



Paper 4: Calculating the Annual Update Allowance under the Demonstration

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1. Introduction

1.1 - This Paper outlines a unified approach to the formulation of an Annual Update Allowance for the Global Model and the Modified CPC systems that will encourage, but not coerce, hospitals to voluntarily adopt the Global Model. This approach will provide stable and predictable revenues to Maryland hospitals and transparently equitable treatment to each group of hospitals (i.e., the Modified CPC hospitals, the TPR hospitals, and the other Global Model hospitals).

1.2 - Under this proposed formulation, it will be possible to:

- a) Extend the TPR arrangement to suburban and urban hospitals (through the adoption of Global Budget Rate "GBR" arrangements);
- b) Make the Modified CPC system directly comparable to the Global Model and show it to be a more attractive option for most suburban and urban hospitals; and
- c) Unify both the All-Payer and the Medicare-specific waiver tests (i.e., if the Target Budgets of the Global Model meet the All Payer Cap then they will also meet the Medicare Targets).

1.3 – In Section 2, we begin by evaluating different approaches of establishing the relationship between the growth in Medicare charges per FFS beneficiary and the growth in All Payer hospital charges per Maryland resident.

Historical data from FY 2008 to FY 2013 show that the average annual increase in Medicare hospital charges per resident age 65+ was .69% whereas the average annual increase in hospital charges per resident for all payers was 3.63%. Thus, the annual increase hospital charges per resident was, on average, 2.94% higher than the increase in Medicare hospital charges per resident.

In Section 3, we analyze the reasons for the relatively low increase in Medicare hospital claims per FFS beneficiary compared to the increase in total hospital claims per resident. We establish

a more conservative estimate of the difference between these two growth rates so that the HSCRC can establish policies to ensure that the growth in Medicare hospital claims per FFS beneficiary continues to be reliably and substantially lower than the growth in total hospital claims per resident in the future.

Section 4 treats the difference between the historical Medicare growth in hospital charges per resident age 65+ and the growth in All Payer hospital charges per resident (which we term the “Difference Statistic”) as a random variable. We derive a more conservative projection of the Difference Statistic for 2014 and 2015 as 2.0% rather than 2.94%.¹ In Section 4, we identify and discuss two key reasons that explain the comparatively low increase in Medicare hospital claims per FFS beneficiary.

In order to maintain the Difference Statistic at 2% or more, it will be necessary to encourage the disproportionate elimination of Medicare Potentially Avoidable Volumes (PAVs), or to reduce the Medicare LOS, or both. If there are a lot of PAVs of non-Medicare patients that are eliminated, it will be important for hospitals to exceed that performance for Medicare PAVs. This need for a more concerted effort to reduce Medicare PAVs relates to the fact that the Medicare test is a much tighter constraint and the secret to the system’s success in meeting both tests may lie in its ability to achieve differentially larger reductions in excess Medicare utilization including Medicare LOS.

Using previous estimates of the growth limits imposed by the Medicare Savings Targets (i.e., 1.25% in CY 2014 and in CY 2015) and by the volume allowance methodology that we described in Paper 2, Section 4 derives a conservative Annual Update Allowance for CY 2014 and CY 2015 (i.e., 2.89% in each of these years) that will meet both waiver tests provided that the projections of Medicare hospital claims per beneficiary of the CMS actuaries are correct.

2. Comparing the Annual Growth Rates in Charge per Resident: Medicare vs. All Payer

2.1 - The Demonstration's dual waiver tests pose standards that are not necessarily consistent with each other (i.e., it is entirely possible for Maryland to meet the All Payer Cap, but to exceed the Medicare Savings Targets; and conversely, for Maryland to meet the Medicare Savings Targets but to exceed the All Payer Cap). It is, therefore, very important to be able to predict and to ultimately influence the relationship between the two waiver test limits because this capability will allow the HSCRC to establish overall target budgets that will reliably meet both tests.

¹ In statistics, a random variable is a quantity having a numerical value for each member of a group, especially one whose values occur according to a frequency distribution. There is a statistically conventional way of studying the variations in these variables, and these conventions can provide a more conservative estimate than the average provides of what the variable will be.

2.2 - Staff has determined that, over the FY 2008 – FY 2013 period, the growth in Medicare hospital charges per beneficiary was 68% of the growth in total hospital charges per resident. We believe that a more accurate and reliable prediction of the growth in Medicare hospital claims per FFS beneficiary can be derived by subtracting a fixed percentage from the overall growth in hospital charges per resident rather than by applying the historical 68% ratio to the overall growth in hospital charges per resident.

2.3 - Schedule 1 presents the Medicare hospital charges per resident, age 65+, and the hospital charges per resident for all payers for FY 2008 and FY 2013. Line 9 shows that the average annual increase in Medicare hospital charges per resident, age 65+, between 2008 and 2013 was .69%; whereas the average annual increase in hospital charges per resident for all payers was 3.63% (i.e., 2.94% higher than the Medicare statistic). We will refer to the difference in the two waiver statistics, calculated annually, as the Difference Statistic.

**Schedule 1
Annual Growth Rates in Charges per Resident (Medicare vs. All Payer)**

	Medicare			All Payer		
	A Inpatient	B Outpatient	C Total	D Inpatient	E Outpatient	F Total
L1 FY2008 Charges (000,000s)	\$3,239.0	\$935.0	\$4,174.0	\$7,655.7	\$3,501.3	\$11,157.0
L2 Residents (000)	659.6	659.6	659.6	5,699	5,699	5,699
L3 Charge/Resident	\$4,911	\$1,418	\$6,328	\$1,343	\$614	\$1,958
L4 % of Total Charges	77.6%	22.4%		68.6%	31.4%	
L5 FY2013 Charges (000,000s)	\$3,529.8	\$1,608.9	\$5,138.7	\$8,281.3	\$5,494.7	\$13,776.0
L6 Residents (000)	784.5	784.5	784.5	5,886.9	5,886.9	5,886.9
L7 Charge/Resident	\$4,499	\$2,051	\$6,550	\$1,407	\$933	\$2,340
L8 % of Total Charges	68.7%	31.3%		60.1%	39.9%	
L9 Average Annual Increase Chg/Resident	-1.73%	7.67%	0.69%	0.93%	8.72%	3.63%
L10 Difference Statistic						2.94%

2.4 - These results suggest that if the HSCRC were to set rates and global budgets so that total hospital charges per resident would increase at a growth rate below the 3.58% annual All Payer Cap, the increase in Medicare hospital charges per resident age 65+ would be expected to be less than .64% (i.e., 3.58% - 2.94%). This 0.64% Medicare average growth rate would ensure that the Medicare Savings Targets would be met.

2.5 – It would be unsound to assume that the average 2.94% difference that existed between the two waiver test statistics over the 2008 – 2013 period will persist in 2014 or in future years. It would be prudent to assume a lower estimate of the difference between the two waiver test statistics, and to set target budgets low enough to achieve the Medicare payment test even

with the smaller assumed estimate of the Difference Statistic. However, the estimate of the Difference Statistic should be based on a reasonable methodology. In Sections 3 and 4, respectively, we suggest two methods that can be used to establish the projected difference in the two waiver statistics for 2014 and 2015 on a conservative basis:

- A statistical method that focuses on the historical variation in the difference between the waiver test statistics by year, and
- An analytic method that attempts to explain the amount of the projected difference derived from the statistical analysis and to use the findings to project the Difference Statistic.

3. Variations in and Explanations of the Level of the Difference Statistic

3.1 – Statistical Method: Schedule 2 calculates the Difference Statistic during each year from FY 2008 through FY 2013. It is important to note (as shown in Schedule 2), that the growth in Medicare charges per resident, age 65+, was very low in each of the years from FY 2008 to 2013. Column D in Schedule 2 derives the absolute value of the difference between the Difference Statistic in each year and the average of the Difference Statistics from 2008 to 2013 (Absolute Variance). The average of these Absolute Variances is .79% over the period. The standard deviation of the Difference Statistics is 1.04%. The average of the Absolute Variances offers us a statistical estimate of the Difference Statistic that is more conservative (i.e., smaller) than the standard deviation. Use of the more conservative statistical approach to derivation of the Difference Statistic would be prudent given the very adverse consequences that could befall Maryland and its hospitals if it were to fail the Medicare payment limitation in the Demonstration.

Schedule 2
The Difference Statistics FY 2008 – FY 2013

	A Increase in All Payer Charges Per Resident	B Increase in Medicare Charges Per Resident, Age 65+	C Difference Statistic: = (A)-(B)	D Absolute Variance from Average: = (C) – 2.94%
08 vs. 09	5.4%	2.0%	3.4%	.46%
10 vs. 09	2.2%	-2.1%	4.3%	1.36%
11 vs. 10	4.5%	2.9%	1.6%	1.34%
12 vs. 11	5.0%	1.9%	3.1%	.16%
13 vs. 12	1.2%	-1.1%	2.3%	.64%
Avg.	3.63%	.69%	2.94%	.79%

3.2 – Analytic Method: Using either statistical measure (i.e., the standard deviation or the absolute value of the Difference Statistic) of the average size of the Difference Statistic over the

2008 through 2013 period, it would appear that the Difference Statistic could reasonably and conservatively be projected to be 2.0%. A statistically derived projection that the growth in Medicare charges per beneficiary will typically be 2.0% less than the growth in All Payer hospital charges per resident can be supported by two key facts that were highly influential over the 2008 through 2013 period which are also likely to be important in the future. These facts are:

- Medicare hospital claims expenses are much more heavily concentrated in the inpatient area than in the outpatient area, relative to the distribution of claims expenses for all other payers, and this distributional difference has benefited Medicare from an expenditure growth perspective because hospital utilization and cost growth has occurred to a disproportionately high degree in the outpatient areas; and

Medicare experienced a larger decline than other payers experienced in inpatient cases over the period 2008 to 2013 and this larger decline dampened the level of hospital cost growth experienced by Medicare relative to the level of cost growth experienced by the other payers.

3.3 -_The effect of the disproportionately large percentage of Medicare claims in inpatient services, and the relatively low growth of inpatient (vs. outpatient) vs. outpatient expenditures, confers on Medicare a cost saving advantage that amounts to almost 1.0% per year—specifically, the expected annual increase in Medicare claims expense growth is 2.67% per year and this growth rate is nearly 1.0% below the expected all payer average claims growth of 3.64% per year. Therefore, about 1.0% of the Difference Statistic results from Medicare’s favorable distribution of claims between inpatient and outpatient services. The maintenance of this 1.0% component of the Difference Statistic in the future depends on the relative level of growth in the hospitals’ charges per resident for inpatient versus outpatient services. This relationship between the relative level of growth for inpatient and outpatient services is likely to continue because outpatient volume growth is likely to continue to outstrip inpatient volume growth in the future. The moderate relative growth in Medicare expenditures that is likely to continue due to the higher percentage of Medicare hospital care that is performed on an inpatient basis would be supported by arrangements focused on the reduction of PAVs in the inpatient area, including required reductions in unnecessary readmissions (which are more frequent for Medicare than for other payers) and in Medicare lengths of stay.

3.4 -_The difference between the percentage reduction in Medicare discharges per 1,000 residents (i.e., 4.16%) and the percentage reduction in the All Payer discharges per 1,000 residents (i.e., 2.91%) over the period FY 2008 – FY 2013 was 1.85%.² This difference is important because 77.6% of Medicare claims expenses are for inpatient care, whereas approximately 51% of the claims expenses of the other payers are for inpatient care. The differential reduction in Medicare discharges per 1,000 residents age 65+ results in a differential reduction in Medicare claims expenses per 1,000 residents age 65+ of 1.44% (77% x 1.85%).

² These calculations are shown in Appendix 1 to this Paper.

The differential reduction in Medicare inpatient discharges does not have a fully proportional impact on Medicare's inpatient expenses because the reduction in Medicare discharges includes a high proportion of relatively low cost one-day stays. The task of quantifying the case mix of the discharges that are being eliminated and the countervailing impact of the case mix governors is beyond the scope of this paper. However, based on other work, we can estimate that the differential reduction in Medicare cases accounts for at least 1% of the Differential Statistic. This 1% component of the Differential Statistic can be maintained if the focus of PAVs includes reduced Medicare discharges (e.g., fewer readmissions) and reduced Medicare LOS under the Global Models.

This emphasis on managing Medicare PAVs is appropriate given that both Medicare discharges per 1,000 beneficiaries and Medicare LOS in Maryland appear to be high relative to Medicare's experience on a national basis and the Maryland Demonstration requires Maryland to achieve reductions in readmissions and hospital acquired conditions (which influence the length and cost of hospital inpatient stays) and to hold the growth in Medicare hospital charges per beneficiary below the national Medicare experience and the all payer experience in Maryland.

4. Implications of the Difference Statistic for the Annual Update Allowance Early in the Demonstration

4.1 - In this section, we will illustrate the importance of the Difference Statistic in establishing Target Budgets for the Global Models and in establishing the Annual Update Allowances and Volume Governors of the Modified CPC system. In developing this illustration, we will adopt the following assumptions:

(1) The Annual Update Allowance of both the Target Budgets of the Global Models and the Modified CPC rates will be derived from four components:

- An inflation allowance calculated to meet the All Payer Cap and Medicare Savings Cap;
- A volume allowance, including the Volume Governor of the Modified CPC hospitals;
- A PAV adjustment that will offset the prospective volume allowance; and
- A new services adjustment to fund the incremental costs of CON projects; this adjustment will relate primarily to the new CON-approved hospital in the Germantown area.

(2) As described in our previous Paper 2 (Calculating Hospital Volume Allowances), the volume allowance of each Global Model hospital will be derived from the demographic changes in its Virtual Patient Service Area (VPSA) multiplied by a VCF of 50%. The volume allowance is tied to the full demographic change in Weighted Residents (adjusted as described in Item 3, below) and will average .7%.

(3) The reductions to the demographic adjustments related to revised Weights and the exclusion of PAVs from the volume allowance that are being considered by the HSCRC staff will

be counted as productivity adjustments and will amount to .2% of the aggregate revenue of all of the hospitals covered by the Demonstration..

(4) A New Service Adjustment will total 1%, which will be spread over two years (2014- 2015), with the effect that the adjustments will amount to 0.5% per year. The annual 0.5% adjustment will be split into two equal parts. Half of the .5% (.25%) will be funded as an offset to the statewide annual inflation allowance and the other half (.25%) will be funded through reductions in the volume allowances of the Montgomery County hospitals that are affected by the new CON-approved hospital that will be opening in Germantown in 2014.

(5) The Medicare Savings Targets will require a limit of 1.25% growth in Medicare hospital claims per FFS beneficiary in CY 2014 and in CY 2015. This limit is the sum of the CMS actuaries' projection of Medicare hospital claims expense per beneficiary in CY 2014 (1.9%) and 2015 (1.6%), reduced by the 1% 2015 Medicare Savings requirement that is included in the Demonstration spread evenly over CY 2014 and CY 2015: $1.25\% = (1.9\% + 1.6\% - 1.0\%) / 2$ ³

4.2 - With these assumptions, the HSCRC would implicitly approve an increase in Medicare claims per FFS beneficiary of 1.25%. That is, if the HSCRC approved (through Global Budget models and modified CPC rate agreements) an increase in the total charges per resident of 3.25%, with a projected Difference Statistic of 2.0%, it could reasonably be assured that Medicare growth per FFS beneficiary would be approximately 1.25% (i.e., 3.25% - 2.00%). The growth in residents of approximately .7% would result in a maximum approved hospital revenue increase of 3.95% (i.e., 3.25% + .7%). The HSCRC would have to decide whether an annual increase of 1.25% in Medicare claims expenses per beneficiary would be low enough to meet the Medicare payment increase limits that are built into the Demonstration. It could

³ One potential dynamic that may result in an increase in the relative growth of Medicare hospital expenditures per FFS beneficiary is the following: When compared to Medicare, the non-Medicare payers have a greater percentage of their aggregate hospital services provided as outpatient care. Therefore, they probably have a greater opportunity to redirect services to free-standing providers. Proportionately larger shifts of commercial patients to non-hospital providers would shift an increased proportion of a GBR or TPR hospital's Target Budget from non-Medicare payers to Medicare. This dynamic would tend to reduce the Difference Statistic and make conservatism in its projection a prudent policy.; since non-Medicare payers have a greater percentage of their aggregate hospital services provided as outpatient, it would appear that these payers have a greater potential to redirect services to free-standing providers.

The HSCRC staff has discussed various rate-setting policies that would help to ensure that the historically slower growth in Medicare hospital charges per FFS beneficiary relative to the growth in hospital charges for all residents will be sustained in the future. As discussed at various points in this paper, these policies would involve a focused effort to drive reductions in potentially avoidable volumes (PAVs), which are much greater for Medicare beneficiaries than for All Payers. For example, Medicare readmission rates have decreased more rapidly than the readmission rates for All Payers. The definition of PAVs could be expanded so that even more Medicare services, such as excessive LOS levels, would be targeted for improvement by the HSCRC and by the hospitals.

approve Global Budgets and modified CPC arrangements that would produce less than a 3.25% charge increase across all payers and, by implication, less than 1.25% for Medicare, if it deems lower approval levels to be warranted.

4.3 - The annual inflation allowance for each year can then be derived as follows:

- The unadjusted prospective volume allowances would be, in the aggregate, 50% of the full demographic adjustments (1.4%) or .7% of total hospital charges in the prior year. These volume allowances would be split between prospective allowances to the Global Model hospitals and the Volume Governor of the Modified CPC hospitals as described in Paper 2 (“Calculating Hospital Volume Allowances”) that addresses the topic of Volume Allowances.
- These volume allowances would be reduced by two adjustments—namely, an assumed .2% reduction related to PAVs and a Montgomery County-specific adjustment to fund the new, CON-approved Germantown hospital that would amount to .25% of the aggregate allowable revenue of all of the other hospitals in Montgomery County. The adjustment related to PAVs would include the HSCRC staff’s revision to the age cohort Weights, by which PAVs are excluded from the Weight calculations, and the limitation whereby the Demographic Adjustment is not applied to all or a portion of each Global Model hospital’s PAV revenue.

4.4 - The maximum Annual Update Allowance would be derived (as shown in Schedule 3) by adjusting the maximum allowable revenue increase of 3.95% by the .7% volume allowance, the .5% incremental charge for the Germantown facility, the .2% PAV related productivity offset, and the .25% volume allowance offset of the Montgomery County hospitals related to the new Germantown hospital (which was established as a part of the Germantown CON).

Schedule 3
Maximum Annual Update Allowance and Suggested Annual Update Allowance

L1	Maximum Allowable Revenue Increase		3.95%
	Less:		
L2	Full Volume Allowance:	-0.70%	
L3	Full Incremental Germantown Allowance:	-0.50%	
L4	Subtotal of subtractions		-1.20%
	Plus:		
L5	PAV Adjustment	0.20%	
L6	Volume Allowance Offset to Fund Germantown:	0.25%	
L7	Subtotal of Additions		0.45%
L8	Maximum Annual Update: (L1 + L4 + L7)		3.20%
L9	Suggested Conservative Annual Update Allowance (10 Yr. Avg. MBI)		3.20%

4.5 - It would, of course, be prudent for the HSCRC to adopt a conservative approach to setting the hospitals' Annual Update Allowance by holding the Maximum Annual Update Allowance to a level that approximates the hospital Market Basket Index (MBI)—i.e., to a level of about 2.89% (which reflects the 10-year average MBI less productivity offsets).⁴ This analysis shows that if the HSCRC takes a conservative approach with regard to the provision of volume allowances (i.e., a volume allowance methodology that limits volume allowances to changes in projected demographic factors on the margin multiplied by a VCF of 50%), it should have sufficient flexibility to provide hospitals with annual allowances that approximate the MBI each year while also meeting both the Medicare specific and All Payer tests. The ability to cover reasonable hospital cost inflation each year is an important objective because the hospitals have, in the past, stated that a key principle of a reformed system should be its ability to provide efficient hospitals with annual allowances that at least cover factor cost growth (less reasonable offsets for productivity). This will not be possible unless the HSCRC is very tight in approving volume adjustments and in limiting or eliminating any other types of adjustments (such as those for new technology).

⁴ See Appendix 2 for a calculation of the average Market Basket Increase over the past 10 years

**Appendix 1:
Calculation of Medicare Discharges per 1,000 Residents 65+
vs. All Payer Discharges per 1,000 (over the period FY 2008 – FY 2013).**

	2008	2013	Annual % Growth
(1) Medicare Discharges	276,513	257,704	-1.40%
(2) Residents, Age 65+ (000's)	659.6	784.5	
(3) Discharges/ 100 Residents	419.2	328.5	-4.76%
(4) All Pay Discharges	762,793	678,856	-2.30%
(5) Residents, All Ages (000's)	5698.9	5886.9	
(6) Discharges/ 1000 Residents	133.8	115.3	-2.91%
(7) Different: Medicare All Payer ((3)-(6))			-1.85%
(8) % Medicare Inpatient (2008)			77.6%
(9) Reduction in Medicare versus All Payer Annual Charges per Resident			1.44%

Source: HSCRC Case Mix Data Base

Appendix 2 – Ten Year Market Basket Index less Productivity Offsets

CMS Market Basket Index

	Weighted Hospital Market Basket Index	Productivity Adjustment	MBI Less Productivity Adj.
FY 2005	3.30%	NA	3.30%
FY 2006	3.70%	NA	3.70%
FY 2007	3.40%	NA	3.40%
FY 2008	3.30%	NA	3.30%
FY 2009	3.60%	NA	3.60%
FY 2010	2.10%	NA	2.10%
FY 2011	2.60%	NA	2.60%
FY 2012	3.00%	1.00%	2.00%
FY 2013	3.60%	0.70%	2.90%
FY 2014	2.50%	0.50%	2.00%
Average	3.11%		2.89%

Source: CMS.Gov/Research-Statistics