



Performance Measurement Work Group Meeting

12/20/2017

Agenda

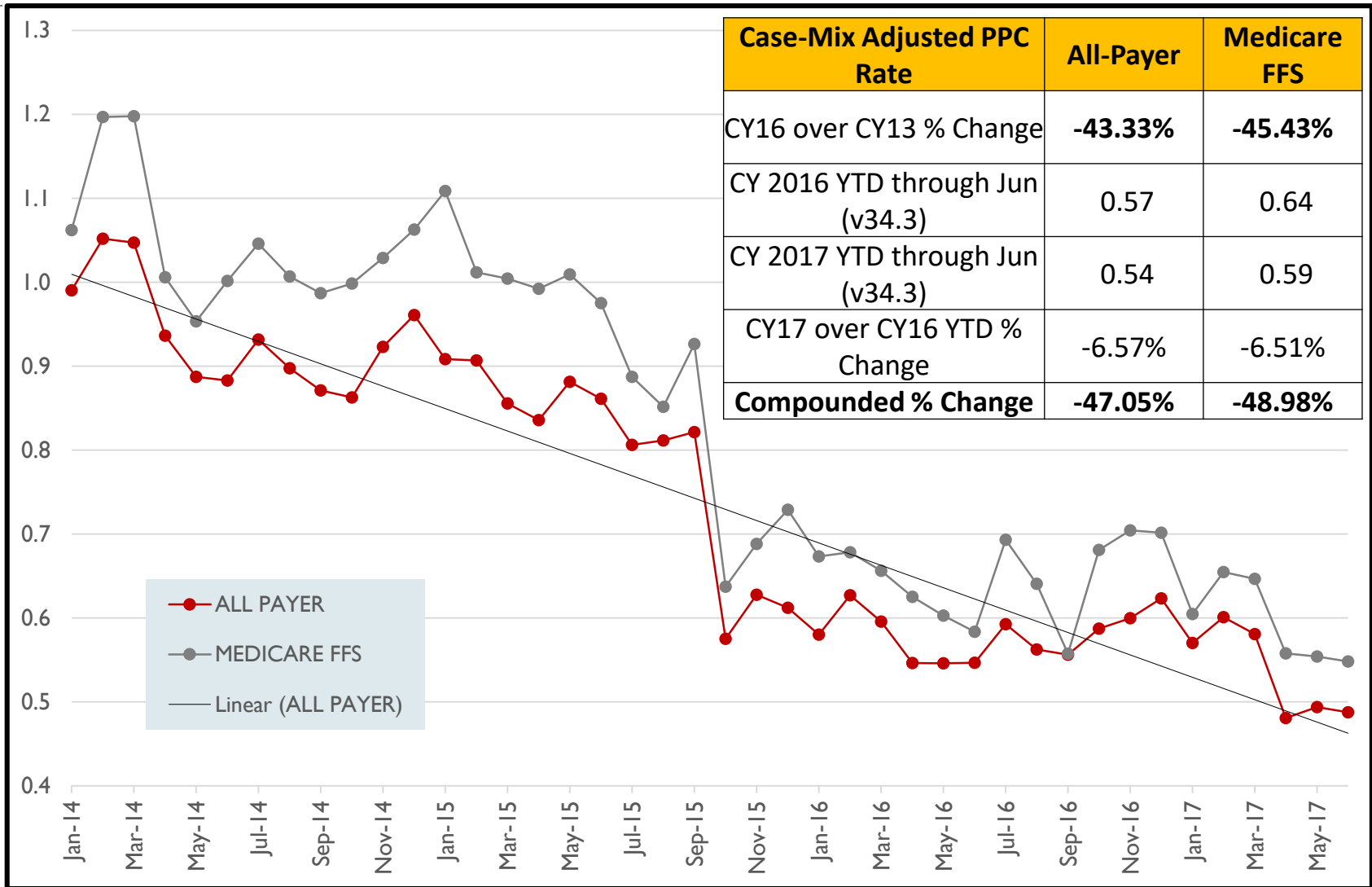
- ▶ **MHAC Modeling – RY 2020**
 - ▶ Methodology Changes
 - ▶ PPC Tier and List Changes
 - ▶ Revenue Adjustment Scales
 - ▶ Updates in RY 2021 and Beyond
- ▶ **RRIP – Readmissions Modeling RY 2020**
 - ▶ Improvement Target
 - ▶ National Forecasting; Cushion; Conversion to All-Payer
 - ▶ Attainment Target
 - ▶ Revenue Adjustment Scales
- ▶ **QBR – Status Update**
- ▶ **Commissioner White Paper Discussion**

Maryland Hospital Acquired Complications (MHAC)

MHAC Program

- ▶ Uses Potentially Preventable Complication (PPCs) measures developed by 3M Health Information Systems.
- ▶ PPCs are post-admission (in-hospital) complications that may result from hospital care and treatment, rather than underlying disease progression
 - ▶ Examples: Accidental puncture/laceration during an invasive procedure or hospital acquired pneumonia
- ▶ Relies on Present on Admission (POA) Indicators
- ▶ Links hospital payment to hospital performance by comparing the observed number of PPCs to the expected number of PPCs.

Monthly Case-Mix Adjusted PPC Rates



Note: Line graph based on v32 prior to October 2015 and v34.3 October 2015-June 2017. All data are final.

Rate Year 2020 Timeline

▶ Base Period = **FY 2017***

*Base Period may be extended for the full ICD-10 time period through FY 2017, TBD

▶ Used for normative values for case-mix adjustment

▶ Performance Period = **CY 2018**

▶ Grouper Version: **3M APR-DRG and PPC Grouper Version 35**

Rate Year	FY16-Q3	FY16-Q4	FY17-Q1	FY17-Q2	FY17-Q3	FY17-Q4	FY18-Q1	FY18-Q2	FY18-Q3	FY18-Q4	FY19-Q1	FY19-Q2	FY19-Q3	FY19-Q4	FY20-Q1	FY20-Q2	FY20-Q3	FY20-Q4
Calendar Year	CY16-Q1	CY16-Q2	CY16-Q3	CY16-Q4	CY17-Q1	CY17-Q2	CY17-Q3	CY17-Q4	CY18-Q1	CY18-Q2	CY18-Q3	CY18-Q4	CY19-Q1	CY19-Q2	CY19-Q3	CY19-Q4	CY20-Q1	CY20-Q2

Quality Programs that Impact Rate Year 2020

MHAC: Better of Attainment or Improvement			MHAC Base Period (Proposed)																Rate Year Impacted by MHAC Results
▶ 6								MHAC Performance Period: Better of Attainment or Improvement (Proposed)											

MHAC Update Considerations

- ▶ Given CY 2018 is final year of model test, PPCs must continue to be used and staff are recommending minimal changes to the current methodology
- ▶ Stakeholder concerns (UMMS/JHHS) regarding number of APR-DRG SOI norms that have a value of zero (results in the expected rates of PPCs to be zero)
 - ▶ Approx. 89% of norm cells have zero norm (FY17 base)
- ▶ Evaluation of PPCs in payment program, combos, tiers
- ▶ Concerns regarding revenue adjustment scale and size of penalties for each PPC

MHAC Modeling

- ▶ Staff have modeled attainment only scores using v35 of the PPC grouper methodology for the following:
 - ▶ **Model 1:** FY 2017 base period, no changes to methodology
 - ▶ **Model 2:** Extended base period (Oct. 2015-June 2017, which is 21 months under ICD-10) and increased minimum at-risk (>30) per APR-DRG SOI cell. **3M suggests this Model.**
- ▶ **UMMS/JHHS will present third option for addressing zero-cell norm issue**
 - ▶ **Model 3:** Restrict the payment program to the APR-DRGs where 80% of PPCs occur to reduce number of zero cells and to focus clinical improvement

Model 1 & 2

Model Number	Model Description	Statewide Total At-Risk Discharges (Discharges X # of PPCs At-Risk)	Statewide Total # PPCs	PPC Rate per 1,000 Discharges	% Zero norm*
1	No Changes	13,240,877	9,164	0.6921	89%
2	Extended Base and >At-Risk Requirements	24,644,769	15,776	0.6401	82%

*This is the percentage of APR-DRG SOI cells with norm of zero divided by the number of APR-DRG SOI cells with a norm (0% or higher); 45% of APR-DRG SOI cells are excluded prior to this calculation.

UMMS/JHHS Presentation: Model 3

Modeling Discussion

- ▶ **Concern:** Zero norm values may be valid; however, may function mathematically as never events
- ▶ **Potential Solutions:**
 - ▶ Model 2: Raising At-Risk minimum + Extending Norms
 - ▶ Raising At-Risk drops additional APR-DRG-SOI cells from evaluation
 - The minimum was raised from 2 to 30 Statewide at-risk discharges.
 - ▶ Extending Norms generates additional observed events
 - Tradeoff - More Accurate vs. Diluted (Example: $1/500=0.2\%$ vs $1/1000=0.1\%$)
 - ▶ Model 3: Including APR-DRGs where 80% of PPCs occur
 - ▶ Drops 20% of PPCs from MHAC program
 - ▶ Focuses clinical improvement

Current Monitoring Only and Combo PPCs

Monitored PPCs (not in payment program)

PPC NUMBER	PPC DESCRIPTION
2	Extreme CNS Complications
15	Peripheral Vascular Complications Except Venous Thrombosis
20	Other Gastrointestinal Complications without Transfusion or Significant Bleeding
29	Poisonings Except from Anesthesia
33	Cellulitis
36	Acute Mental Health Changes
66	Catheter-Related Urinary Tract Infection
Combination PPCs	
Combo 1:25	Renal Failure with Dialysis
26	Diabetic Ketoacidosis & Coma
63	Post-Operative Respiratory Failure with Tracheostomy
64	Other In-Hospital Adverse Events
Combo 2:17	Major Gastrointestinal Complications without Transfusion or Significant Bleeding
18	Major Gastrointestinal Complications with Transfusion or Significant Bleeding



New Considerations – Tiers/PPC List

PPC NUMBER	PPC DESCRIPTION	Obs. in BASE	Potential Adjustment
23	GU Complications Except UTI	59	Consider combining in NEW PPC Combo #3
28	In-Hospital Trauma and Fractures	52	Consider Combining in PPC Combo #1
34	Moderate Infectious	28	Consider combining in NEW PPC Combo #3
65	Urinary Tract Infection without Catheter	55	Consider combining in NEW PPC Combo #3
38	Post-Operative Wound Infection & Deep Wound Disruption with Procedure	13	Consider combining with PPC 37 in NEW Combo #4 (without procedure)

- ▶ HSCRC Process to make determination RE:Tiers/PPC list changes:
 - ▶ Review from clinical standpoint; confirm with 3M when necessary
 - ▶ Review from mathematical/statistical standpoint as needed
 - ▶ Validate data under PPC grouper v. 35

RY 2019 MHAC Revenue Adjustment Scale

- ▶ No statewide improvement goal
- ▶ Continue scaling methodology as a single payment scale, ranging from 0% to 100%, with a revenue neutral zone between 45% and 55%.
- ▶ Set the maximum penalty at 2% and the maximum reward at 1%.

Final MHAC Score	Revenue Adjustment
0.00	-2.00%
0.05	-1.78%
0.10	-1.56%
0.15	-1.33%
0.20	-1.11%
0.25	-0.89%
0.30	-0.67%
0.35	-0.44%
0.40	-0.22%
0.45	0.00%
0.50	0.00%
0.55	0.00%
0.60	0.11%
0.65	0.22%
0.70	0.33%
0.75	0.44%
0.80	0.56%
0.85	0.67%
0.90	0.78%
0.95	0.89%
1.00	1.00%
Penalty threshold: 0.45	
Reward Threshold 0.55	

R_Y 2019 YTD Revenue Adjustments

MHAC Revenue Adjustments	R_Y18 Final Scores under R_Y18 scale	R_Y18 Final Scores under R_Y19 Scale	R_Y19 YTD under R_Y19 Scale
Statewide Penalty	\$0	-\$ 1,914,322	-\$ 9,484,222
Statewide Reward	\$34,745,216	\$13,006,968	\$ 4,970,906
Statewide Net Impact	\$34,745,216	\$11,092,646	-\$ 4,513,315

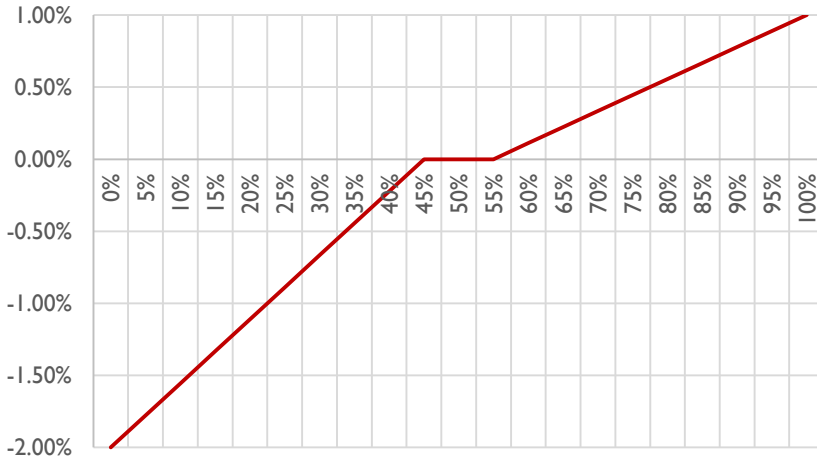


RY 2020 Revenue Adjustment Scale Considerations

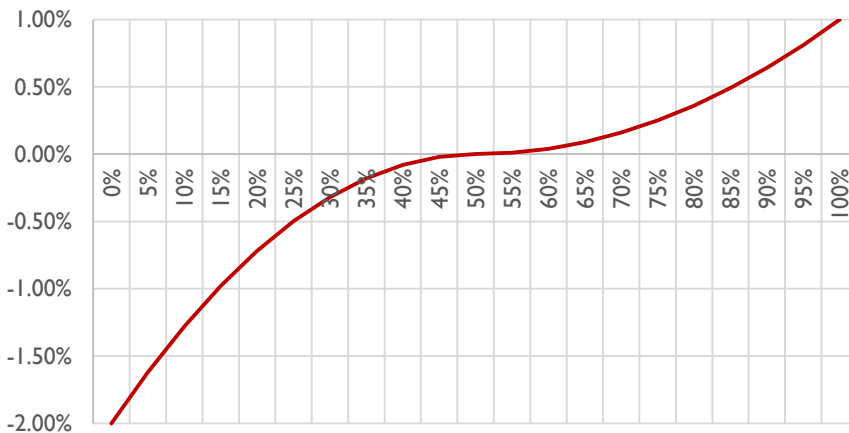
- ▶ State has achieved a significant improvement in PPC rates
- ▶ Measurement concerns continue:
 - ▶ Claims based measures
 - ▶ Zero-norm issue
 - ▶ Clinical concerns
- ▶ Two Options for scaling:
 - ▶ Continue to use RY 2019 scale
 - ▶ Modify scale to exponential scale
 - ▶ Focus rewards and penalties on outliers
 - ▶ Diminish rewards and penalties for hospitals with average performance

Scale Options

Linear Scale w/ Revenue Neutral Zone



Exponential Scale w/o Revenue Neutral Zone



Final MHAC Score	Percent Revenue Adjustment	
	RY 2019 Scale-- linear scale with revenue neutral zone	Exponential scale with no revenue neutral zone
0%	-2.00%	-2.00%
5%	-1.78%	-1.62%
10%	-1.56%	-1.28%
15%	-1.33%	-0.98%
20%	-1.11%	-0.72%
25%	-0.89%	-0.50%
30%	-0.67%	-0.32%
35%	-0.44%	-0.18%
40%	-0.22%	-0.08%
45%	0.00%	-0.02%
50%	0.00%	0.00%
55%	0.00%	0.01%
60%	0.11%	0.04%
65%	0.22%	0.09%
70%	0.33%	0.16%
75%	0.44%	0.25%
80%	0.56%	0.36%
85%	0.67%	0.49%
90%	0.78%	0.64%
95%	0.89%	0.81%
100%	1.00%	1.00%



Complications in New Model – Update

Process Update: Complications under the New Model

- ▶ **New Model continues to be negotiated – nothing final at this time.**
- ▶ **General feedback Summary:**
 - ▶ Some support to moving to federal (national) complications measures (not methodology)
 - ▶ Some support for maintaining PPCs and paring down list to fewer, more clinically significant complications
- ▶ **Other considerations**
 - ▶ Alternatives to PPC or HAC measures
 - ▶ Data source(s) for measures
 - ▶ Review scoring, scaling, and risk adjustment methodologies



Next Steps: Complications under the New Model

- ▶ HSCRC procured a **vendor to convene a sub-group** of clinical and performance measurement experts.
 - ▶ Sub-group will build plan to measure and report complications under the Enhanced Model
 - ▶ Scope will include review of potential all-payer, clinically valid complication measures, including risk adjustment
- ▶ Anticipated **timeline**:
 - ▶ Sub-group will meet beginning in early 2018
 - ▶ Sub-group will recommend measures options to the PMWG by Summer/early Fall 2018
 - ▶ PMWG to develop payment adjustment methodology Fall 2018
 - ▶ Timeline subject to change

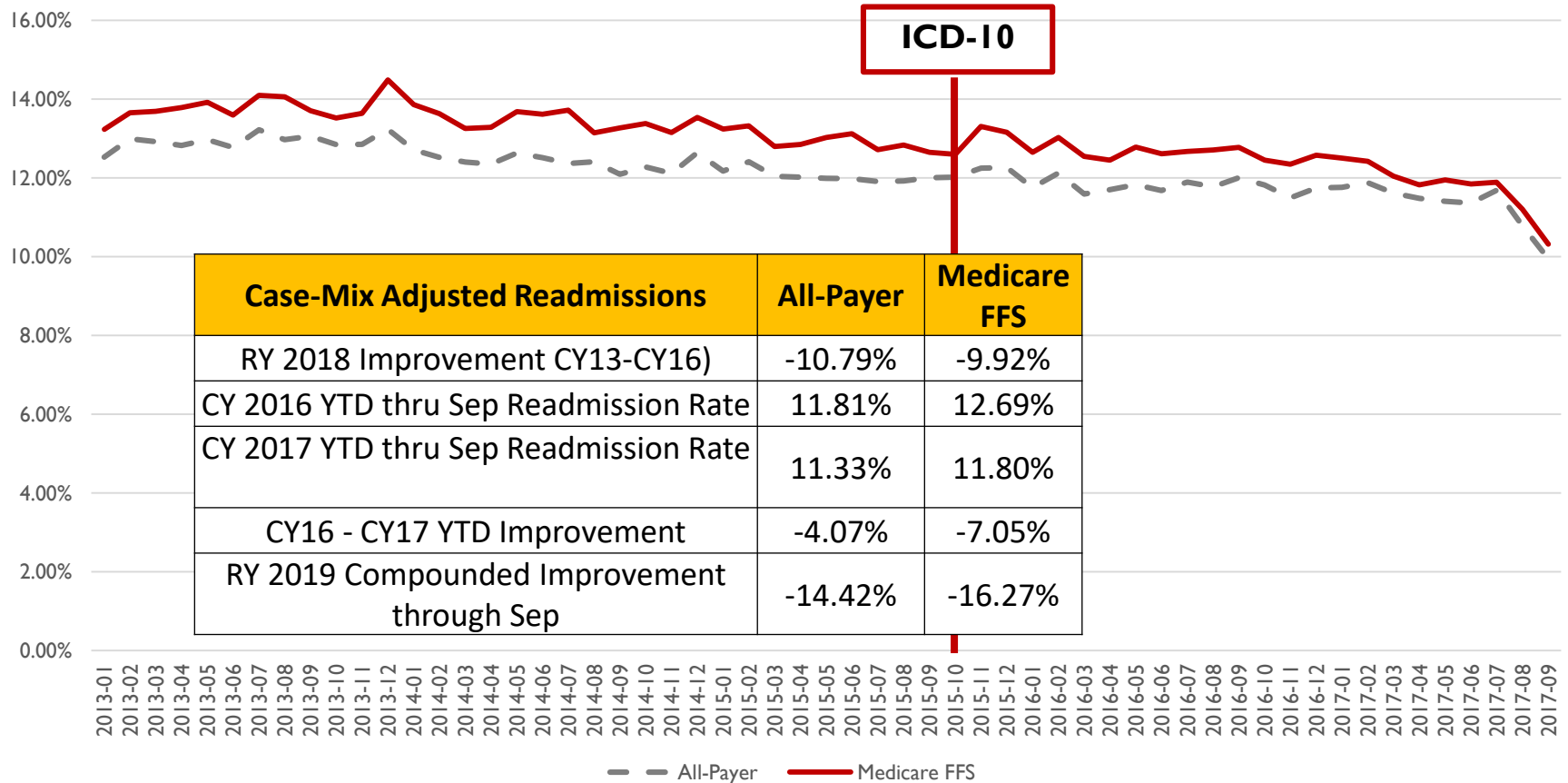


Readmission Reduction Incentive Program (RRIP)

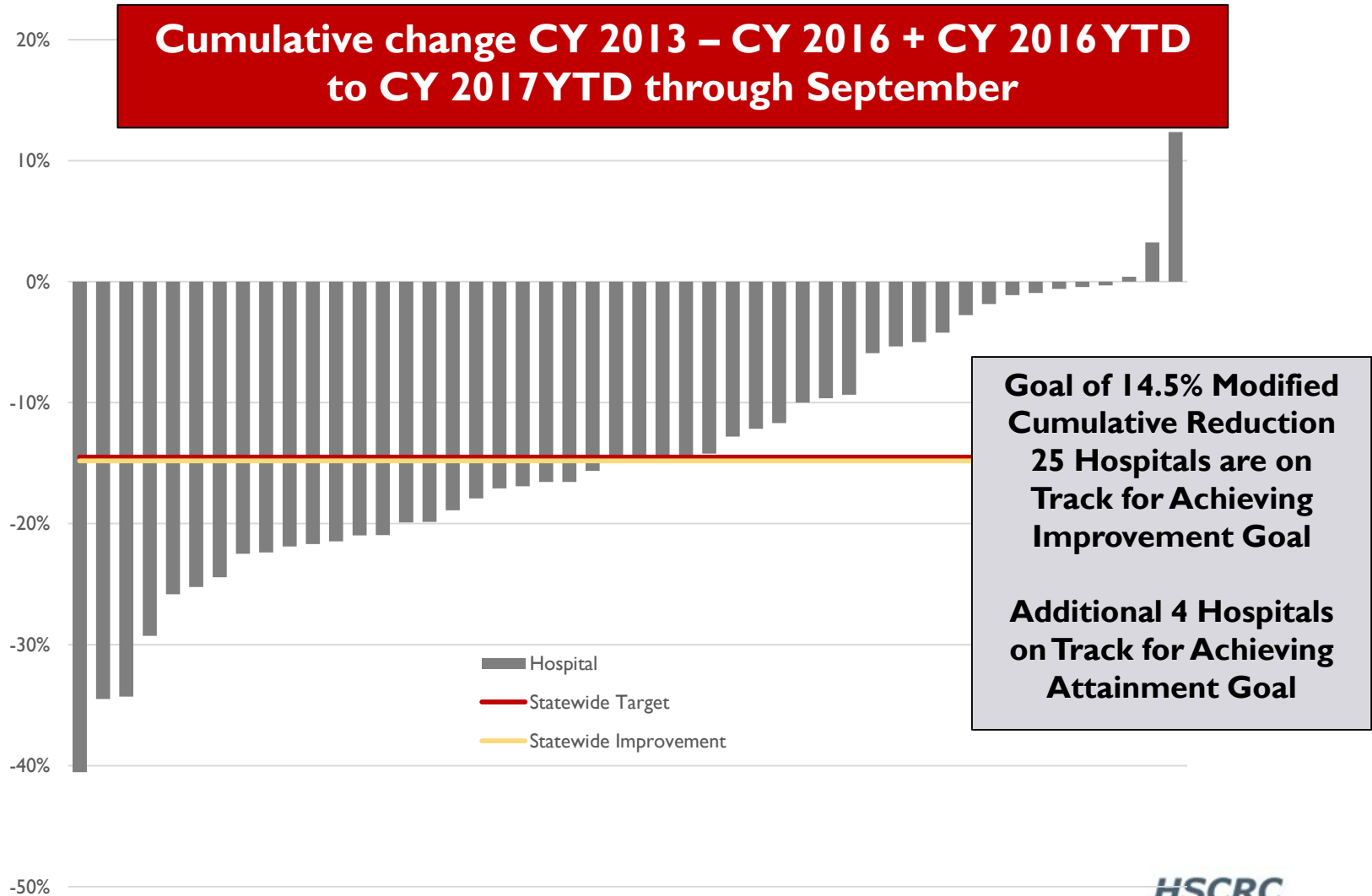
Readmission Reduction Incentive Program

- ▶ Payment program supports the waiver goal of reducing inpatient Medicare readmissions to national level, but applied to all-payers.
- ▶ **Case-Mix Adjusted Inpatient Readmission Rate**
 - ▶ 30-Day
 - ▶ All-Payer
 - ▶ All-Cause
 - ▶ All-Hospital (both intra- and inter-hospital)
 - ▶ Chronic Beds included
- ▶ **Exclusions:**
 - ▶ Same-day and next-day transfers
 - ▶ Rehabilitation Hospitals
 - ▶ Oncology discharges
 - ▶ Planned readmissions
 - ▶ (CMS Planned Admission Version 4 + all deliveries + all rehab discharges)
 - ▶ Deaths

Monthly Case-Mix Adjusted Readmission Rates



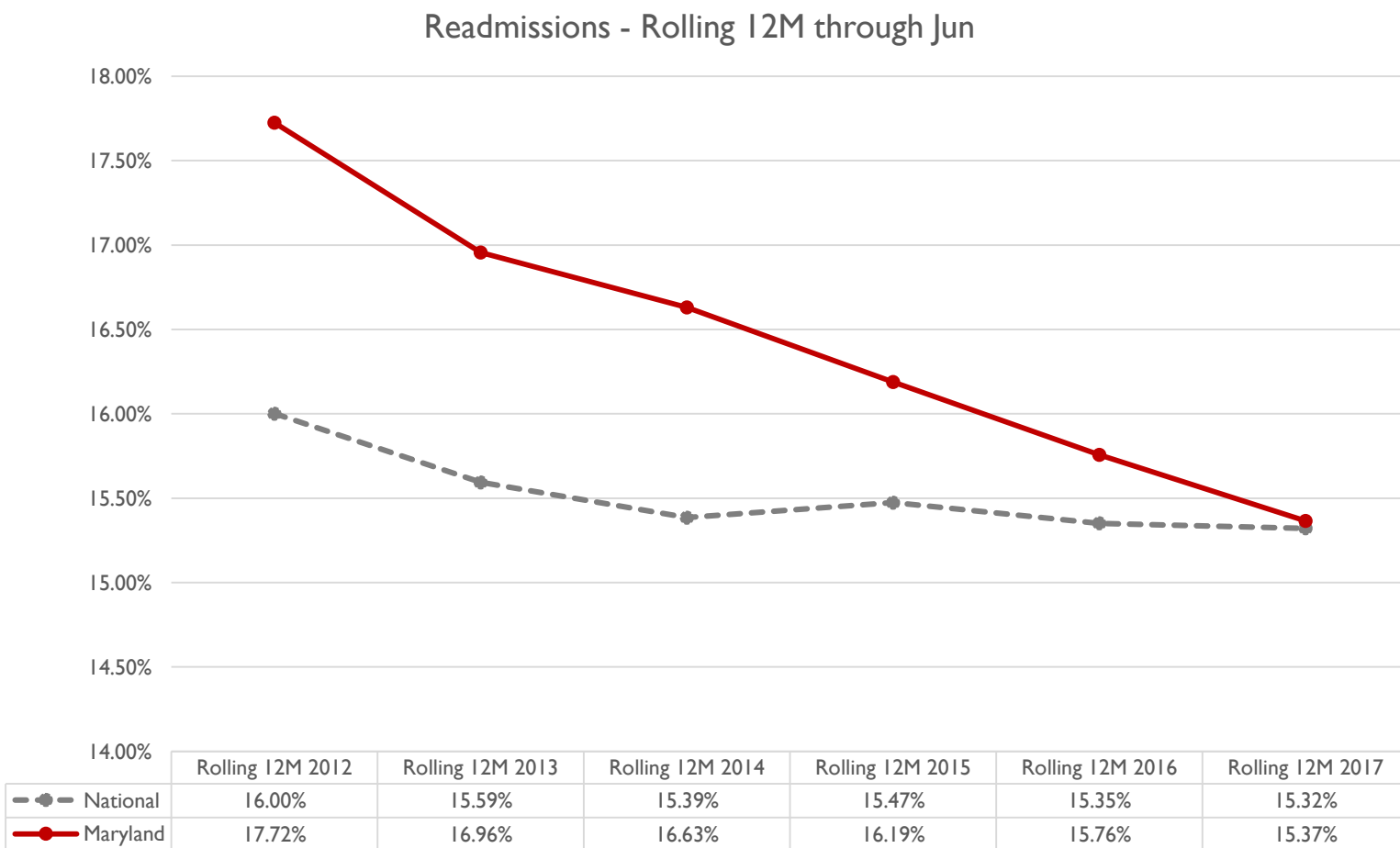
Change in All-Payer Case-Mix Adjusted Readmission Rates by Hospital



HSCRC

Health Services Cost Review Commission

Medicare Readmissions – Rolling 12 Months Trend



Proposed Timeline

- ▶ **Base Period: CY 2016**
 - ▶ Used for normative values for case-mix adjustment
- ▶ **Performance Period: CY 2018**
- ▶ **grouper Version: APR-DRG Grouper Version 35**

Rate Year (Maryland Fiscal Year)	FY16- Q3	FY16- Q4	FY17- Q1	FY17- Q2	FY17- Q3	FY17- Q4	FY18- Q1	FY18- Q2	FY18- Q3	FY18- Q4	FY19- Q1	FY19- Q2	FY19- Q3	FY19- Q4	FY20- Q1	FY20- Q2	FY20- Q3	FY20- Q4	
Calendar Year	CY16- Q1	CY16- Q2	CY16- Q3	CY16- Q4	CY17- Q1	CY17- Q2	CY17- Q3	CY17- Q4	CY18- Q1	CY18- Q2	CY18- Q3	CY18- Q4	CY19- Q1	CY19- Q2	CY19- Q3	CY19- Q4	CY20- Q1	CY20- Q2	
Quality Programs that Impact Rate Year 2020																			
RRIP Incentive	RRIP Base Period (Proposed)																		Rate Year Impacted by RRIP
									RRIP Performance Period (Proposed)										

Flowchart of Predicting Improvement Target

Step 1

- **Test Past Accuracy of Medicare Predictive Models**

Step 2

- **Project CY 2018 National Medicare rates**

Step 3

- **Add a cushion to Medicare projections**

Step 4

- **Convert MD Medicare (projected) reduction to All-Payer Improvement Target**

Step 5

- **Compound 2016-2018 Improvement Target (RY 2020) with 2013-2016 Improvement (RY 2018)**

Step 1: Predictive Models -Descriptions

- ▶ Model 1: **Average Annual Change (AAC)**: (16 over 15; 15 over 14; 14 over 13; averaged)
- ▶ Model 2: **Most Recent Annual Change (MRAC)**: (17 YTD over 16YTD)
- ▶ Model 3: **12MMA**: 12-Month Moving Average
- ▶ Model 4: **24MMA**: 24-Month Moving Average
- ▶ Model 5: **Proc Forecast (PROC)**: Predictive Function in SAS
- ▶ Model 6: **ARIMA**: Auto-Regressive Integrated Moving Average
- ▶ Model 7: **STL**: Seasonal and Trend decomposition using Loess

Step 1: Testing Past Accuracy of Forecasting Models

- ▶ We tested the predictive accuracy of 7 forecasting models, and selected the **Average Annual Change** to forecast the National Medicare Readmission Rate at end of CY 2018.

		Predicted Rates						
Year	Actual Rate	Average Annual Change	Most recent annual change (cummulative CY rates)	12 MMA	24 MMA	PROC FORECAST	ARIMA	STL
2013	15.38%	15.24%	15.24%	15.90%				
2014	15.49%	14.93%	15.01%	15.51%	15.66%	14.91%	15.21%	15.28%
2015	15.42%	15.22%	15.60%	15.42%	15.41%	14.83%	15.57%	15.48%
2016	15.31%	15.20%	15.35%	15.47%	15.46%	14.96%	15.61%	15.47%

Step 2: Projecting National Medicare Rate

- ▶ Average of Projections for CY 2017 National Readmission Rate is ~**15.28%**.
 - ▶ In previous years, MD slowed improvement in second half of year.
 - ▶ Range of CY 2017 estimates is **15.04% to 15.59%**.
 - ▶ Range of CY 2018 estimates is **14.96% to 15.32%**.

Model	AAC	MRAC	12MMA	24MMA	PROC	ARIMA	STL
CY 2017	15.11%	15.28%	15.32%	15.33%	15.04%	15.32%	15.59%
CY 2018	15.25%	15.25%	15.30%	15.32%	14.96%	15.14%	15.24%

- ▶ For purposes of today's meeting, we are using the AAC output to calculate improvement target.

Step 2: Projecting National Medicare Rate

Year	National Medicare Rate
CY 13	15.38%
CY14	15.49%
CY 15	15.42%
CY16	15.31%
CY17 (est. based on Avg. of Projections)	15.28%



	Model	Projections of National Rate
2018	AAC	15.25%
	MRAC	15.25%
	12MMA	15.30%
	24MMA	15.32%
	PROC	14.96%
	ARIMA	15.14%
	STL	15.24%

Step 3: Cushion for CY 2018 Predictions

- ▶ Per discussions, we will include a cushion in our predictive methodology to ensure waiver test is achieved at end of CY 2018
- ▶ Cushion is modeled at **0.1%** reduction from prediction, and **0.2%** reduction.
 - ▶ Both cushions are assuming that the prediction methodology is *under*-predicting the National Readmission Rate improvement for CY 2018.
 - ▶ Need to be conservative in predictions in final year of Model.

	Predicted Trend	Predicted Trend + -0.1% Cushion	Predicted Trend + -0.2% Cushion
CY 2018 National Readmission Rate	15.25%	15.15%	15.05%

Step 3: Cushion for CY 2018 Predictions

- ▶ Calculate the reduction in MD Medicare Readmission rate that will reach the projected National Rate.
- ▶ MD Medicare rate in CY 2016 was **15.60%**. To reach the projected national numbers by CY 2018, MD Medicare Readmissions must reduce by:

	Predicted Trend	Predicted Trend + - 0.1% Cushion	Predicted Trend + - 0.2% Cushion
CY 2018 National Readmission Rate	15.25%	15.15%	15.05%
MD Medicare Improvement Necessary to reach CY 2018 National Readmission Rate	-2.22%	-2.86%	-3.50%

Step 4: Conversion to All-Payer Target

- ▶ Once MD Medicare reduction target is determined, need to calculate corresponding All-Payer reduction.
- ▶ Multiple methods used to Compare MD Medicare and MD All-Payer Readmission Trends
 - ▶ **Simple difference:** MD Medicare reduction is approximately **2.01%** less than corresponding reduction in All-Payer (CY 17 projected compared to CY 13 observed)
 - ▶ **Ratio of difference:** MD Medicare reduction is approximately **81%** of All-Payer reduction (CY 17 projected compared to CY 13 observed)
 - ▶ **Additional Ratios Model:** May be added for January review.

Step 4: Conversion to All-Payer Target

▶ Further explanation of Conversion Factor Calculations:

	Predicted Trend
MD Medicare Readmission Change CY13-CY17 (projected)	-8.36%
All Payer Readmission Change CY13- CY17 (projected)	-10.37%
All Payer Adjustment Factor (Simple Difference)	2.01%
All Payer Adjustment Factor (Ratio Difference)	81%

Step 4: Conversion to All-Payer Target

- ▶ Conversion yields the following output:

	Predicted Trend	Predicted Trend + -0.1% Cushion	Predicted Trend + -0.2% Cushion
CY 18 Medicare FFS Readmission Rate Reduction Target Compared to CY 16	-2.22%	-2.86%	-3.50%
Method 1: Add difference in rates of change to FFS target (-2.01%)	-4.23%	-4.87%	-5.51%
Method 2: Use ratio of changes in rates to scale FFS target (81%)	-2.75%	-3.55%	-4.34%
Average of Conversion Models 1 and 2	-3.49%	-4.21%	-4.93%

- ▶ Current suggestion to Model with **-4.21% CY 2018** compared to CY 2016.

Step 5: Compounding Distinct Improvements

- ▶ RY 2018 (CY 2013-CY2016) must be **compounded** with CY 2016-CY2018 Improvement, which are fundamentally different:

- ▶ Formula of Compounded Improvement:

$$(1 + a) * (1 + b) - 1$$

- ▶ Example of Compounded Improvement

- ▶ Readmission Rate Improves 50% (written as -.5) under RY 2018, and an additional 50% under RY 2020:

$$\begin{aligned} &(1 + -.5) * (1 + -.5) - 1 \\ &(-.5) * (-.5) - 1 \\ &.25 - 1 \\ &-.75 \end{aligned}$$

- ▶ This example yields a 75% reduction in Readmissions, rather than a 100% reduction, as a 50% improvement upon the original 50% improvement is a compounded 75% improvement.

Improvement Target

- ▶ **RY 2019 Improvement Target WITH Compounded Target**

$$(1 - .1075) * (1 - .0375) - 1$$
$$\sim 14.10\%$$

- ▶ Original Improvement Target (without compounding) was 14.50%

- ▶ RY 2020 Modeled Improvement Target (-4.21%) compounded with experienced RY 2018 Improvement (-10.75%) yields:

- ▶ **RY 2020 Improvement Target: (14.51%)**

$$(1 - .1075) * (1 - .0421) - 1$$
$$\sim 14.51\%$$

Flowchart of Predicting Attainment Target

Step 1

- **Take Current Casemix-Adjusted Readmission Rates**

Step 2

- **Adjust these rates for Out-of-State Readmissions**
- Using CMMI data, the ratio is as follows: *Total Readmissions* : *InState Readmissions*

Step 3

- **Calculate the 25th and 10th percentiles for the statewide distribution of scores**
- 25th Percentile is **threshold** to receive attainment point rewards
- 10th Percentile is **benchmark** to receive maximum attainment point rewards

Step 4

- **Adjust benchmark and threshold downward 2.5%, per principles of continuous quality improvement**

RY 2019 Revenue Adjustment Scales

▶ Improvement Scale –

All Payer Readmission Rate Change CY13-CY17	Over/Under Target	RRIP % Inpatient Revenue Payment Adjustment
A	B	C
LOWER		1.0%
-25.0%	-10.5%	1.0%
-19.8%	-5.3%	0.5%
-14.5%	0.0%	0.0%
-9.2%	5.3%	-0.5%
-4.0%	10.5%	-1.0%
1.3%	15.8%	-1.5%
6.5%	21.0%	-2.0%
HIGHER		-2.0%

- ▶ The improvement scale uses the slope of the RY 2018 scaling, adjusted for the RY 2019 reward/penalty cut point.

▶ **Modeled Threshold - 14.51%**

▶ Attainment Scale

All Payer Readmission Rate CY17	Over/Above Target From Target	RRIP % Inpatient Revenue Payment Adjustment
A	B	C
LOWER		1.0%
9.83%	-1.0%	1.0%
10.33%	-0.5%	0.5%
10.83%	0.0%	0.0%
11.33%	0.5%	-0.5%
11.83%	1.0%	-1.0%
12.33%	1.5%	-1.5%
12.83%	2.0%	-2.0%
HIGHER		-2.0%

- ▶ The attainment scale calculates maximum rewards at the 10th percentile of performance for RY 2018, and maximum penalties are linearly scaled based on max reward and reward/penalty cut point.

▶ **Modeled Threshold – 10.31%**

Commissioner White Paper Discussion

Commissioner White Paper: Recommendations for Policy Improvements

▶ General

- ▶ Apply continuous scaling in P4P programs, but with modifiers that can be focused or relaxed
- ▶ Eliminate contingency incentives based upon other hospitals' performance.
 - ▶ Addressed, contingent scale no longer in MHAC policy.
- ▶ Eliminate use of combined “attainment,” “improvement” and “consistency” scales; **use attainment only.**
 - ▶ Requires additional risk adjustment
- ▶ Design QBR, MHAC, and RRIP programs at least as stringent as those used nationally.
- ▶ Timing: First half of 2018.

Commissioner White Paper: Recommendations for Policy Improvements

▶ PAU

- ▶ Broaden the definition of Potentially Avoidable Utilization.
- ▶ Give hospitals opportunity to propose to HSCRC their own programs that meet specified criteria - Target update by 7/1/18

▶ MHAC & QBR

- ▶ Review and retain MHACs that are “reliable”; increase emphasis on patient satisfaction and patient safety; focus on smaller number of measures
- ▶ Revise MHAC program or consolidate them in a revised QBR program
- ▶ Benchmark against national performance
- ▶ Develop needed risk adjustments (e.g., SES adjustment for ED wait times)

▶ RRIP

- ▶ Medicare only; obtain benchmarks for other payers.
- ▶ Consider other criteria in expanded readmission definition

QBR

Status Update

Recommendations in Final Policy (Approved)

- ▶ Update the Maryland Mortality Measure to include palliative care cases (risk-adjusted for palliative care status) for calculating attainment and improvement scores.
- ▶ Include ED Wait Times measures (ED-1b and ED-2b) in the Person and Community Engagement domain; HSCRC staff will work with industry and MIEMSS to determine if there is appropriate risk adjustment for the measures by 7/1/18.
- ▶ Continue to weight the domains as follows for determining hospitals' overall performance scores: Person and Community Engagement - 50%, Safety - 35%, Clinical Care - 15%.
- ▶ Maintain RY 2019 Pre-set scaling options, and continue to hold 2% of inpatient revenue at-risk for the QBR program.

Our next **Performance Measurement Work Group Meeting** is scheduled to take place **Wednesday, January 17th 2018 at 9:30 AM**

Contact Information

Email: HSCRC.performance@Maryland.gov