urology and Nephrology
2	166	LEVEL I URETHRA AND PROSTATE PROCEDURES	25	Urology and Nephrology
3	180	TESTICULAR AND EPIDIDYMAL PROCEDURES	25	Urology and Nephrology
3	164	LEVEL II BLADDER AND KIDNEY PROCEDURES	25	Urology and Nephrology
3	185	PROSTATE NEEDLE AND PUNCH BIOPSY	25	Urology and Nephrology
3	162	URINARY DILATATION	25	Urology and Nephrology
3	163	LEVEL I BLADDER AND KIDNEY PROCEDURES	25	Urology and Nephrology
3	740	MALIGNANCY, MALE REPRODUCTIVE SYSTEM	25	Urology and Nephrology
3	723	KIDNEY AND CHRONIC URINARY TRACT INFECTIONS	25	Urology and Nephrology
3	725	MALFUNCTION, REACTION, COMPLIC OF GENITOURINARY DEVICE OR PROC	25	Urology and Nephrology
3	720	RENAL FAILURE	25	Urology and Nephrology
3	721	KIDNEY & URINARY TRACT MALIGNANCY	25	Urology and Nephrology
3	722	NEPHRITIS & NEPHROSIS	25	Urology and Nephrology
3	167	LEVEL II URETHRA AND PROSTATE PROCEDURES	25	Urology and Nephrology
4	165	LEVEL III BLADDER AND KIDNEY PROCEDURES	25	Urology and Nephrology
4	160	EXTRACORPOREAL SHOCK WAVE LITHOTRIPSY	25	Urology and Nephrology
4	183	OTHER PENILE PROCEDURES	25	Urology and Nephrology
4	184	DESTRUCTION OR RESECTION OF PROSTATE	25	Urology and Nephrology
4	168	HEMODIALYSIS	25	Urology and Nephrology
4	169	PERITONEAL DIALYSIS	25	Urology and Nephrology
5	182	INSERTION OF PENILE PROSTHESIS	25	Urology and Nephrology

Appendix 4. ICC and Geographic TCOC Growth Rankings

Hospital Name	ICC Result	ICC Rank	2013-2018 TCOC per Capita Growth Rate	TCOC Rank	Total Rank Points (Low Score is Better)
Anne Arundel Medical Center	-5.87%	7	3.53%	3	10
Atlantic General Hospital	-4.24%	4	5.01%	9	13
Johns Hopkins Hospital	-9.59%	10	3.81%	5	15
St. Agnes Hospital	-12.39%	17	4.10%	6	23
Johns Hopkins Bayview Medical Center	-10.21%	12	6.09%	14	26
University of Maryland Baltimore Washington Medical Center	-10.46%	14	5.98%	12	26
Meritus Medical Center	-10.12%	11	6.18%	15	26
Holy Cross Hospitals	-7.55%	8	7.69%	21	29
Mercy Medical Center	-2.19%	1	9.23%	29	30
Harford Memorial Hospital	-17.55%	28	3.44%	2	30
Washington Adventist Hospital	-15.22%	25	4.35%	7	32
MedStar Union Memorial Hospital	-4.87%	5	9.53%	30	35
Howard County General Hospital	-10.26%	13	7.92%	25	38
Fort Washington Medical Center	-5.57%	6	10.42%	33	39
Laurel Regional Hospital	-25.31%	41	3.09%	1	42
University of Maryland Shore Medical Center at Dorchester	-19.85%	30	5.67%	11	41
Frederick Memorial Hospital	-16.80%	26	6.88%	16	42
MedStar Southern Maryland Hospital Center	-23.15%	38	3.79%	4	42
Suburban Hospital	-2.54%	2	12.37%	41	43
Peninsula Regional Medical Center	-12.85%	18	8.48%	26	44
University of Maryland Shore Medical Center at Easton	-21.79%	35	5.67%	10	45
Doctors Community Hospital	-21.65%	34	4.52%	8	42

MedStar Franklin Square Hospital Center	-13.54%	21	7.88%	24	45
MedStar Harbor Hospital Center	-3.70%	3	18.04%	45	48
MedStar St. Mary's Hospital	-13.68%	22	8.89%	27	49
Sinai Hospital	-20.17%	31	7.15%	19	50
Western Maryland Regional Medical Center	-21.21%	33	7.00%	17	50
Prince Georges Hospital Center	-13.06%	20	10.40%	32	52
Shady Grove Adventist Hospital	-12.88%	19	10.71%	34	53
Greater Baltimore Medical Center	-12.13%	16	11.15%	38	54
Garrett County Memorial Hospital	-7.95%	9	19.96%	46	55
University of Maryland Charles Regional Medical Center	-11.04%	15	11.72%	40	55
Upper Chesapeake Medical Center	-17.36%	27	9.01%	28	55
Carroll Hospital Center	-21.07%	32	7.85%	23	55
McCready Memorial Hospital	-27.27%	45	6.03%	13	58
University of Maryland Medical Center	-13.70%	23	11.03%	36	59
Calvert Memorial Hospital	-22.19%	36	7.84%	22	58
Northwest Hospital Center	-24.36%	40	7.01%	18	58
University of Maryland Shore Medical Center at Chestertown	-24.29%	39	7.16%	20	59
University of Maryland Rehabilitation & Orthopaedic Institute	-27.00%	44	11.03%	36	80
University of Maryland St. Joseph Medical Center	-14.57%	24	11.16%	39	63
MedStar Good Samaritan Hospital	-19.25%	29	12.93%	44	73
Bon Secours Hospital	-26.22%	42	10.31%	31	73
MedStar Montgomery Medical Center	-22.71%	37	12.57%	42	79
Union Hospital of Cecil County	-30.59%	46	10.94%	35	81
University of Maryland Medical Center Midtown Campus	-26.49%	43	12.64%	43	86

Appendix 5: Preliminary Overview of Total Cost of Care Benchmark Calculations

Staff is proposing to calculate a hospital's Benchmark Score as the ratio of the Medicare FFS average per capita cost of care for their attributed beneficiaries for CY2018 to that of a benchmark group. A score above 1 will indicate total cost of care above the benchmark, a score below 1 will indicate cost below the benchmark. For this purpose total cost of care for each Maryland hospital will be calculated leveraging the MPA policies with the only revision being that the categorical exclusions and the elimination of beneficiary costs above the 99th percentile will not be applied.¹⁸

Benchmark Overview

The benchmark for a hospital will be developed in a three step process. Step 1 is to identify benchmark groups for each Maryland County. Step 2 is to translate the county benchmarks into a benchmark for each hospital. Step 3 is to complete the cost comparison.

Step 1 Establish Benchmark Counties

Staff has established and shared a list of benchmark counties for each Maryland County (collectively for each Maryland County the Benchmark Cohort). The Benchmark Cohort was identified in two steps (1) narrowing possible benchmark counties for each Maryland County to those of a similar population size and density and (2) from the narrowed list selecting the counties with the closest match to the Maryland County in terms of four demographic characteristics.

A. Step 1, Part 1 – Narrowing the Potential Benchmark Cohort

Initially the Benchmark Cohort for a county was limited to counties with the same Rural-Urban Continuum code (RU Code) as the Maryland County. RU Codes are assigned to each US County by the Department of Agriculture and reflect factors such as population, degree of urbanization and adjacency to a metro area.¹⁹

The potential Benchmark Cohort was further narrowed based on the population size and density. Under this approach the most urban counties were subdivided into a 4x4 matrix based on the population size and density quartiles. The potential Benchmark Cohort was then narrowed to only those national counties in the same cell as the Maryland County. In this process, some cells were combined due to small size.

¹⁸ These adjustments are removed due to the technical complexity of applying them to the national benchmark data. Staff believes that given that the outcomes of the benchmarking are being used to broadly group hospitals rather than measure at a detail level, the removal of the exclusions is not material.

¹⁹ The codes range from 1 (most urban) to 9 (least urban). For Maryland counties with RU Codes 2-8 all national counties with the same RU Code were included in the potential Benchmark Cohort. However, RU Code 1 reflects a large variation in county size, in order to better match Maryland's five large urban counties to an appropriate peer group (Baltimore City and County, Anne Arundel, Prince George's and Montgomery) a refinement was added for all RU 1 Maryland counties.

B. Step 1, Part 2 – Selecting the Benchmark Cohort

The specific members of the Benchmark Cohort for each Maryland County were selected as the most “similar” to the Maryland County across four dimensions:

Income – **Median Income** (Source: American Community Survey 2013 to 2017)

Cost – **Regional Price Parities (RPP)**, price levels across the US (Source: Bureau of Economic Analysis, 2018)

Socio-Economic Status – **% Deep Poverty**, % of individuals below 50% of the poverty level (Source: American Community Survey, 2013 to 2017)

Disease Burden – **Hierarchical Condition Category (HCC)**, measure of healthcare cost risk in a population (Source: CMS, 2017)

Staff considered an extensive list of metrics on which to define similarity. Staff settled on a short list of metrics in order to simplify the process and maximize data availability. These specific metrics that were selected represent various factors that drive healthcare need in a community. Staff specifically avoided metrics that reflect the historic nature of the healthcare system in a community like academic presence, physician supply or payor mix.

The values from each metric for each county were then converted to standard deviations from the mean to create a common scale and then blended together with equal weight given to each metric.²⁰ Each national county’s similarity to each Maryland County was then calculated based on comparing the blended score of the Maryland County with that of the national county. The Benchmark Cohort for a Maryland County is made up of the national counties with the smallest difference from the Maryland County (from within the pools determined in Step 1 Part 1).

For the five large urban counties the Benchmark Cohort consists of the 20 most similar national counties. For the remaining counties the 50 most similar were used. The number of counties in the Benchmark Cohort was selected to balance a number of factors. The need to evaluate the Maryland County against a range of peers for this and other policies and the greater stability of larger samples indicated a larger cohort size. However, increasing the sample size reduces the average similarity and tends towards the maximum potential matches for the largest counties. The cohort sizes were selected to balance these factors, with a larger cohort used for smaller counties with more potential matches and greater risk of data instability (see discussion of 5% sample below).

Step 2 – Translate County Benchmarks into Hospital Benchmarks

Once a Benchmark Cohort was selected average total cost of care was calculated for each member and a cohort average was calculated based on a straight average (Benchmark TCOC). A straight average was used as staff did not feel that different county sizes were relevant once a county was placed in the Benchmark Cohort.

²⁰ Data for all the metrics except RPP are available at a county level. RPP is available at an MSA level. Staff felt it was appropriate to map from an MSA level to a county level for this metric due to the regional nature of prices.

Data for national costs was pulled from the Medicare 5% sample provided by CMS in its data warehouse referred to as the Chronic Condition Warehouse or CCW.²¹ The 100% sample was used for Maryland because of the greater stability. Testing showed that for smaller counties the 5% sample can be unstable, at a county level, from year to year. However, given the size of the cohort used for small counties (50 counties), staff believes using the 5% sample for the Benchmark Cohorts is a reliable approach.

Once benchmark costs had been established at a county level they were translated to a hospital level based on the residence of a hospital’s MPA attributed beneficiaries, which was calculated for each hospital in each county. Counties with less than 2% of the hospital’s total population were then dropped as reflecting noise in the data. A percentage of total MPA attributed beneficiaries reflected in the benchmark was then calculated as 1 – Sum of the percentage reflected by the dropped counties to ensure that the sum of the weights equals 100. For most hospitals, the percent of MPA beneficiaries in dropped counties is less than 10%.

Each Hospital’s Unadjusted Benchmark was then calculated as

$$\frac{\sum \text{MD County \% of Hospital attributed beneficiaries} \times \text{MD County Benchmark TCOC}}{\% \text{ of Hospital's total MPA attributed beneficiaries reflected}}$$

To better match on healthcare risk the Unadjusted Benchmark was then converted to an Adjusted Benchmark by dividing the Unadjusted Benchmark by the average HCC score for the Benchmark Cohort and multiplying it by the HCC score for the Hospital MPA attributed beneficiaries.

Staff is continuing to evaluate methods that will further normalize the Adjusted Benchmark for differences between the demographics of the Hospital’s attributed population and the benchmark demographics that are not accounted for in the HCC score.

Step 3 – Complete the cost comparison

Each hospital’s Benchmark Score is calculated as the ratio of the average total cost per capita of the Hospital’s attributed beneficiaries to the Adjusted Benchmark. Hospitals below their Adjusted Benchmark will have scores below 1.0, those above their adjusted benchmark will have scores above 1.0.

The Benchmark Scores are then ranked from lowest to highest and the bottom quartile flagged for potential adjustment under this efficiency approach.

²¹ Whereas under the MPA attribution costs for Maryland counties are pulled from the 100% sample for Maryland provided by CMS in CCW. Staff compared results for Maryland between the two samples and determined they were comparable.



August 16, 2019

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

RE: HSCRC Proposed Integrated Efficiency Policy

Dear Ms. Wunderlich:

On behalf of the University of Maryland Medical System (UMMS), representing 15 acute care hospitals and health care facilities, we are submitting comments in response to the Health Services Cost Review Commission's (HSCRC) Draft Recommendation for the Integrated Efficiency Policy.

We support the Staff's proposal to implement a standardized approach for evaluating hospital efficiency and adjusting hospital revenue. An efficiency policy is necessary to ensure that hospital costs remain reasonable and health care is affordable in the state of Maryland. The Inter-hospital Cost Comparison (ICC) and Total Cost of Care (TCOC) growth are appropriate measures of efficiency. The addition of a per capita measure aligns with the goals of the Total Cost of Care model.

While the foundation of the efficiency measure is well developed, we support the points raised in MHA's comment letter and feel further exploration and refinement of the policy and methodology is warranted, as it is the basis of what can amount to significant adjustments for hospitals over a multi-year period.

In addition to the comments made by MHA, we would further voice a concern regarding the identification of smaller facilities (e.g. UM Rehab, Union of Cecil and Chestertown) being identified as outliers. These facilities often face unique challenges due to circumstances such as size, type of services and/or location. Often a 'one size fits all' approach within a methodology is not necessarily appropriate. We recommend the HSCRC staff evaluate the circumstances contributing to the outlier status of these small facilities and consider making adjustments to recognize their unique nature and circumstances.

Thank you for the opportunity to provide feedback. If you have any questions, please do not hesitate to contact me.

Sincerely,

A handwritten signature in blue ink that reads "Alicia Cunningham".

Alicia Cunningham
Senior Vice President
Corporate Finance & Revenue Advisory Services

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Katie Wunderlich
August 16, 2019

cc: Nelson Sabatini, Chairman
HSCRC Commissioners
John Ashworth, UMMS CEO
Michelle Lee, UMMS CFO



Maryland
Hospital Association

August 16, 2019

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

Dear Ms. Wunderlich:

On behalf of Maryland's 61-member hospitals and health systems, the Maryland Hospital Association (MHA) appreciates the opportunity to comment on the Health Services Cost Review Commission's (HSCRC) proposed integrated efficiency policy.

MHA supports the proposal to adjust hospital revenues for efficiency.

The Inter-hospital Cost Comparison (ICC) and Total Cost of Care (TCOC) growth are appropriate measures of efficiency. Measuring efficiency in a fixed revenue environment is difficult, and we appreciate the HSCRC staff's approach to balance unit price efficiency with hospital specific, per capita attribution. Global budgets create powerful incentives to reduce utilization, that by design, can lead to price inefficiency. This is an important consideration that requires a thoughtful approach in all HSCRC policies to avoid competing incentives.

The efficiency policy should be revenue neutral on a statewide basis.

If any high cost hospitals' revenues are reduced, the full sum of this reduction should be available to be redistributed within the system. No portion should be withheld. We appreciate the HSCRC staff's consideration that allows low cost outliers to apply for increases and other proposed uses of savings, including capital funding, etc.

The profit strip should not apply when determining high- or low-cost outliers for revenue adjustments but may apply when using the methodology for a full rate application.

In today's TCOC environment, it is impractical to remove only regulated profits from the calculation when hospitals are asked by HSCRC to invest in activities to transform care. Many, if not most, care transformation activities and investments occur in settings not regulated by HSCRC. We appreciate that staff does not regulate professional physician services, the major component of unregulated losses, and we are not advocating that the HSCRC should do so. However, hospitals believe that removing total operating profit – regulated and unregulated – does not violate the HSCRC's statute, particularly as the other efficiency measure, TCOC, includes physician services when determining hospital revenue adjustments. Removing total operating profit gives a much clearer and cleaner picture of actual cost incurred as hospitals move to reduce TCOC.

Policy Goals and Objectives, and Methodology Application

HSCRC should describe clear policy goals and objectives for the efficiency policy. The HSCRC staff's document introduces the measure, but no section clearly articulates the policy's aims.

HSCRC staff propose to use methodology results to withhold the Medicare portion of the annual payment update for those hospitals determined to be high cost. HSCRC staff also propose to use the methodology results to evaluate global budgeted revenue (GBR) enhancement requests. We agree that a single methodology should be used to measure performance that can be applied to revenue adjustments.

While not explicit in the recommendation, MHA expects this methodology would be used in the full rate application process. We note that once the methodology is developed it may be used in several ways to directly or indirectly adjust revenues, and it will likely remain in place for several years. As noted in the ICC Methodology section below, MHA suggests applying adjustments differently in a full rate application, rather than the methodology used to determine outliers.

HSCRC staff should consider the efficiency measure as a threshold to apply a revenue reduction. Historically, hospitals above a certain threshold were identified as high cost hospitals, subject to a spenddown – agreed to by hospital and HSCRC staff. Hospitals appreciate the need to adopt clear policies with stated results. The methodology would still identify high cost outliers with required revenue adjustments but allow hospitals some flexibility to negotiate with staff over terms and amounts. Under this approach, the terms of the agreement should be a public document, reviewed and approved by commissioners at a public meeting.

Hospital revenue reductions from the efficiency measure should be net of other adjustments applied by HSCRC staff. Hospitals are concerned that the efficiency policy could double count revenue reductions previously applied, including deregulation or other GBR adjustments.

ICC and Rate Efficiency Methodology (REM)

The ICC methodology is the first pillar of the efficiency policy. As a reminder, the ICC methodology is largely “fixed.” Hospitals have very little, if any, control over the results because revenues per unit of measure and the adjustment factors are pre-determined.

Hospitals have identified several matters for staff to consider:

Identifying High- and Low-Cost Outliers versus Settling Full Rate Applications

The efficiency measure uses the historical full rate setting approach, establishing a peer group average less profit and productivity, then comparing each hospital’s result to its unadjusted charge per unit. Under the proposed approach, all hospitals appear inefficient because all hospitals appear to receive a revenue reduction. To identify high-and low-cost outliers, hospitals should be compared to the peer group standard using the REM, without adjustments to remove regulated profit or productivity (excess capacity). If the intended goal is to measure price efficiency rather than cost efficiency, profit and productivity should not be removed. These changes should not materially alter the overall results, but profits and productivity should only be applied in a full rate setting.

The full rate application standard, though based on the same framework, should use the ICC and may include adjustments for profit and productivity. The standard to receive additional funding through a full rate application was always more stringent than a hospital efficiency comparison.

Adjustments for Quality Measures

HSCRC staff propose to adjust the methodology for quality performance. Maryland's hospitals are steadfastly committed to raising quality. However, we respectfully request HSCRC staff eliminate this adjustment. There are already ample adjustments for quality in the rate setting system, both direct – readmissions, complications, etc. – and indirect – Medicare Performance Adjustment, etc.

Volume Adjustment

HSCRC staff propose to volume adjust the methodology to reward hospitals that reduced utilization and penalize hospitals that increased utilization. Hospitals generally agree that some adjustment should be made because unit prices are a function of fixed revenues and changing units. Hospitals experiencing a decline in units will appear inefficient if the decline is caused by reductions in avoidable utilization, aligning with GBR and system incentives. Hospitals should receive credit for reducing potentially avoidable utilization (PAU) and there should be no adjustment for general utilization declines. This adjustment is one area where hospitals can affect the ICC results because reducing avoidable utilization will affect the outcome.

This adjustment is applied during the build-up phase of the ICC calculation. The adjustment to recognize PAU must be changed because of MHA's recommended change to measure outliers using the REM and not the ICC.

Productivity Adjustment

Like the profit strip, the productivity adjustment should only apply when using the methodology for a full rate application. Hospitals understand the productivity adjustment will vary by peer group. This adjustment will not apply in MHA's proposed approach to measuring outliers, but because it affects all hospitals in the peer group equally, it should have no impact on any hospital's position.

HSCRC staff recommend an excess capacity adjustment that measures the decline in patient days from 2010 through 2018. Hospital GBRs were constructed using the 2013 base period and negotiated into 2014. Some amount of fixed cost was built into the GBR. If the productivity adjustment measurement period begins in 2010, the methodology will not account for some fixed costs that were included in the initial GBR rate setting.

Peer Groups

HSCRC staff have historically used peer groups to account for unmeasured difference in hospital costs. HSCRC staff are not proposing to evaluate peer groups. We suggest HSCRC assess peer groups because they are an integral part of the core ICC methodology.

Medical Education, Disproportionate Share (DSH) and Other Direct Strips

Hospitals agree it is appropriate to adjust for costs unique to each hospital. The indirect medical education (IME) adjustment was revised during the initial ICC proposal in 2018. MHA and HSCRC staff did not address the IME adjustment during that period. Hospitals note the adjustment was last calculated based on 2015 data.

The revised ICC does not reflect an adjustment for DSH. DSH generally refers to unmeasured cost differences for treating an underserved population, which is different from measuring patient complexity. We appreciate HSCRC staff's conclusion that expanding Medicaid has led to a reduction

in uninsured patients and that comparing case mix adjusted charges for a poor population compared to all other populations did not yield a significant variance. However, many hospitals believe HSCRC staff should continue to study this issue.

The revised labor market adjustor (LMA) splits the state into three categories: Prince George's plus Montgomery counties, all other Maryland, and three outlier hospitals. HSCRC staff previously indicated a desire to use Medicare Wage Index data in the future. MHA supports using Medicare wage data to improve the accuracy of the information. However, as staff pursues this approach, we urge careful consideration of replacing the existing methodology that blends labor markets throughout the state with one that could create "cliffs" by using a defined geographical area.

Total Cost of Care Growth Measure

The second pillar of the efficiency policy measures Medicare TCOC growth – hospital and non-hospital spending per beneficiary – as assigned to a specific hospital. MHA agrees this is an important measure in the efficiency policy because the system incentives are population based.

HSCRC's approach uses the Primary Service Areas-Plus (PSA-P) method to assign beneficiaries to hospitals. We note that this methodology is different than the methodology used to measure the Medicare Performance Adjustment (MPA). We understand HSCRC staff's intent to measure TCOC performance since 2013 and we agree it is not possible using the MPA attribution.

Hospitals acknowledge and agree that any logic attributing beneficiaries to hospitals will be imperfect. Hospital Medicare payments are directly adjusted based on MPA performance. However, we also note that HSCRC staff's statistical analysis reflected a strong correlation between the 2018 MPA results and the 2018 PSA-P. With additional time to review the policy, HSCRC should strive for consistency in its approach to attribution.

Implications for Other HSCRC Policies

Once an efficiency measure is in place, we respectfully ask HSCRC staff to revisit its unit rate compliance policy. Measuring monthly rate compliance and adjusting unit rates, with the process of requesting adjustments outside certain corridors, creates a heavy burden on hospital reimbursement staff, with very little net value. HSCRC staff have previously indicated a willingness to revisit this issue after an efficiency measure has been adopted. We appreciate the need to hold hospitals accountable to revenue targets.

Methodology Validation and Stakeholder Input

MHA recognizes the methodologies and underlying data used to manage the rate setting system have evolved over time. Combining inpatient and outpatient measures, and measuring total cost of care, involve new data sets and unique patient identifiers. One of the hallmarks of Maryland's rate setting system has been the ability to replicate and validate calculations. Allowing unfettered access to patient identifiable data may not be practical, but we would appreciate HSCRC staff's consideration of this important process set. In cases where data can be made available, we urge staff to err on the side of transparency and share the data for all to validate.

Katie Wunderlich
August 16, 2019
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We strongly encourage HSCRC to maintain an open and transparent process for stakeholders to share feedback on policies, including underlying methodologies. A regular review process will allow all stakeholders to provide feedback to HSCRC staff and will ultimately support the recommendation process.

Thank you again for your careful consideration of these matters. If you have any questions, please contact me.

Sincerely,



Brett McCone
Senior Vice President, Health Care Payment

cc: Nelson J. Sabatini, Chairman
Joseph Antos, Ph.D., Vice Chairman
Victoria W. Bayless
Stacia Cohen, RN

John M. Colmers
James N. Elliott, M.D.
Adam Kane
Allan Pack, Principal Deputy Director



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Susan K. Nelson
Executive Vice President and
Chief Financial Officer

August 16, 2019

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

Dear Katie:

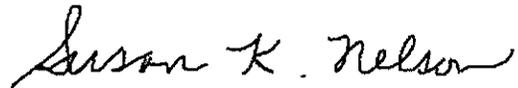
On behalf of MedStar Health, Inc. and our Maryland hospitals, we are submitting additional comments on the Health Services Cost Review Commission's ("HSCRC") Draft Recommendation on Integrated Efficiency Policy as a supplement to the Maryland Hospital Association's ("MHA") letter for the hospital industry.

- We support the positive adjustments to the methodology that recognize utilization declines due to population health initiatives and appreciate the HSCRC staff recognizing the importance of encouraging these efforts.
- Impact of rate increases related to significant capital expenditures

Holy Cross received significant capital funding to build a new hospital in Germantown and the HSCRC made related adjustments to the update factor in prior years. The location of the hospital created both utilization changes/shifts and impacted TCOC for all hospitals in these overlapping service areas. We request the HSCRC study the impact of the funding of the new hospital and adjust appropriately any unintended consequences on hospitals' efficiency performance. We believe this study may also provide valuable insights on the impact of potential new capital funding policies.

Thank you for the opportunity to comment and we look forward to continued discussion as this proposal is finalized.

Sincerely,

A handwritten signature in cursive script that reads "Susan K. Nelson".

Susan K. Nelson
Executive Vice President and Chief Financial Officer
MedStar Health

cc: Nelson Sabatini, Chairman
Joseph Antos, Ph.D., Vice Chairman
Adam Kane
Victoria W. Bayless
James Elliott, M.D.
Stacia Cohen, RN
John M. Colmers
Allan Pack, Principle Deputy Director, HSCRC
Kathy Talbot, Vice President of Reimbursement, MedStar Health

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Vice President of Revenue Management
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August 16, 2019

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

Dear Ms. Wunderlich:

On behalf of the Johns Hopkins Health System (JHHS), we appreciate the opportunity to comment on the commission's Draft Recommendation on Integrated Efficiency Policy.

JHHS supports the proposal to adjust hospital revenues for efficiency. We also believe that it is appropriate to have both a Price Efficiency metric as well as a Total Cost of Care (TCOC) metric included as part of the methodology. Measuring efficiency in a fixed revenue environment is challenging, and we appreciate the HSCRC staff's approach to balance price efficiency with hospital specific, per capita TCOC performance.

JHHS also 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. We appreciate the HSCRC staff's consideration that allows low cost outliers to apply for increases and other proposed uses of savings.

Policy Goals and Objectives, and Methodology Application

JHHS believes that HSCRC staff should include clear policy goals and objectives for the efficiency policy.

HSCRC staff propose to use methodology results to withhold the Medicare portion of the annual payment update for those hospitals determined to be high cost. HSCRC staff also propose to use the methodology results to evaluate global budgeted revenue (GBR) enhancement requests. We agree that a single methodology should be used to measure performance that can be applied to revenue adjustments.

HSCRC staff should consider the efficiency measure as a threshold to apply a revenue reduction. Historically, hospitals above a certain threshold were identified as high cost hospitals, subject to a spenddown – agreed to by the hospital and HSCRC staff. Hospitals appreciate the need to adopt clear policies with stated results. The methodology would still identify high cost outliers with required revenue adjustments but have some flexibility to negotiate with staff over terms and amounts. Under this approach, the terms of the agreement should be a public document, reviewed and approved by commissioners, at a public meeting.

Hospital revenue reductions from the efficiency measure should be net of other adjustments applied by HSCRC staff. Hospitals are concerned that the efficiency policy could "double count" revenue reductions previously applied, such as deregulation or other global budget revenue adjustments.

ICC Methodology

The ICC methodology is the first pillar of the efficiency policy. JHHS has identified several matters for staff to consider and these are listed below. As a reminder, the ICC methodology is largely “fixed.” Hospitals have very little, if any, control over the results because revenues per unit of measure and the adjustment factors are pre-determined.

Identifying High- and Low-Cost Outliers versus Settling a Full Rate Application

The proposed ICC logic follows the HSCRC’s historic approach of developing a peer group standard. There has always been a difference between the efficiency measurement and the full rate setting methodology as they serve two similar but different purposes. Historically, hospitals were compared to the peer group standard to measure if they were efficient or inefficient, which would result in a revenue adjustment via a spenddown or adjustment to the annual payment update. This was a simple way to compare hospitals and apply a revenue adjustment.

In a full rate setting, the peer group standard was reduced to remove regulated profit and to adjust for productivity. The resulting standard was then “built up” using the target hospital’s factors to compare its “new” price per unit to its existing price per unit. The standard to receive additional funding through a full rate application was always more stringent than a hospital efficiency comparison.

The efficiency measure uses the full rate setting approach, comparing each hospital to itself after profit, productivity and other adjustments. Under this approach, all hospitals appear inefficient because all-hospitals appear to receive a revenue reduction. For purposes of identifying high and low-cost outliers, hospitals should be compared to the peer group standard, without adjustments to remove regulated profit or productivity (excess capacity). If the intended goal is to measure price efficiency rather than cost efficiency, then profit and productivity should not be removed.

Adjustments for Quality Measures

While we appreciate the intent to magnify the rewards and penalties for quality, we feel that this adjustment should be eliminated from the efficiency measurement. The efficiency methodology measures a hospital’s permanent rate base. The quality adjustments are made on a one time basis. By incorporating the quality adjustments into the efficiency measurement you would be in fact making the impact on a hospital’s rate base permanent, which should not be the intent of this policy.

Volume Adjustment

HSCRC staff propose to volume adjust the methodology to reward hospitals that have reduced utilization and penalize hospitals that increased utilization. We agree that some adjustment should be made because unit prices are a function of fixed revenues and changing units. Hospitals with a decline in units will appear inefficient, though if the decline is caused by reductions in Potentially Avoidable Utilization (PAU), the outcome aligns the GBR and system incentives. Hospitals should receive credit for reducing PAU but there should not be an adjustment for general utilization.

Profit Strip in a Full Rate Setting

As stated earlier, the profit strip should not apply when determining high- or low-cost outliers for revenue adjustments but should apply when using the methodology for a full rate application. In today’s total cost of care environment, it is impractical to remove only regulated profits when hospitals are asked by HSCRC to invest in activities to transform care. Many, if not most care transformation activities and investments are unregulated.

Productivity Adjustment

Like the profit strip, the productivity adjustment should only apply when using the methodology for a full rate application.

HSCRC staff recommends an excess capacity adjustment that measures the decline in patient days from 2010 through 2018. Hospital GBRs were constructed using the 2013 base period and negotiated into 2014. Some amount of fixed cost was built into the GBR. If the productivity adjustment measurement period begins in 2010, the methodology will not account for some fixed costs that were include in the initial GBR rate setting.

Medical Education and Disproportionate Share (DSH)

JHHS agrees that it is appropriate to adjust for costs unique to each hospital. The Indirect Medical Education (IME) adjustment was revised during the initial ICC proposal in 2018. We feel that changes to this methodology should follow a review process similar to other changes in HSCRC methodologies. Historically, each of these adjustments was addressed as individual policy discussion to assure that all parties were at the table.

The revised ICC does not reflect an adjustment for DSH. DSH generally refers to unmeasured cost differences for treating an underserved population which is different from measuring patient complexity. We appreciate HSCRC staff's conclusion that expanding Medicaid has led to a reduction in uninsured patients and that comparing case mix adjusted charges for a poor population compared to all other populations did not yield a significant variance. However, we believe that HSCRC staff should continue to study this issue and possibly consider a way to utilize an Area Deprivation Index (ADI) to account for health disparities.

Other Considerations

JHHS appreciates the need to compare hospitals to like peers in the state, however the current peer groups were initially developed almost 20 years ago. Many hospitals have changed since the initial creation of these groups. We would ask that HSCRC staff revisit the peer grouping logic and revise the groups appropriately if necessary.

Total Cost of Care

The second component of the efficiency policy measures Medicare Total Cost of Care (TCOC) growth per beneficiary by hospital. JHHS agrees that this is an important measure in the efficiency policy because the system incentives are population based however only measuring growth could disadvantage hospitals with very low TCOC relative to others in the state which may have a difficult time improving that position over time. We believe that it would be appropriate to also include some attainment threshold which would give credit to hospitals whose TCOC are among the lowest in the state.

Finally, we believe that this and all methodologies need to be reviewed and revisited on a regular basis to assure that the underlying methodologies are keeping in sync with the goals of the new model and to provide refinements where needed.

Thank you again for your consideration of these matters. If you have any questions, please feel free to contact me.

Sincerely,



Ed Beranek
Vice President, Revenue Management and Reimbursement

cc: Nelson J. Sabatini, Chairman
Joseph Antos, Ph.D., Vice Chairman
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August 16, 2019

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

Dear Mr. Sabatini:

The purpose of this letter is to provide CareFirst's comments on the HSCRC staff's Draft Recommendation on the Integrated Efficiency Policy (i.e., Draft ICC Efficiency Policy) dated July 10, 2019 and presented at the July public meeting of the HSCRC.

CareFirst strongly supports the intent and objectives of policies that identify "high-cost" hospitals and reduce excess hospital revenues associated with relative operating inefficiency or due to shifts of services from hospitals to non-hospital providers. The Commission staff has achieved success in this regard through the implementation of the recent Spenddown agreement with University of Maryland Midtown Hospital and the removal of excess revenues in other hospital Global Budget Rate (GBR) arrangements associated with shifts of services to unregulated settings. The current Draft ICC Efficiency Policy is intended to further these policy objectives by establishing a more formulaic approach to remove excessive revenues from hospital GBRs by limiting rate updates for hospitals the HSCRC determines to be high-cost. While we strongly support the intended purpose of the ICC Efficiency Policy, we offer the following observations and suggestions.

The Revenue Impact Should be Revenue Neutral

CareFirst strongly supports rate policies that focus revenue increases to the most efficient hospitals. While we recognize the significant time and effort applied in the development of this policy, overall it will have an extremely small impact on hospital revenues (approximately \$7 million in rate reductions applicable to four hospitals or about 0.04% of annual system revenue). This is before considering enhancement awards for efficient hospitals which could very likely exceed the \$7M in reductions. We suggest making this policy revenue neutral so that the overall intent is to reapportion revenue from less efficient to more efficient hospitals. As a result, we suggest the staff modify the criteria it uses to identify the worst performing hospitals by targeting the bottom quartile of hospitals and/or lowering the 1.21 times the ICC cost standard limitation to expand the group of targeted hospitals. This will allow more revenue to support efficient operations, incent hospitals to focus on improving efficiency levels, and allow the system to remain in balance from a revenue perspective.

The Need for a National Peer Group to Evaluate the Relative Efficiency of the AMCs

In CY 2018, the HSCRC commissioned an analysis performed by Navigant Consulting, which compared Johns Hopkins Hospital's (JHH) adjusted cost per case to the average adjusted cost per case of 35 comparable Academic Medical Centers (AMCs) across the U.S. The Navigant study determined that JHH was 6-8% less efficient than the average inpatient costs of the national AMC peer group. Despite the results of this study the current ICC Efficiency methodology would exempt JHH from rate reductions and may well put the hospital in a position to request further rate increases from the HSCRC in the future. Fortunately, staff has acknowledged the need to make use of the methodology used in the Navigant study to evaluate the relative efficiency of inpatient services of the State's two large AMCs (Johns Hopkins Hospital and University of Maryland Medical Center). We would encourage the staff to finalize this analysis and also investigate the potential of extending this type of national comparison to the State's other two large teaching hospitals, Johns Hopkins Bay View Medical Center and LifeBridge's Sinai Hospital.

Observations regarding Other Provisions of the Proposed Methodology

DSH Adjustment: The analysis performed by staff clearly shows that Medicaid charge per Case Mix Adjusted Discharges (CMAD) does not differ significantly from the charge per CMAD of other major payer groups. Accordingly, we agree with the staff conclusion that there is no empirical evidence to support the use of a DSH adjustment in the ICC component of the Efficiency Matrix.

ICC Volume Adjustment: The current proposed ICC Efficiency policy now includes an adjustment that reflects hospitals' reduction in Potentially Avoidable Utilization (PAU), as defined by the PAU Shared Savings Program, plus additional proxies for avoidable utilization. These additional proxies include selected medical DRGs and ED volumes. Volumes from this analysis, both negative and positive, amend a hospital's final ICC calculated cost base as well as the hospital's position relative to the ICC Cost Standard (i.e., hospitals with reductions in these categories of cases will benefit in the relative ICC comparison and those with increases in these volume categories will fair less favorably). However, the staff has decided not to include certain classes of surgical cases in this adjustment.

While we support the use of the proposed Volume Adjustment in the ICC, we would note that PAU is defined by the Commission to apply almost exclusively to inpatient medical admissions (such as Heart Failure) that are frequently outside the control of the hospital, but leave aside the arguably more important avoidable admissions for complex surgeries, such as many over-used cardio-thoracic and orthopedic procedures. These types of procedures generate excess cost and also place patients at risk. We would therefore respectfully request that the staff make use of the literature it has assembled on avoidable utilization with an eye toward the inclusion of the most over-used surgeries and procedures in the ICC Volume adjustment. We would be happy to assist the staff in identifying candidates for inclusion in the Volume Adjustment from our own experience and review of the literature on this topic.

Credit for Losses on Investments that are "in-line" with the Purpose of the Demonstration: In subsequent iterations of the ICC the staff intends to develop a methodology that will provide hospitals credit for investments they are making in unregulated settings that are "in line" with the incentives of the Total Cost of Care Model.

First, we believe that the adoption of such a policy would require a change to the HSCRC statute which currently provides the HSCRC with regulatory authority over inpatient services and outpatient services provided "at the hospital." Based on current law, the HSCRC cannot devise methodologies that affect hospital rates based on the profitability or unprofitability of unregulated services.

Second, even if the HSCRC or a court determined that adjustments to regulated rates could be allowed in this circumstance, identifying investments that are "in-line" with the purpose of the Demonstration will likely be a highly subjective exercise open to broad interpretation. We fail to see how the HSCRC will be able to definitively determine whether a particular hospital investment is supportive of the objectives of population-health or the investment is primarily intended to expand the hospital's realm of influence over the delivery system, with little or no positive impact on the health of the community it serves.

Most importantly, we believe that through the GBR, hospitals are already being paid sufficient amounts (either through its billings to payers for its new unregulated services and through amounts retained in the particular hospital's GBR related to services now moved out of the hospitals) to cover any such losses. In this case, providing hospitals with additional "credit" in the ICC would be inappropriate.

The Need to Link the ICC Efficiency Policy more Strongly to the Key Waiver Tests: The current Demonstration has several Waiver Tests that are framed in terms of the rate of increase of Medicare TCOC (per beneficiary) in Maryland versus the U.S. This means that the central purpose of the ICC Efficiency methodology should be to provide hospitals with clear and meaningful incentives to meet these Waiver Tests and to do so by applying criteria to hospital Global Budget increases that will limit the Medicare TCOC growth in the hospital's service area (the "TCOC Standard").

However, the ICC Efficiency Policy applies two standards of efficiency (the ICC per case standard and the TCOC per beneficiary standard) that work at cross purposes to one another. If a hospital responds to the TCOC Standard, they will reduce their volumes of service, especially for Medicare. Under the fixed GBR target budgets this reduction in a hospital's caseload will increase its cost per case and it will perform less favorably on the ICC per case standard.

In addition, the calculation of the hospital's TCOC increase for Medicare beneficiaries depends on a "geographically-based" algorithm for attributing beneficiaries to hospitals which, in most cases, attributes beneficiaries to multiple hospitals making the coordinated clinical management of the attributed beneficiaries nearly impossible.¹ For these two reasons, the proposed methodology is largely a consolidation of two efficiency standards but does little to further the key objectives of the Demonstration.

To address these weaknesses, we suggest that in the future that the staff consider modifying the ICC Efficiency Policy so that the methodology provides stronger incentives for the hospitals to control TCOC for their Medicare patients. We have conceived of an approach that would accomplish this goal and provide a more efficacious system for attributing Medicare beneficiaries to hospitals. Such an attribution system should not (for the most part) be done on a hospital-specific basis.² We look forward sharing our perspective on this issue (and other observations about the ICC Efficiency Policy) with staff at their earliest convenience.

As always, thank you for this opportunity to provide our comments on the staff's Draft Recommendation. We look forward to discussing these and other observations and suggestions with you and all of the Commissioners at the next public meeting of the HSCRC.

Sincerely,



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

¹ A key tenant of the ACO attribution methodologies is that the methodology assigns beneficiaries to groups of providers (the ACO in question) such that these providers can both identify these beneficiaries and effectively coordinate and manage their care, in order to achieve the cost control goals of the ACO program. The ability of a hospital to identify and manage beneficiaries attributed to them through the HSCRC's Geographic Attribution methodology is severely limited by allocation of beneficiaries to multiple hospitals.

² Note - a number of Maryland hospitals are sole community providers in a particular county. For these hospitals a hospital-specific attribution methodology may be appropriately applied.