Performance Measurement Work Group

3/15/17 Meeting

HSCRC
Health Services Cost Review Commission

QBR Updates

QBR Updates: RY 2018 and RY 2019

- RY 2018 will include Pain Management Measure
- HSCRC will ensure we have most updated benchmarks/ thresholds for RY 2018 and 2019
- Current issues and ongoing efforts to access Hospital Compare data
- Issue with QBR: MD Mortality Measure
  - Improvement in MD Mortality Rates overstated due to increases in palliative care

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Palliative care and mortality:

Approaches to risk adjustment

Performance Measurement Work Group
Baltimore MD

March 15, 2017

Eric Schone

Background

- **Risk adjusted inpatient mortality measure is part of HSCRC's quality-based reimbursement**
  - **Palliative care is excluded from the measure**
- **Increasing palliative care is lowering measured mortality rates**
  - **Hospitals are rewarded for improvement in mortality, when it may be only changing patient classification**

Statement of Problem

- **Design a mortality measure that accurately accounts for relation of palliative care to mortality**
  - **Death rate for palliative care cases is higher**
  - **Palliative care rate is influenced by policy**
  - **Palliative care rate differs by hospital and over time**

Three measures

- **Palliative care excluded**
  - Current approach
  - Logistic regression estimated over non-excluded cases
  - Non-palliative deaths/non palliative predicted deaths
- **Palliative care included**
  - Logistic regression over palliative and non palliative stays
  - Palliative care is risk factor
  - Total deaths/total predicted deaths
- **Nested logit**
  - Logistic regressions predicting mortality and palliative care over palliative and non palliative stays
  - Probability of death= probability of palliative care*probability of death if palliative + (1-probability of palliative)*probability of death if not palliative
  - Total deaths/total predicted deaths

Palliative Care Excluded

Pros

- Simple
- Based on homogenous set of patients

Cons

- Trying to treat sick patients may result in a bad rate
- Only includes subset of patients
- May confuse increasing palliative care with improving care

Palliative Care Included

Pros

- Includes all patients
- Accounts for higher mortality risk of non-palliative patients

Cons

- Hospitals that try to treat sicker patients get poorer results
- May confuse increasing use of palliative care with improvement

Nested model

Pros

- Includes all patients
- Accounts for higher mortality risk of non-palliative patients
- Accounts for endogeneity of palliative care

Cons

- May discourage palliative care
- Weak model of palliative care may penalize hospitals with sicker patients

Model Tests

- **October, 2015 to September, 2016 data**
  - **Version 34 APR-DRGs**
  - **Performance year and norm year are the same**
  - **Models tested over palliative excluded set of APR-DRGs and ROMs**
  - **Palliative model includes admission source = SNF**
  - **Logistic regression models predicting inpatient death and palliative care**
  - **Risk adjusted mortality = observed/predicted mortality**
  - **Risk adjusted palliative care = observed/predicted palliative care**

Model Results

- **Model fit**
  - **Palliative excluded c-statistic: 0.904**
  - **Palliative included c-statistic: 0.940**
  - **Palliative care model c-statistic: 0.849**
- **Hospital correlations (risk adjusted rates)**
  - **Mortality - palliative excluded and palliative included: 0.924**
  - **Mortality - palliative excluded and nested: 0.540**
  - **Mortality - palliative included and nested: 0.856**
  - **Palliative care and palliative excluded mortality: -0.545**
  - **Palliative care and palliative included mortality: -0.449**
  - **Palliative care and nested mortality: 0.122**

Conclusions

- **Results of palliative care excluded and palliative care included models are similar**
  - **Palliative care and nested models produce substantially different results**
- **Mortality models are substantially stronger than palliative care model**
- **In non-nested models, use of palliative care and mortality are moderately negatively correlated**
  - **Nested mortality and use of palliative care are weakly positively correlated**

Recommendations

- **Alternatives to mortality model excluding palliative care will reduce bias in favor of palliative care**
- **Nested model may be biased against hospitals that use palliative care because they have sicker patients**
- **Nested model should be considered to measure changes in mortality**
  - **Will control for changes in propensity to use palliative care but less affected by bias due to unmeasured patient characteristics**

Next Steps

- HSCRC is requesting an additional month to further assess risk-adjustment validity.
  - Consider different measures for improvement and attainment?
- HSCRC could provide hospitals with preliminary list of APR-DRGs that will be included for RY 2019

RY 2019 Readmission Reduction Incentive (RRIP)Program

General RY 2019 RRIP Updates

- Update to PPC Grouper Version 34 (ICD-10)
  - Proposed base period = CY 2016
- Inclusion of all chronic beds
- No changes to RRIP case-mix adjusted readmission measure, planned admissions, or other exclusions
- RRIP Improvement and Attainment Scales
  - Update attainment benchmark and scale distribution
  - Continue to set max reward at 1% and max penalty at 2%
- Discuss – One-Year Improvement Target, or factor in Cumulative Improvement?

One-Year vs Cumulative Improvement

Factors to consider:

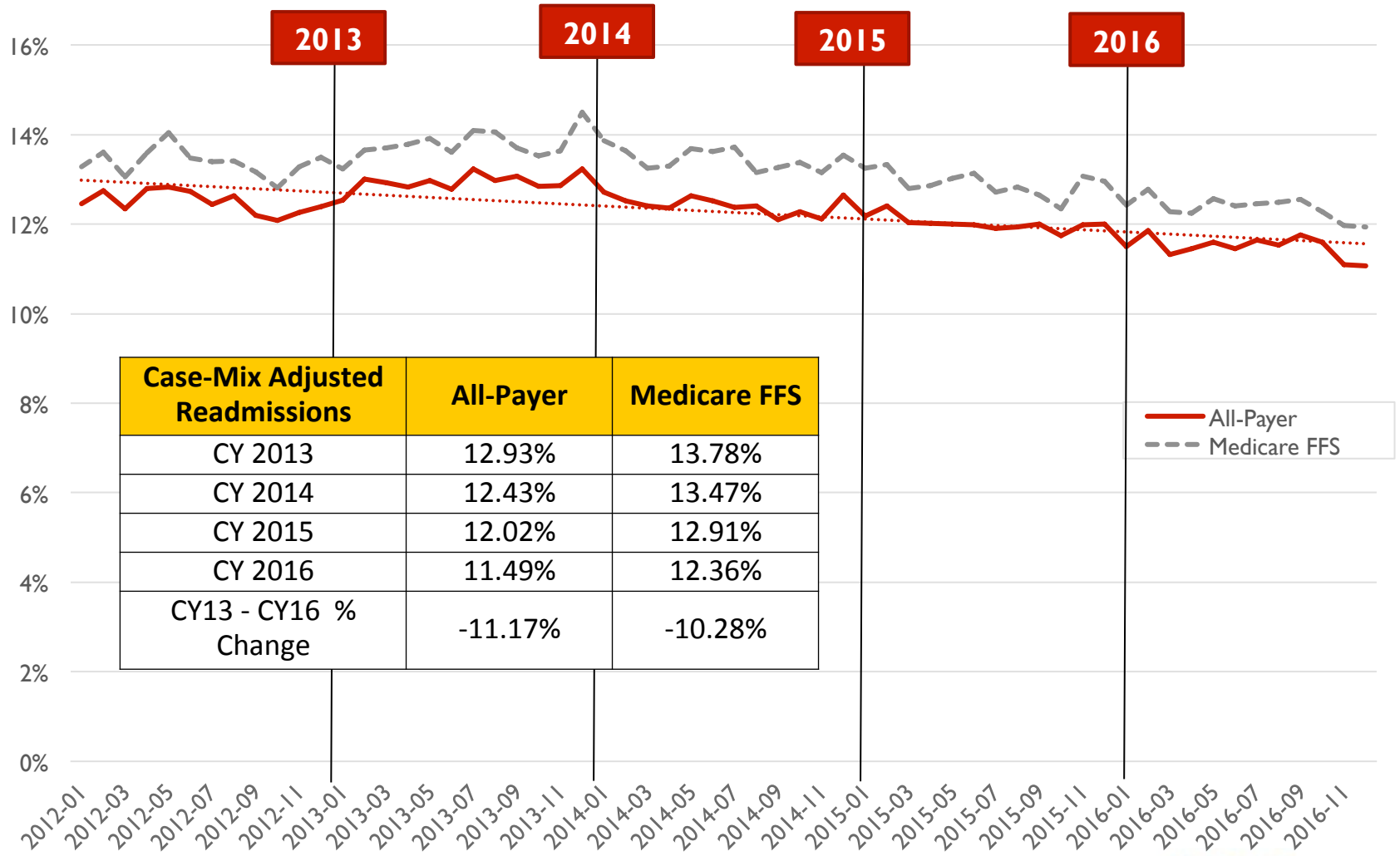
- Need to ensure that RRIP incentivizes ALL hospitals to continue to improve, in order to meet 5-year test
- Should hospitals that made early investments to reduce readmissions be expected to achieve annual improvement target? Are these hospitals protected by having attainment target?
- Current methodology for calculating improvement target "bakes in" previous improvements
- Method for calculating cumulative improvement (i.e., 2013-2017 vs 2013-2016 + 2016-2017 change)

Calculation of Modified Cumulative Improvement

- Lock in the CY 2013 to CY 2016 hospital improvement rate + the annual CY 2016 to CY 2016 improvement rate
  - CY16-17 run under version 34 of PPC grouper

Readmission Trends: CY 2016

Monthly Case-Mix Adjusted Readmission Rates



Case-Mix Adjusted Readmissions	All-Payer	Medicare FFS
CY 2013	12.93%	13.78%
CY 2014	12.43%	13.47%
CY 2015	12.02%	12.91%
CY 2016	11.49%	12.36%
CY13 - CY16 % Change	-11.17%	-10.28%

Note: Based on final data for January 2012 – Sept. 2016, and preliminary data through December 2016.

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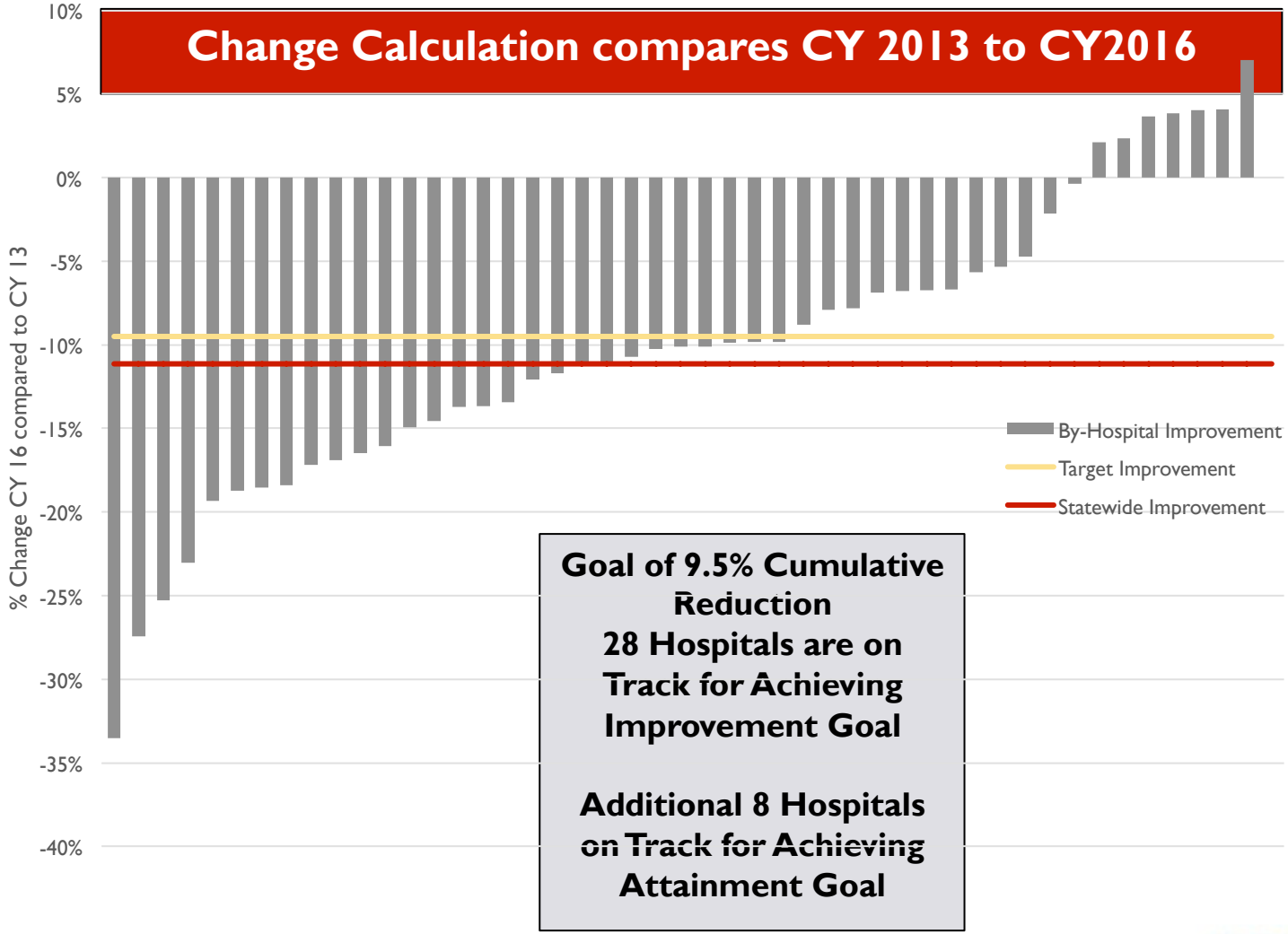
Change in All-Payer Case-Mix Adjusted Readmission Rates by Hospital



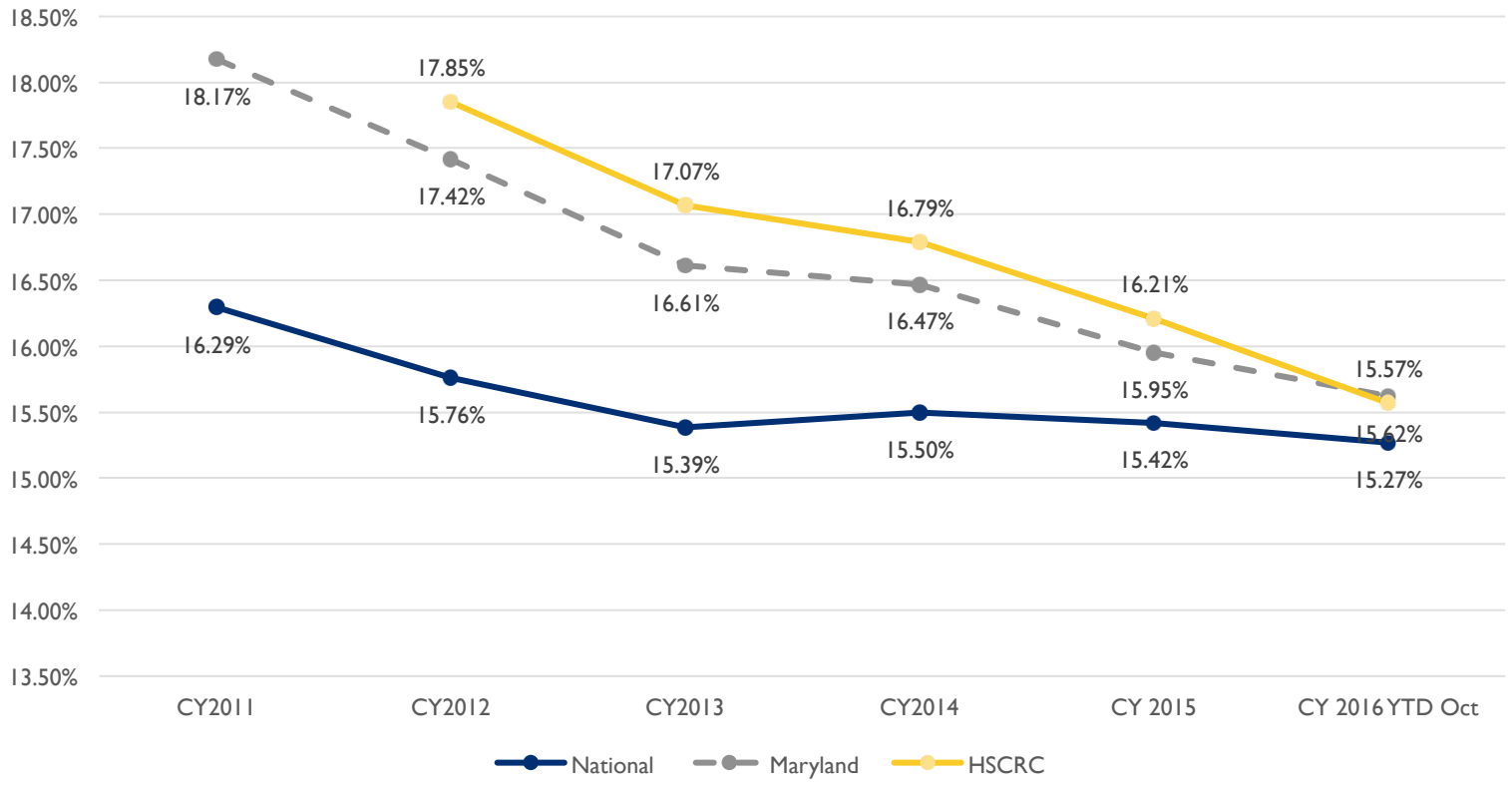
Note: Based on final data for January 2012 – Sept. 2016, and preliminary data through December 2016.

Medicare Readmission All-Payer Model Test

Waiver Test: MD Medicare Unadjusted Readmission rate must be at or below National Medicare rate by end of CY 2018

MARYLAND

Maryland is reducing readmission rate but only slightly faster than the nation



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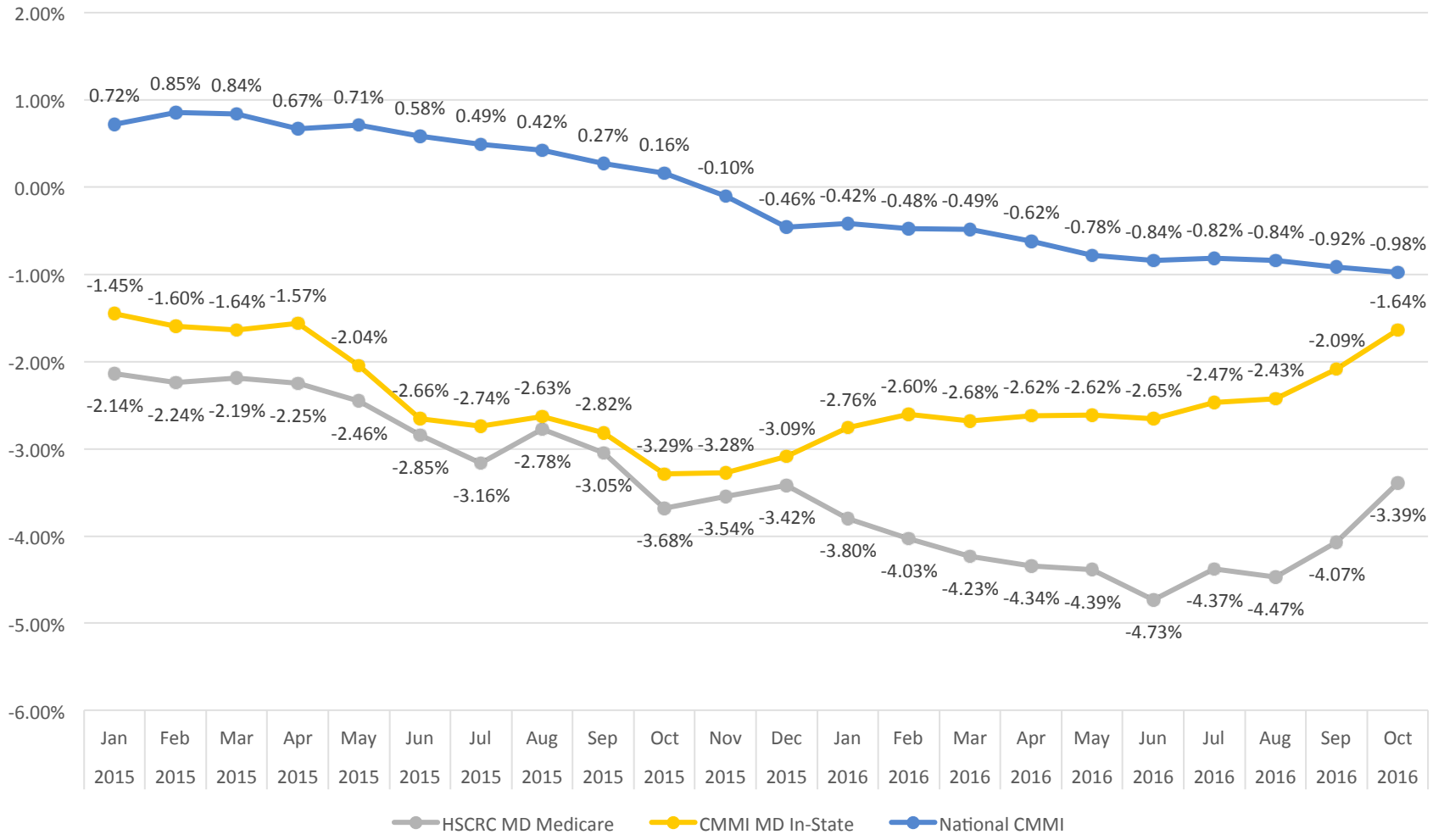
Data Divergence: HSCRC and CMMI

HSCRC Staff continue to explore Data Differences

Cumulative Readmission Rate Change by Rolling 12 Months (year over year): Maryland vs Nation



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Data Discrepancy Analysis

- Discrepancies in admissions included in CMMI-vs-HSCRC data
  - Admissions numbers are off in instance of payer source; consistently off (not cause of recent divergence)
- Looking into CMMI and HSCRC code
- Continue to assess other potential ICD-10 Impacts

Mathematica Modeling of RY 2019 Readmissions Targets

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RRIP RY2019

Preliminary Target Projections and Scales

Performance Measurement Work Group Meeting

March 15, 2017

Matthew J. Sweeney

Outline

- Update projections with new CMS data
- Calculate Maryland Medicare FFS improvement target
- Convert Medicare FFS target to all-payer improvement target
- Draft Improvement and Attainment Scales
  - Cumulative vs. One-Year Improvement

Projecting National Medicare FFS Rate (1)

- **Use historical data to estimate national FFS rate in 2017 and 2018**

- **Test a variety of methods**
  - **Average annual % change from CY 2013 to CY 2016**
  - **Annual % change from CY 2015 to CY 2016**
  - **12-month moving average**
  - **24-month moving average**

- **To create conservative targets:**
  - **Choose method late that predicts lowest national rates**
  - **Simulate more aggressive changes in national rates**

Projecting National Medicare FFS Rate (2)

Year	National Medicare FFS Rate
2013	15.38%
2014	15.49%
2015	15.42%
2016 (estimated)*	15.27%

	Projections of National Rate	Basis for Estimate
2017	15.23%	Average Annual Change 2013 - 2016
	15.12%	Annual Change from 2015 to 2016
	15.26%	12-month moving average
	15.33%	24-month moving average

	Projections of National Rate	Basis for Estimate
2018	15.20%	Average Annual Change 2013 - 2016
	14.97%	Annual Change from 2015 to 2016
	15.25%	12-month moving average
	15.31%	24-month moving average

* 2016 rate estimated by taking the percent change in the national rate from the November 2014-October 2015 time period to the November 2015 -October 2016 time period and applying it to the 2015 rate.

Setting Maryland FFS Target

A. Maryland FFS Rate versus National Rate

Year	National Medicare FFS Rate	Maryland Medicare FFS Rate	DIfference
2013	15.38%	16.60%	1.22%
2014	15.49%	16.46%	0.97%
2015	15.42%	15.95%	0.53%
2016 (estimated)	15.27%	15.69%	0.42%

B. Percent Reduction Required in Maryland FFS Rate, Based on Various Projections of 2018 National Ra

	0.98 Percent Decrease (based on 2015-2016 trend)	1.0 Percent Decrease	1.5 Percent Decrease
2018 Target Rate	14.97%	14.97%	14.81%
Cummulative Reduction Required	-4.59%	-4.61%	-5.57%
Annual Reduction Required	-2.32%	-2.33%	-2.82%

Setting All-Payer Target

A. Maryland All-Payer Rate Trend

Year	National Medicare FFS Rate	Maryland Medicare FFS Rate	All-Payer Rate
2013	15.38%	16.60%	12.93%
2014	15.49%	16.46%	12.43%
2015	15.42%	15.95%	12.02%
2016 (estimated)	15.27%	15.69%	11.57%

B. Construct Candidate Conversion Factors

MD Medicare FFS Change CY13-CY16	-5.5%
All Payer Readmission Change CY13- CY16	-10.5%
Conversion Factor 1 (use difference)	**5.00%**
Conversion Factor 2 (use ratio of changes)	**0.523**
Conversion Factor 3 (regression-based)	**0.650**

Regression of % change in monthly FFS rates on % change in monthly AP rates

C. Develop One-Year Improvement Target

	0.98 Percent Decrease (based on 2015-2016 trend)	1.0 Percent Decrease	1.5 Percent Decrease
Medicare FFS Reduction Target (2016 to 2017)	-2.32%	-2.33%	-2.82%
All-Payer Target Using Conversion Factor 1	**-7.32%**	**-7.33%**	**-7.83%**
All-Payer Target Using Conversion Factor 2	**-4.44%**	**-4.45%**	**-5.40%**
All-Payer Target Using Conversion Factor 3	**-3.57%**	**-3.59%**	**-4.34%**

Setting Draft Scales - Overview

- **Retain 1 percent maximum reward and 2 percent maximum penalty**
- **No major changes to attainment scale setting**
- **Discuss options for improvement scale setting**

Attainment Scale

- **Adjust CY 2016 risk-adjusted rates by:**
  - **Out of state readmission factor (from CMS data)**
  - **Expected improvement factor (2 percent)**
- **Benchmark for any reward:**
  - **Top 25th percentile of adjusted 2016 rates**
- **Benchmark for 1 percent max reward:**
  - **Top 10th percentile of adjusted 2016 rates**
- **Extrapolate remainder of incentive points (linear function)**

Draft Attainment Scale

All Payer Readmission Rate CY17	Over/Under Target	RRIP % Inpatient Revenue Payment Adjustment
LOWER		1.0%
9.92%	-0.9%	1.0%
10.38%	-0.5%	0.5%
10.83%	0.0%	0.0%
11.29%	0.5%	-0.5%
11.74%	0.9%	-1.0%
12.20%	1.4%	-1.5%
12.65%	1.8%	-2.0%
Higher		-2.0%

Improvement Scale - Options

- **Re-baseline improvement to CY 2016**
  - **One year improvement target**
    - Preliminary target = - 5%
  - **Resets program to reflect most recent experience**
  - **All hospitals face same improvement target, regardless of improvement to date**

- **Use modified version of cumulative approach**
  - **Statewide target = actual statewide improvement + one year improvement target**
    - Actual statewide improvement 2013 - 2016= - 11%
    - One year required improvement 2016 – 2017 (prelim) = - 5%
    - Cumulative improvement target (2013 – 2017) = - 16%

Improvement Scale – Re-baselined Option

- **Use 2015 to 2016 rates to simulate distribution of one-year improvement rates**
- **Benchmark for maximum 1 percent reward: 10th percentile of improvement distribution**
- **Benchmark for any reward: one-year target improvement of 5 percent**
- **Extrapolate remainder of incentive points (linear function)**

Draft Improvement Scale – One Year

All Payer Readmission Rate Change CY16-CY17	Over/Under Target	RRIP % Inpatient Revenue Payment Adjustment
LOWER		1.0%
-13.00%	-8.0%	1.0%
-9.00%	-4.0%	0.5%
-5.00%	0.0%	0.0%
-1.00%	4.0%	-0.5%
3.00%	8.0%	-1.0%
7.00%	12.0%	-1.5%
11.00%	16.0%	-2.0%
Higher		-2.0%

Improvement Scale – Modified Cumulative

- **Statewide target = actual statewide improvement + one year improvement target**
  - **Actual statewide improvement 2013 - 2016= - 11%**
  - **One year required improvement 2016 – 2017 (prelim) = - 5%**
  - **Cumulative improvement target (2013 – 2017) = - 16%**
- **Calculate linear function using actual 2013 to 2016 improvement**
  - **Benchmark for any reward: - 9.5%**
  - **Benchmark for maximum 1 percent reward: top 10th percentile**
- **Reset linear function using 2017 target of – 16%**
  - **Retains same slope of linear function from RY 2018 program**

Draft Improvement Scale – Modified Cumulative

All Payer Readmission Rate Change CY13-CY17	Over/Under Target	RRIP % Inpatient Revenue Payment Adjustment
LOWER		1.0%
-26.50%	-10.5%	1.0%
-21.25%	-5.3%	0.5%
-16.00%	0.0%	0.0%
-10.75%	5.3%	-0.5%
-5.50%	10.5%	-1.0%
-0.25%	15.8%	-1.5%
5.00%	21.0%	-2.0%
Higher		-2.0%

Next Steps

- **Explore alternative options for improvement incentives**

- **Examine data discrepancies**
  - **Differences between HSCRC FFS rate and CMS FFS rate**
  - **Assess impact on setting improvement targets**

Draft RY 2019 RRIP Policy

- Decision Point: Annual vs. modified cumulative target
- Round up national improvement and use ratio method for conversion to all-payer target
- Investigate data discrepancies and review CMMI and HSCRC readmission code
- Update readmission numbers and targets based on latest data

CareFirst Presentation on Socioeconomic Status in RRIP

Mathematica Modeling of ICD-10 Impact on RY 2018 Quality Programs

MATHEMATICA
Policy Research

Impact of ICD10 Transition:

Readmission and HAC Casemix

Performance Measures Work Group

March 15, 2017

Eric Schone
Scott McCracken

Performance Measures ICD10 Impacts

- **Transition from ICD9 to ICD10: October 2015**
  - **Affects PPCs and APR-DRGs**
    - RRIP
    - MHAC
- **Version changes**
  - **Version 33 backwards compatible**
- **Impact of ICD10 on risk adjustment**
  - **Through APR-DRG and ROM norms**
    - Relation of APR-DRG to outcomes in base year compared to performance year
    - Affects achievement and improvement measures

ICD10 Impacts – Analysis of coding impacts

- **Increase in frequency of DRGs in certain service lines**
  - **Affects Rehabilitation, Surgery**
    - DRGs with miscellaneous procedures, procedure unrelated to diagnosis increase
    - May affect resource use measurement
- **Does change affect performance measurement?**
  - **Impact on case mix**

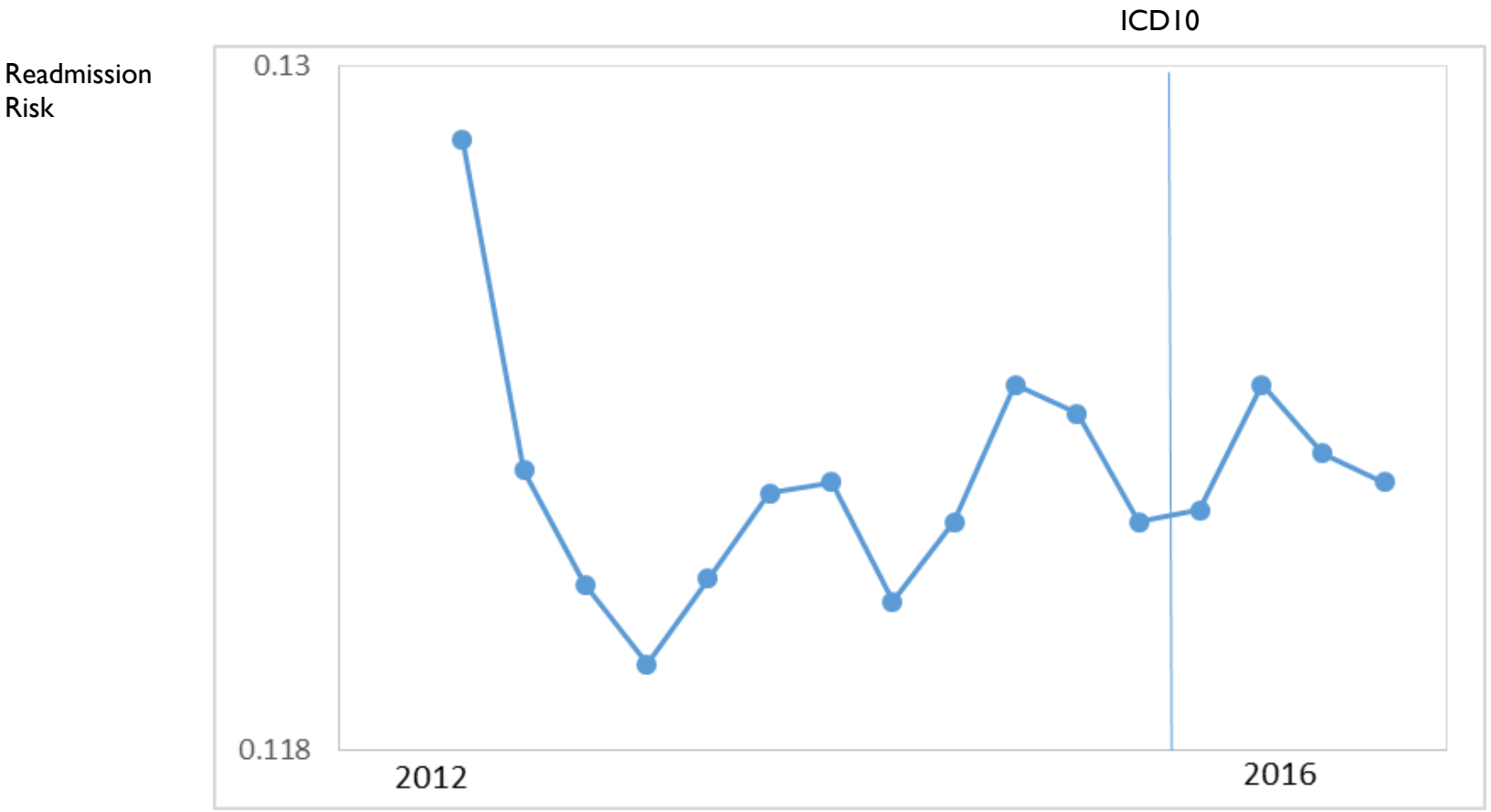
ICD10 Case Mix Methods

- **Readmissions**
  - **APR-DRG and ROM norms before and after transition**
    - October 2012 to September 2016
    - Norms calculated over October 2014 to September 2015 and October 2015 to September 2016
    - Version 33
    - Interrupted time series for log risk with quarterly and hospital fixed effects, linear and nonlinear trend
    - Quarterly plots
    - First quarter anomalous results are dropped

ICD10 Case Mix Methods

- **MHAC**
  - **APR-DRG and ROM norms before and after transition**
    - October 2012 to September 2016
    - Norms calculated over October 2014 to September 2015 and October 2015 to September 2016
    - Version 33
  - **Interrupted time series**
    - Scores by quarter, hospital and PPC
    - Log risk
    - Quarterlynfixed effects
    - Effect of shift controlling for linear and nonlinear trend, PPC fixed effects
    - Analysis by PPC
  - **Scoring**
    - Scores based on 2015 and 2016 norms
    - Scores after removing PPCs with large shifts

Readmission risk – 2015 norms



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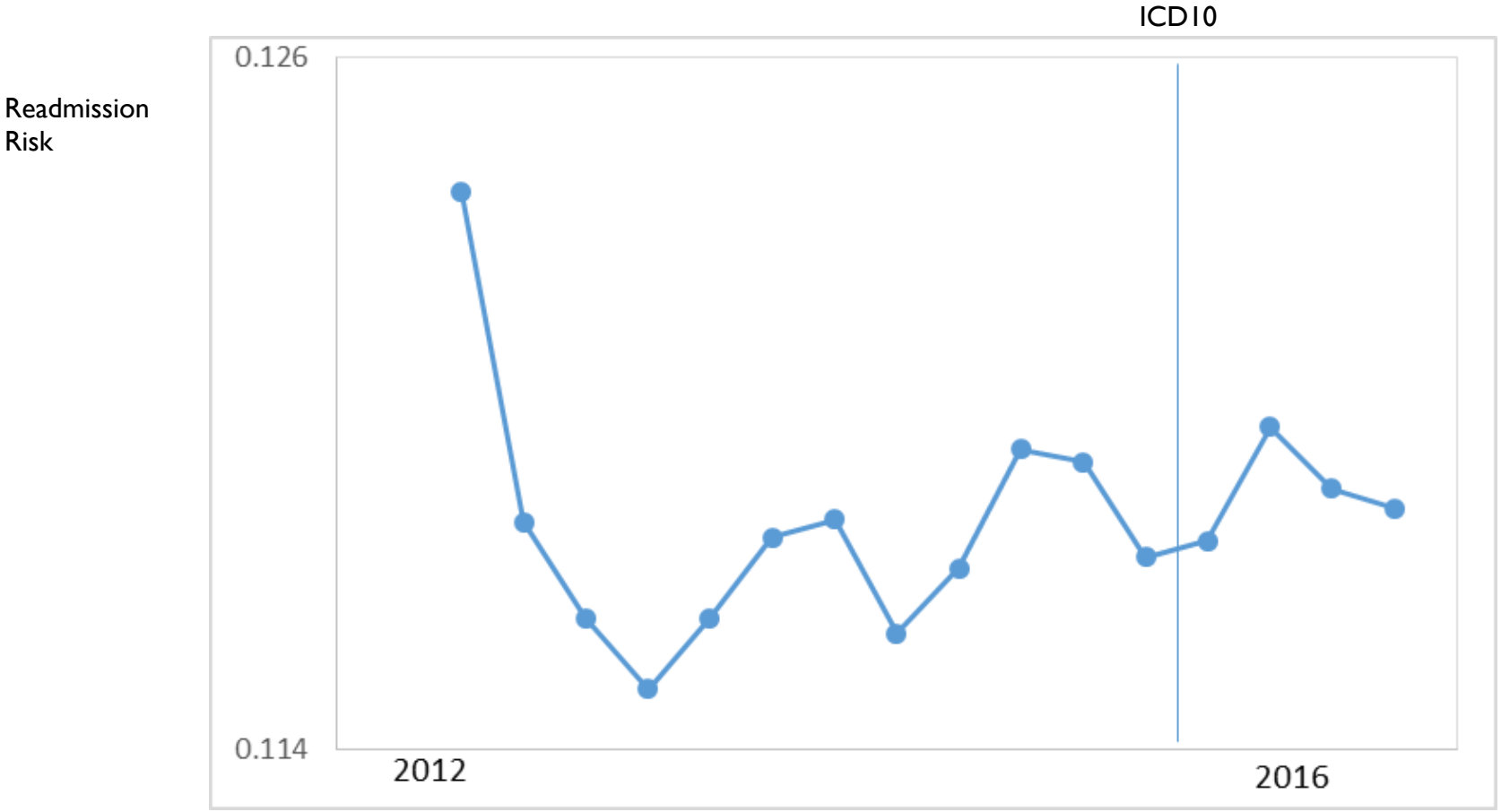
Readmission risk – 2016 norms



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ICD10 and Readmissions Risk: Proportional Impact

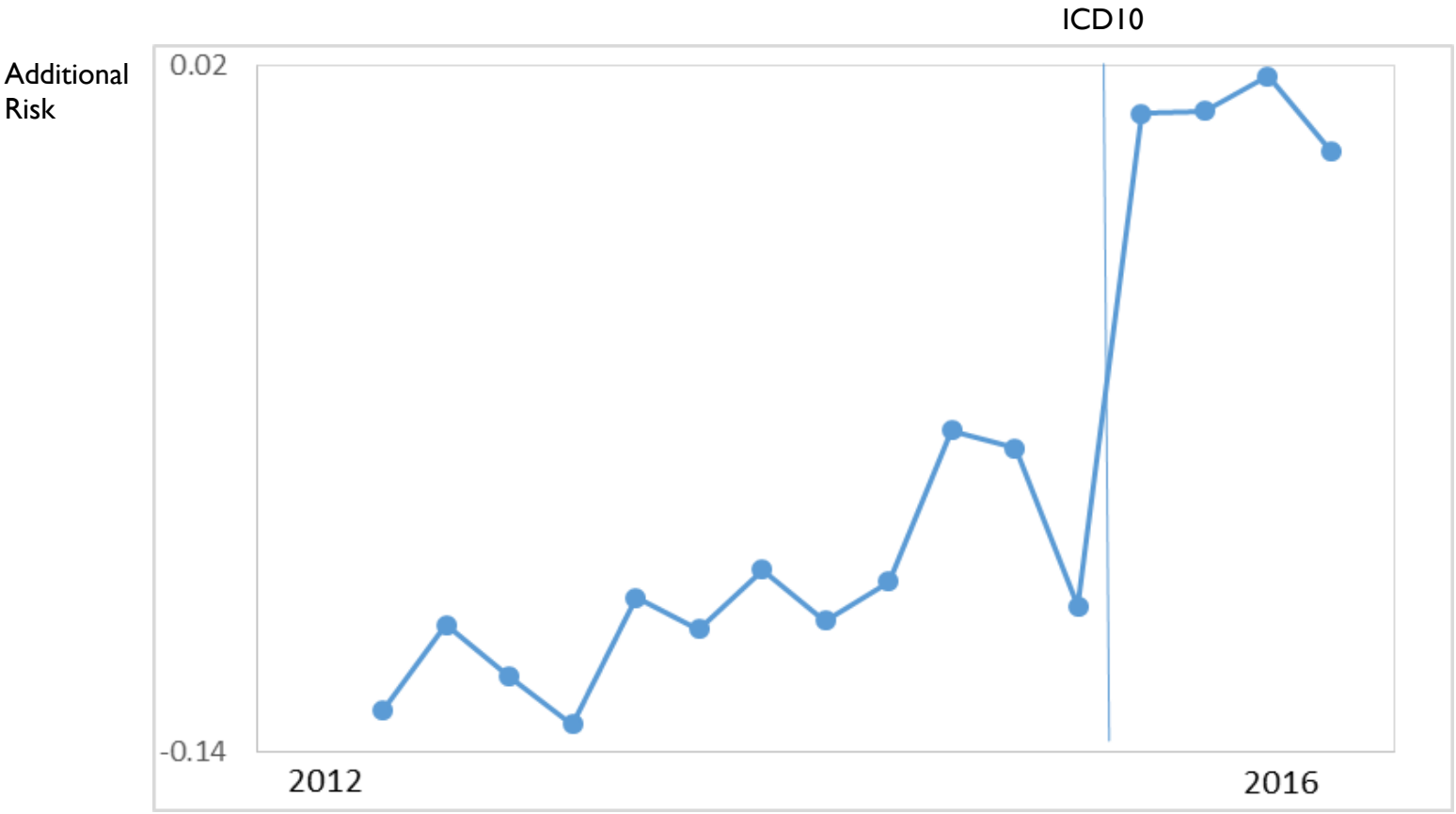
Model	2015 norms	2016 norms
Fixed	.0039*	-.0001
Linear	.0084**	.0082**
Nonlinear	-.0341**	-.0328**

First quarter excluded, no seasonal

Model	2015 norms	2016 norms
Fixed	.0086**	.0046**
Linear	.0066*	.0053*
Nonlinear	.0103*	.0081*

** p<.01, * p<.05

PPC log risk – 2015 norms



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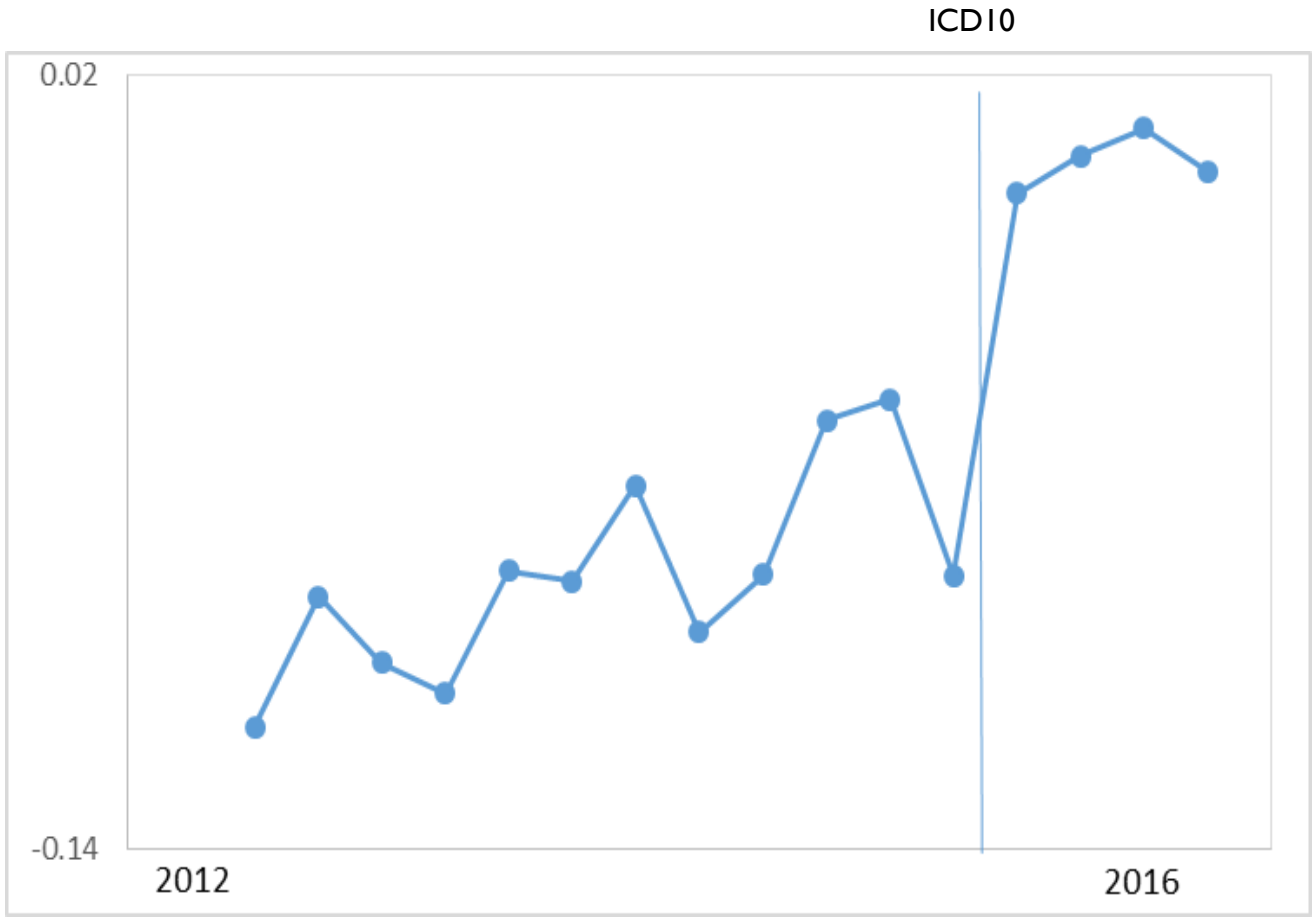
PPC log risk – 2016 norms



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ICD10 and PPC Risk: Proportional Impact

Model	2015 norms	2016 norms
Fixed	.114**	.086**
Linear	.075**	.049**
Nonlinear	.074**	.049**

** p<.01, * p<.05

PPC Scoring

- **Scoring with 2015 norms**
  - **Mean score .475**
    - 3 tier 2 and 3 tier 1 PPCs with largest risk changes removed - mean is .48
- **Scoring with 2016 norms**
  - **Mean score .432**

Conclusions

- **Readmissions do not appear to be substantially affected by case mix change**
  - **Use of 2016 norms mitigates possible shift**
- **PPC risk as measured by case mix has shifted up**
  - **Shift affects most PPCs**
  - **Use of 2016 norms mitigates shift**

ICD-10 Impact on Quality Programs

- Next steps:
  - HSCRC to rerun PPC results by hospital using 2016 norms
  - Examine differences and make final decision on whether any adjustments are warranted

Contact Information

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