maryland
health services
cost review commission

Quality Based Reimbursement Redesign Subgroup to the Performance Measurement Workgroup

April 21, 2021

Agenda

1. Centers for Disease Control National Health Safety Network Healthcare Associated Infection Measures (CDC NHSN HAI)
2. Emergency Department Throughput Measurement
3. Follow up on HCAHPS (from March meeting): Analytics Plan

Meeting Topic 1: NHSN Healthcare-Associated Infection (HAI) Measures

Overview of Centers For Disease Control and Prevention National Healthcare Safety Network (NHSN)

- Healthcare-Associated Infections (HAIs):
  - Among the leading causes of death in the United States.
  - Put the patient at risk, increase the days of hospitalization required for patients, and add to healthcare costs.
  - Are largely preventable with widely publicized interventions, such as better hygiene and advanced scientifically tested techniques for surgical patients.
- CDC NHSN is the nation's most widely used healthcare-associated infection (HAI) tracking system; now serves over approximately 25,000 medical facilities tracking HAIs
- NHSN provides medical facilities, states, regions, and the nation with data collection and reporting capabilities needed to:
  - identify infection prevention problems by facility, state, or specific quality improvement project
  - benchmark progress of infection prevention efforts
  - comply with state and federal public reporting mandates, and ultimately,
  - drive national progress toward elimination of HAIs.
- NHSN gives healthcare facilities the ability to see their data in real-time and share that information with clinicians and facility leadership, as well as with other facilities (e.g., a multihospital system) and partners such as health departments or quality improvement organizations.
- Also allows healthcare facilities to track blood safety errors and important healthcare process measures such as healthcare personnel influenza vaccine status and infection control adherence rates.
- CDC provides the standard national measures for HAIs as well as analytic tools that enable each facility to assess its progress and identify where additional efforts are needed and serves as the conduit for facilities to comply with CMS infection reporting requirements.

SOURCE: https://www.cdc.gov/nhsn/about-nhsn/index.html, last accessed 4/7/2021.

CDC NHSN HAI Standardized Infection Ratio Calculation

- SIR = # Observed Infections/# Predicted Infections
- Confidence intervals tell us significance
  - SIR > 1.0, then more infections were observed than predicted
    - Example 1: 10/5 = 2.0 (1.52, 2.34)
    - Interpretation: There were twice as many infections than predicted. This facility performed significantly worse than the national experience (1.0).
  - SIR < 1.0, then fewer infections were observed than predicted
    - Example 2: 5/10 = 0.50 (0.35, 0.86)
    - Interpretation: There were 50% fewer infections than predicted. This facility performed significantly better than the national experience (1.0).
  - SIR = 1.0, then the **same** number of infections were observed as predicted
    - Example 3: 10/10 = **1.0** (0.87, 1.12)
    - Interpretation: The number of infections is not statistically different than the national experience (1.0).

Note: SIRs are not calculated if the number of predicted infections is less than 1.0

CDC NHSN HAI SIR Calculation Adjustment Variables

Device Associated Infections CLABSI & CAUTI	Procedure Based Infections SSI COLO & SSI HYST	MDRO Infections MRSA and CDI
•CDC Location (e.g., ICU, surgical ward) •Facility bed size •Medical school affiliation •Facility type (e.g., acute care, children's, VA, etc.) •Birthweight (for CLABSI NICU only) NOTE: CLABSI and CAUTI are Unit based and include: •ICUs (adult and pediatric) •Non-ICU wards (adult and pediatric medical, surgical, and medical/surgical wards) •NICUs (CLABSI only)	•Diabetes •ASA Score •Gender (COLO only) •Age •BMI •Closure technique (COLO only) •Oncology hospital NOTE: These variables are included in the CMS complex 30 day model. The Complex A/R model includes other variables such as number of beds, med school affiliation wound class, trauma, anesthesia, scope, and procedure duration.	•Inpatient community-onset prevalence rate •Medical school affiliation •Facility type •Number of ICU beds •Outpatient community-onset prevalence rate ED/24-hour (MRSA only) •Observation Unit (MRSA only) •Average length of stay (MRSA only) •Reporting from ED or 24-hour observation unit (CDI only) •CDI test type (CDI only) NOTE: MDRO infections are facility-wide

More detailed information is available in the NHSN SIR : https://www.cdc.gov/nhsn/pdfs/ps-analysis-resources/nhsn-sir-guide.pdf

CMS Use of CDC NHSN HAI Measures in VBP

- Hospitals must enroll and complete NHSN training to comply with CMS reporting, including:
  - Hospital Inpatient Quality Reporting (IQR) Program
  - Value Based Purchasing Program (VBP)
  - Hospital Acquired Condition Reduction Reduction Program (HAC RP)

CMS Use of HAI Measures in the VBP Program Safety Domain, FFY 2023

Safety — 25%

Patient Safety Composite

Baseline Period
Oct. 1, 2015–June 30, 2017

Performance Period
July 1, 2019–June 30, 2021*

	Measure ID	Measure Name	Achievement Threshold	Benchmark
★⇩	PSI 90	Patient Safety and Adverse Events Composite	0.972658	0.760882

Healthcare-Associated Infections

Baseline Period
Jan. 1, 2019–Dec. 31, 2019

Performance Period
Jan. 1, 2021–Dec. 31, 2021

	Measure ID	Measure Name	Achievement Threshold	Benchmark
⇩	CAUTI	Catheter-Associated Urinary Tract Infection	0.676	0.000
⇩	CDI	Clostridium *difficile* Infection	0.544	0.010
⇩	CLABSI	Central Line-Associated Bloodstream Infection	0.596	0.000
⇩	MRSA	Methicillin-Resistant Staphylococcus *aureus*	0.727	0.000
⇩	SSI	Colon Surgery	0.734	0.000
		Abdominal Hysterectomy	0.732	0.000

*These performance periods are impacted by the ECE granted by CMS on March 22, 2020, further specified by CMS on March 27, 2020 and amended in the August 25, 2020 COVID-19 Interim Final Rule. Claims from Quarter (Q)1 2020 and Q2 2020 will not be used in the claims-based measure calculations.

⇩ Indicates lower values are better for the measure. ✸ Indicates a new measure in the Hospital VBP Program.

CMS Use of CDC NHSN HAI Measures in HAC Reduction Program

HAC Reduction Program (HAC RP)

- Uses the same measures as the Safety domain in VBP.
- Hospitals with Total HAC Scores in the worst-performing quartile of all subsection (d) hospitals receive a 1-percent payment reduction on their overall Medicare fee-for-service payments.

How does CMS determine payment reductions?

Step 1: Calculate measure scores

Measure scores are calculated as the Winsorized z-score of measure results for a given measure.

Using measure results across all subsection (d) hospitals, including Maryland hospitals:

- Winsorize each hospital's measure results.
- Calculate each measure score as the z-score of Winsorized results.

*(Lower measure scores indicate **better** performance and higher measure scores indicate **worse** performance.)*

Step 2: Calculate Total HAC Score

Total HAC Scores are calculated as the equally weighted average of the hospital's measure scores.

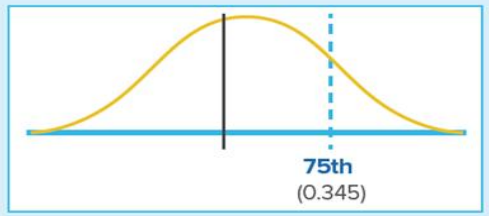
- Calculate hospitals' Total HAC Scores as the equally weighted average of their measure scores.
- If a hospital does not receive a measure score for a measure, it will be excluded from the Total HAC Score calculation.

*(Lower measure scores indicate **better** performance and higher measure scores indicate **worse** performance.)*

Step 3: Determine payment reduction

Hospitals with a Total HAC score in the worst-performing quartile are subject to a 1-percent payment reduction.

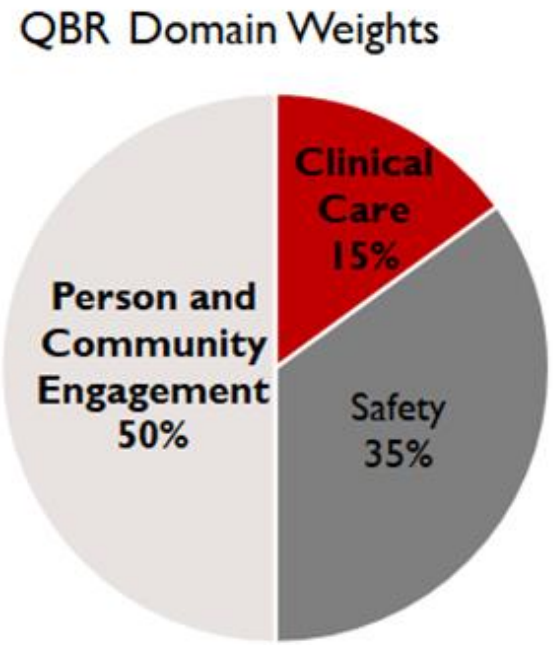
- Determine the 75th percentile of Total HAC Scores across all subsection (d) hospitals.*
- Hospitals with a Total HAC Score greater than the 75th percentile are in the worst-performing quartile.



In the IPPS Final Rule for FFY 2021, CMS published the following performance time periods for the HAC RP for FFY 2023.

- For PSI 90, July 2019-June 2021
- For the CDC NHSN HAI Measures, January 2020-December 2021.

QBR Use of CDC NHSN HAI Measures



Person & Community Engagement (PCE)

- HCAHPS measures
- Follow up after acute exacerbation

Safety

- CLABSI
- CAUTI
- MRSA
- CDIFF
- SSI Colon*
- SSI Hyst*
- PSI-90

Clinical Care

- Inpatient Mortality
- Hip/Knee Replacement Complication

*The SSI colon and hysterectomy categories are combined resulting in five Safety measures.

Hospital Compare Snapshots MPR and HSCRC Analyses

Data Sources and Analyses for NHSN SIRs

Multiple data sources and approaches for comparing Maryland vs. National performance

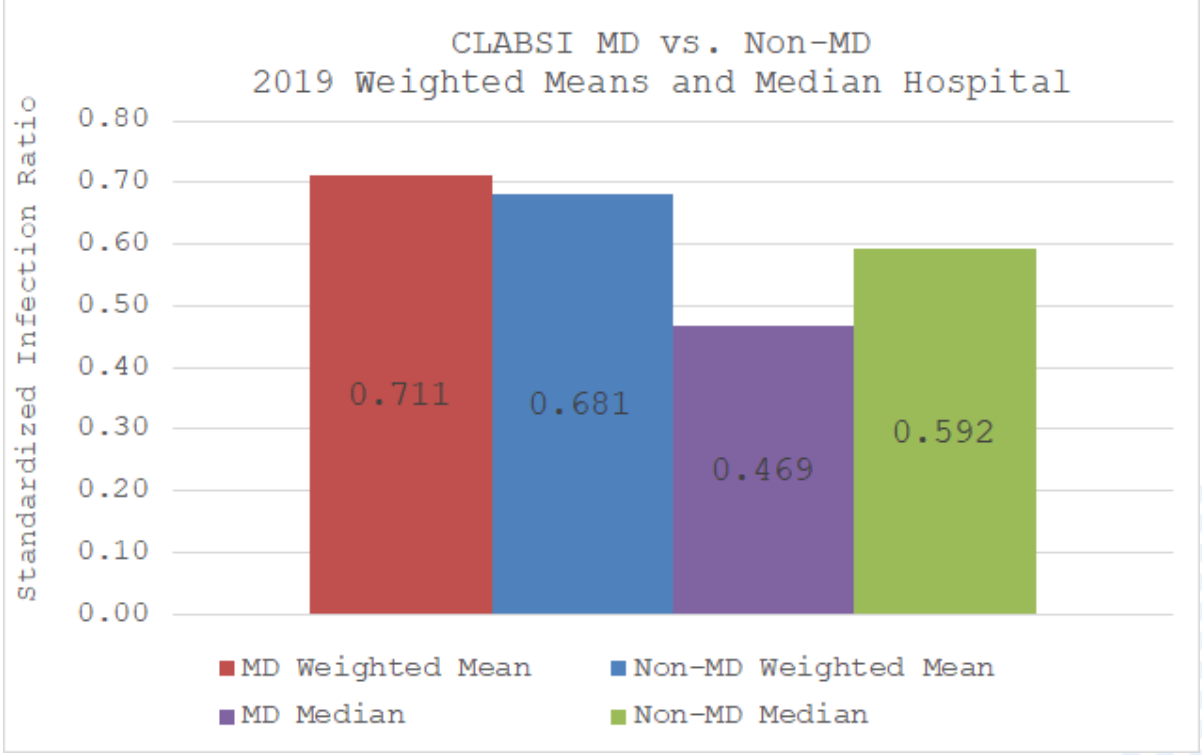
Data Sources	Hospitals Included	Descriptive Statistics
CMMI VBP Analysis	MD + VBP Hospitals	Unweighted Mean
CMS Hospital Compare	All Hospitals - approximation can be used to limit to VBP-only hospitals	Unweighted mean, weighted mean, median
CDC Progress Report	All Hospitals with >1 predicted	Weighted means and hospital median

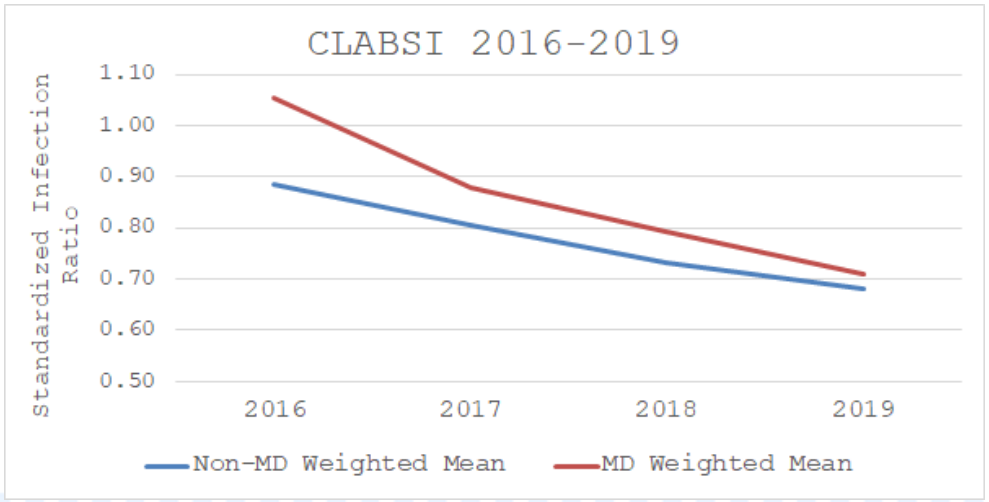
Presented last month

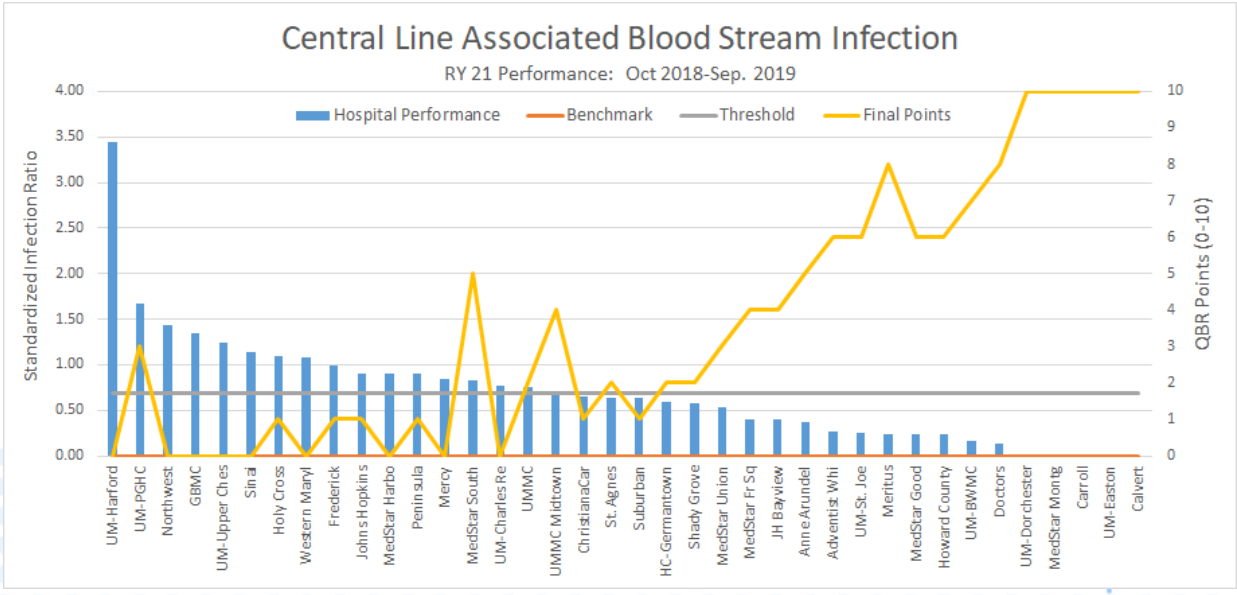
Included in this presentation

CLABSI Snapshot

- Maryland performs worse than nation* (weighted mean)
- Median Maryland hospital performs better than median non-MD hospital
- By hospital graph shows distribution in performance; some hospitals are receiving improvement points despite poor performance
- 2019: State rank 39 (weighted mean); 26 (unweighted);
- 2019: 209 CLABSI events in Maryland (hosp=37)



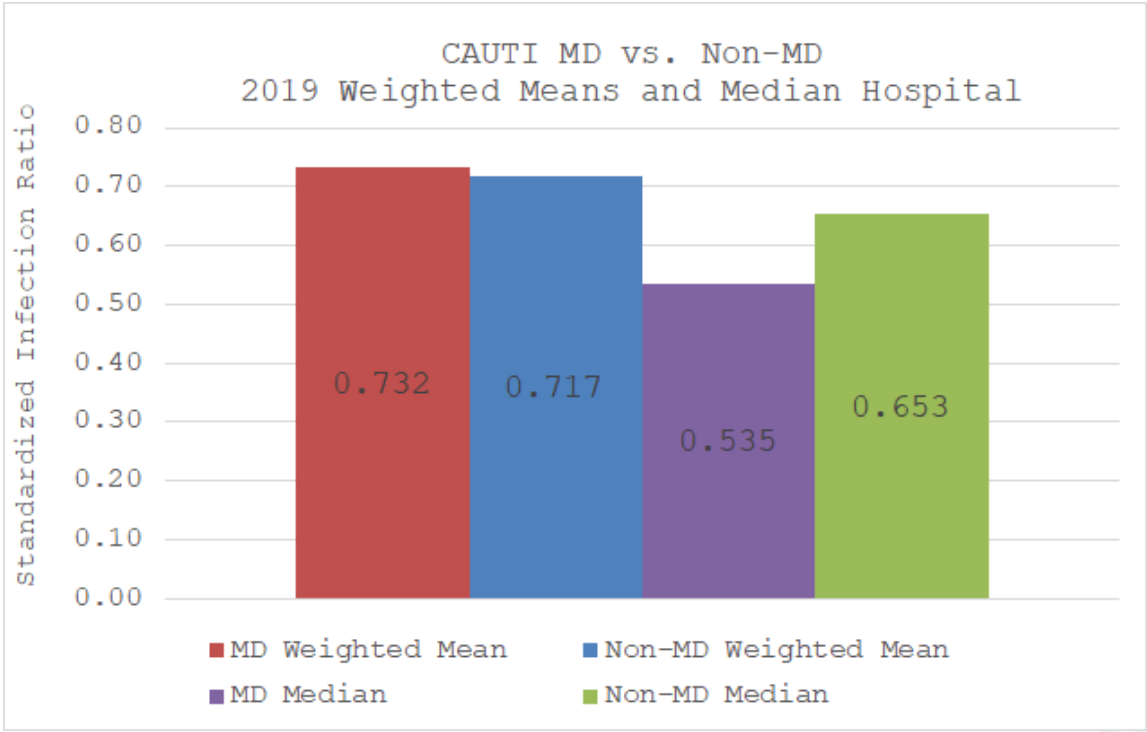


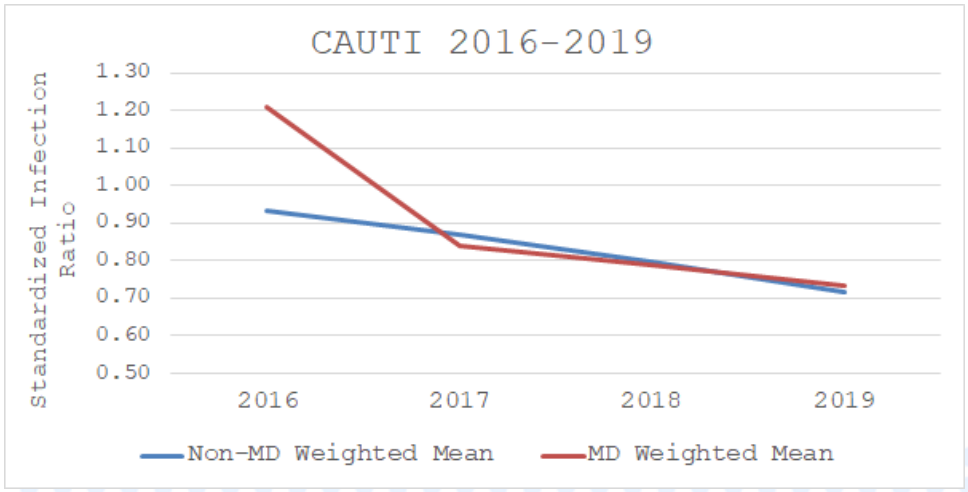


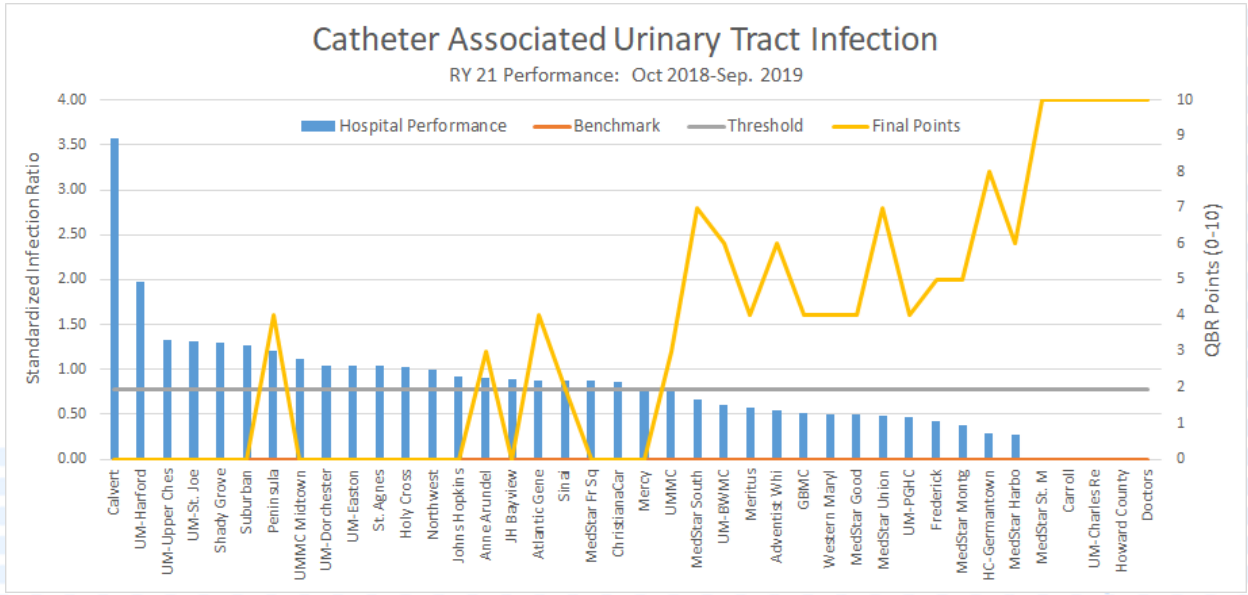
*National data is all non-Maryland hospitals subject to VBP

CAUTI Snapshot

- Maryland performs tad worse than nation* (weighted mean)
- Median Maryland hospital performs better than median non-MD hospital
- By hospital graph shows distribution in performance; some hospitals are receiving improvement points despite poor performance
- 2019: State rank #26 (weighted mean); 18 (unweighted)
- 2019: 225 CAUTI events in Maryland (N=38)







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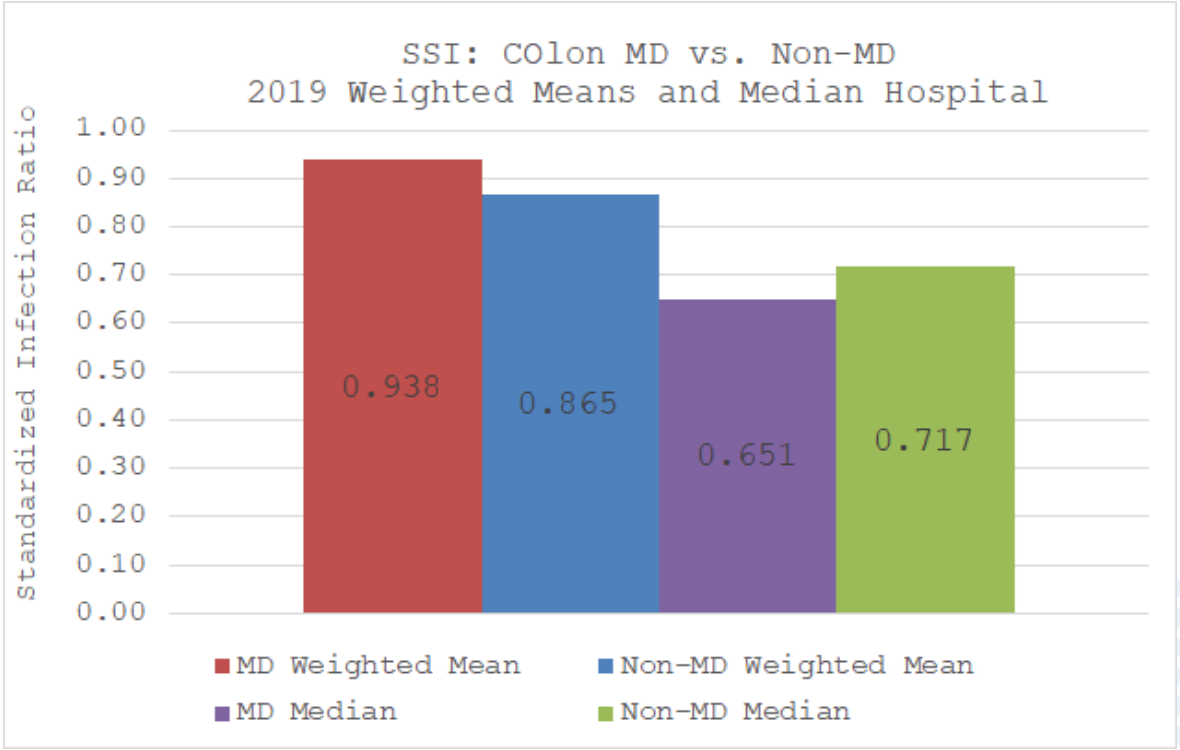
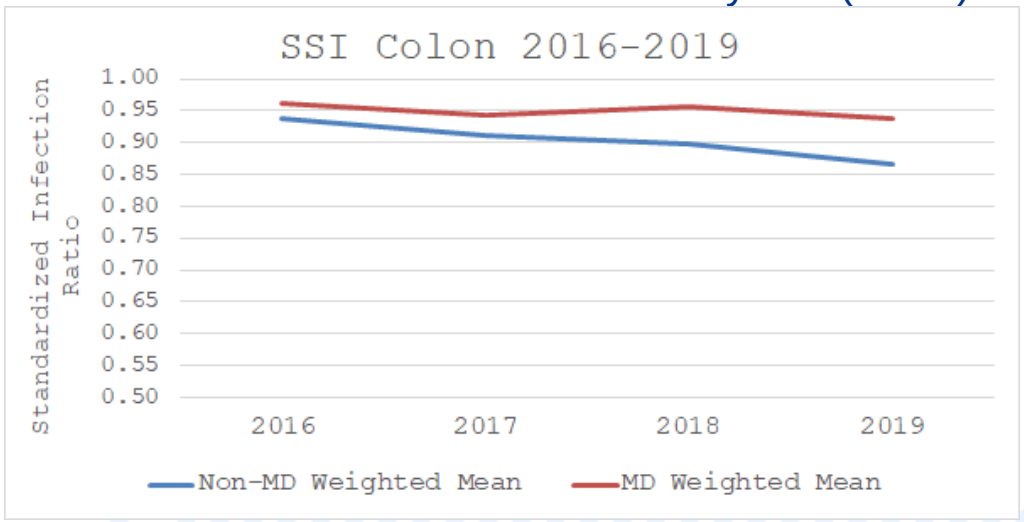
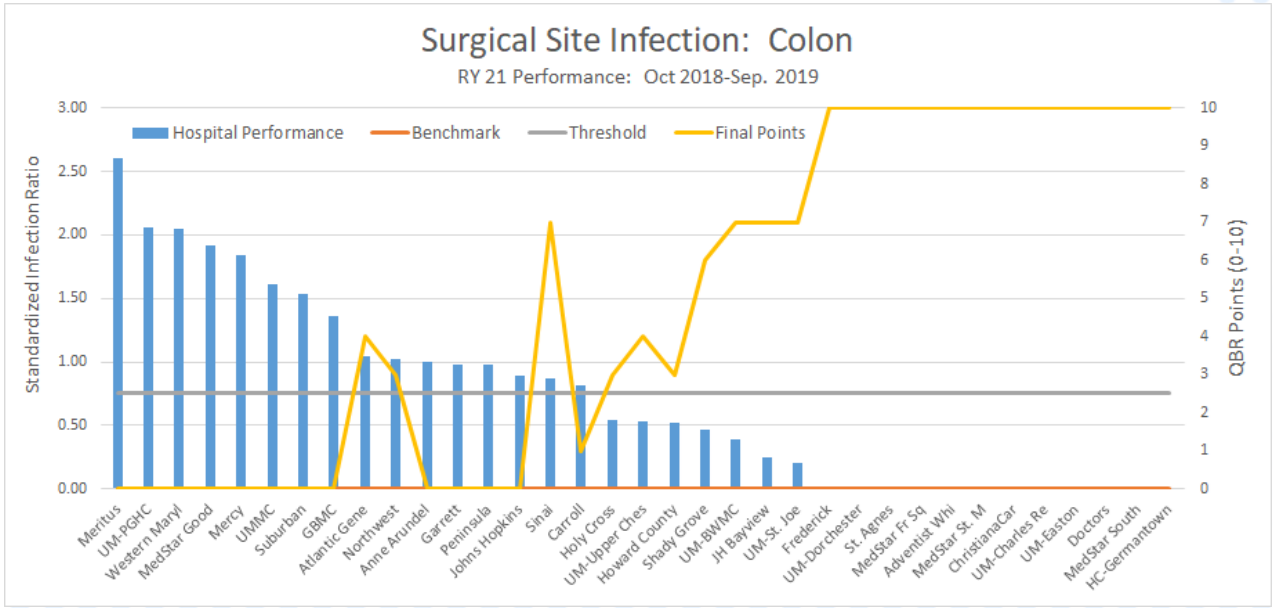
SSI Colon Snapshot

- Maryland performs worse than nation (weighted mean)
- Median Maryland hospital performs better than median non-MD hospital
- By hospital graph shows distribution in performance; some hospitals are receiving improvement points despite poor performance
- 2019: State rank #31 (weighted mean); 19 (unweighted)
- 2019: 138 Colon SSI events in Maryland (N=33)



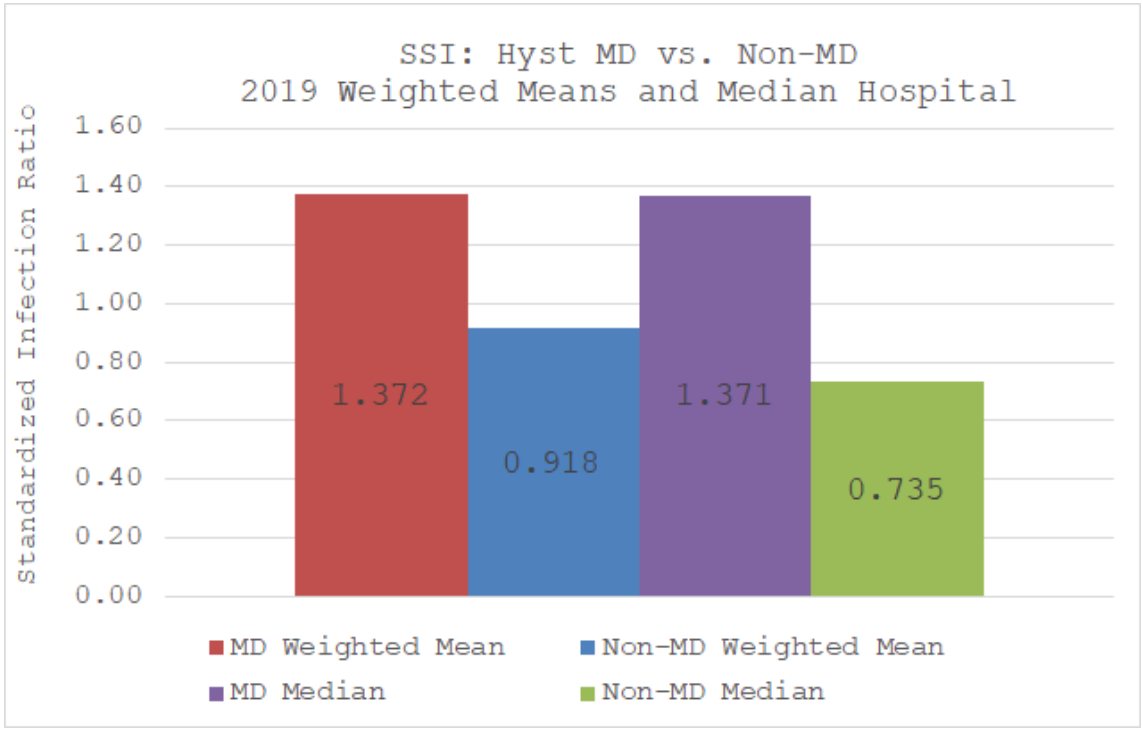


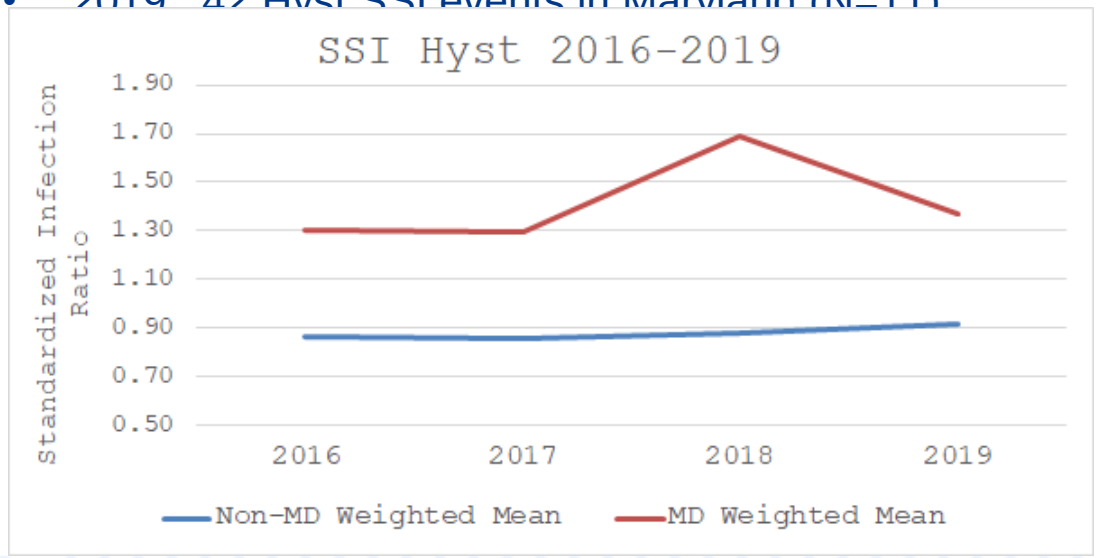


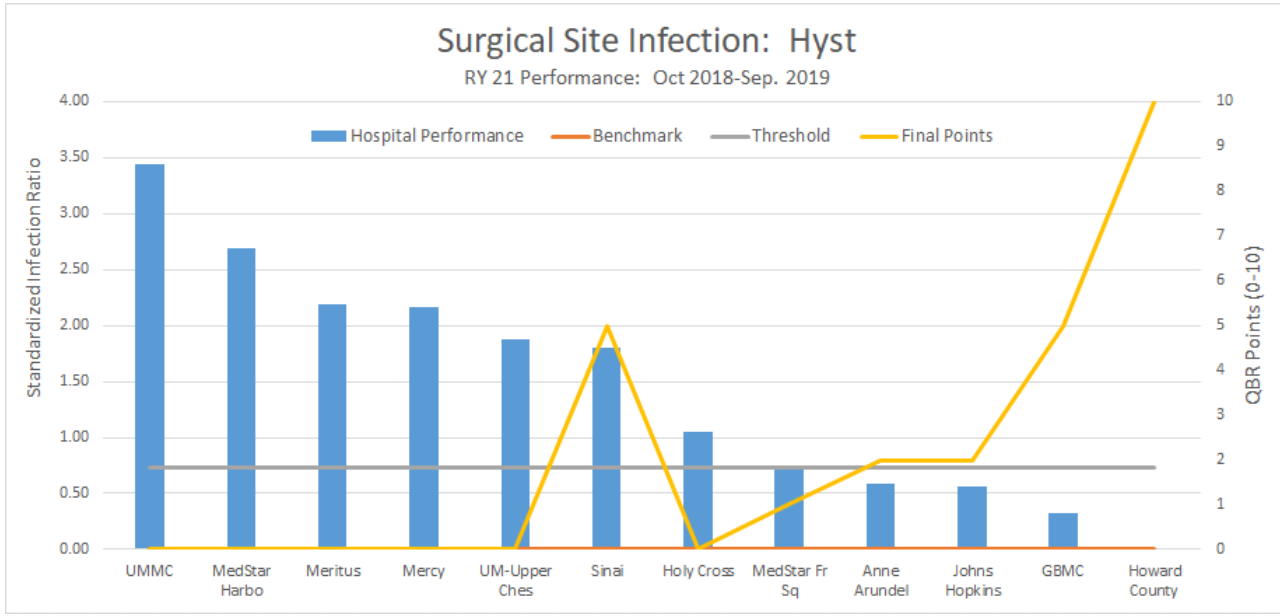
*National data is all non-Maryland hospitals subject to VBP

SSI Hyst Snapshot

- Maryland performs worse than nation* (weighted mean)
- Median Maryland hospital performs worse than median non-MD hospital
- By hospital graph shows distribution in performance; some hospitals are receiving improvement points despite poor performance
- 2019: State rank #47 (weighted mean); 49 (unweighted)
- 2019: 42 Hyst SSI events in Maryland (N=11)



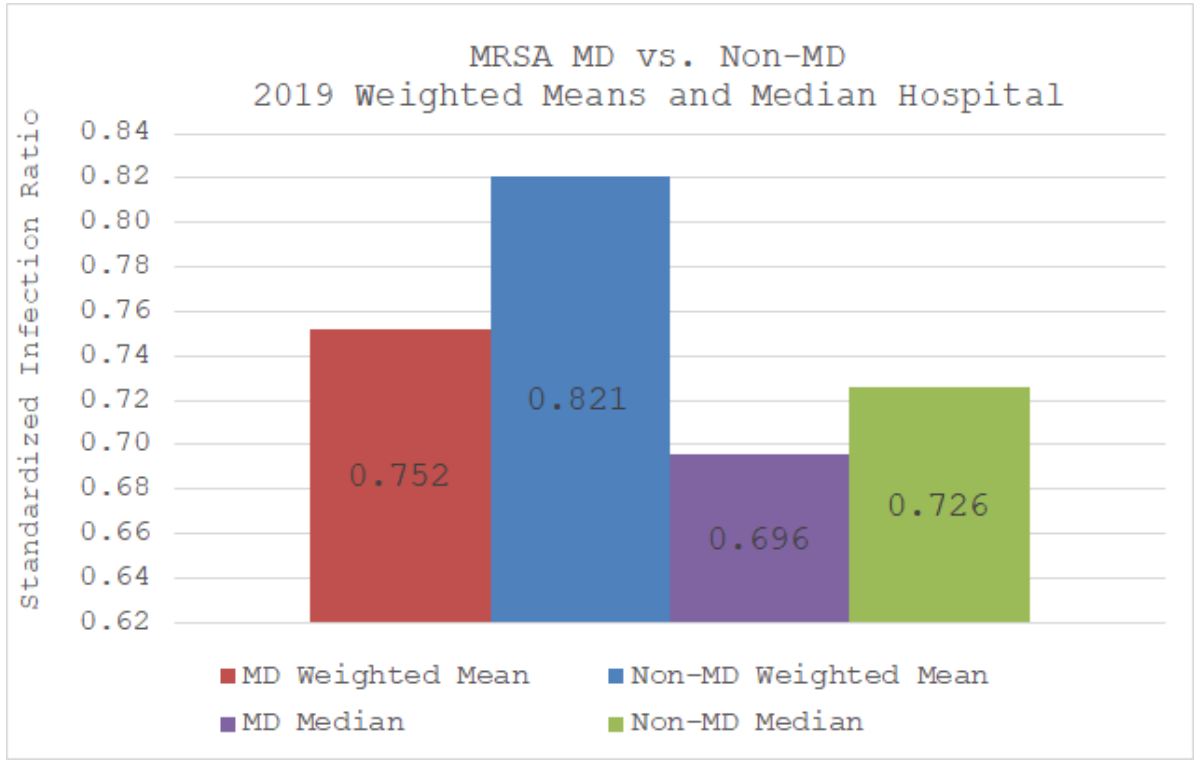


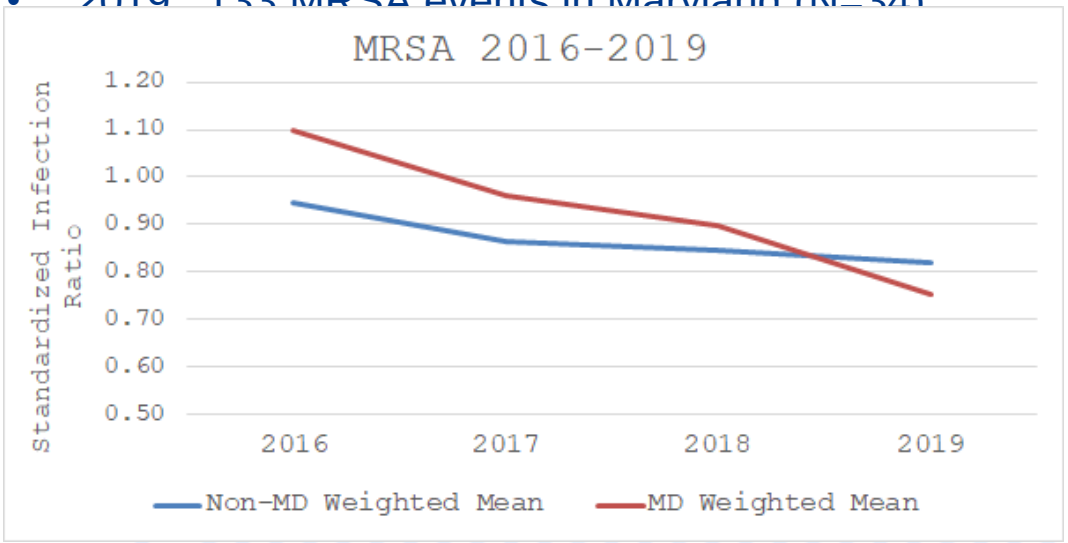


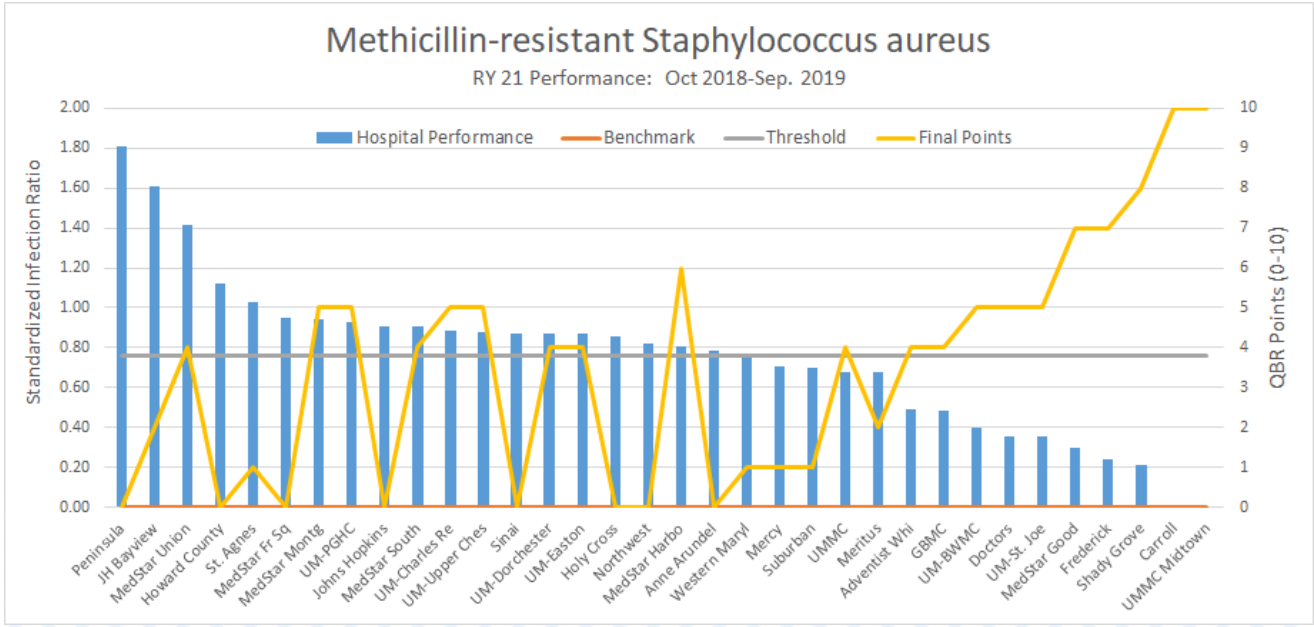
*National data is all non-Maryland hospitals subject to VBP

MRSA Snapshot

- Maryland performs better than nation* (weighted mean)
- Median Maryland hospital performs better than median non-MD hospital
- By hospital graph shows distribution in performance; some hospitals are receiving improvement points despite poor performance
- 2019: State rank #32 (weighted mean); 24 (unweighted)
- 2019: 133 MRSA events in Maryland (N=34)



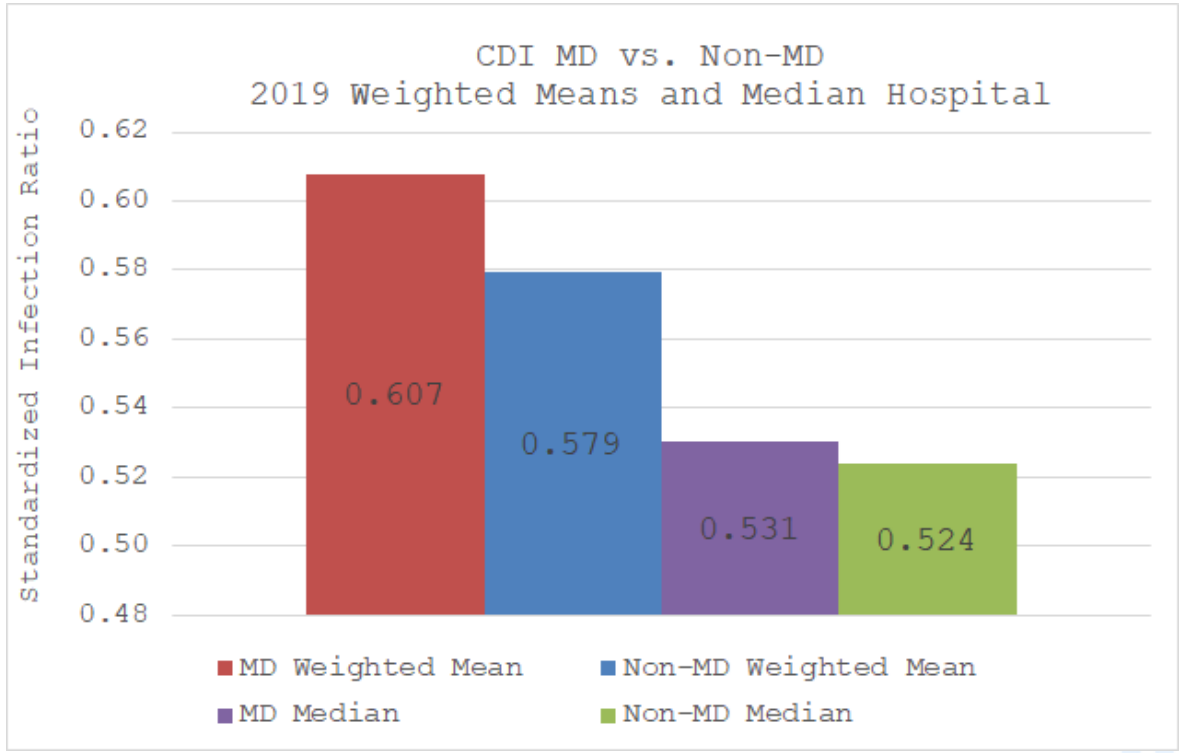


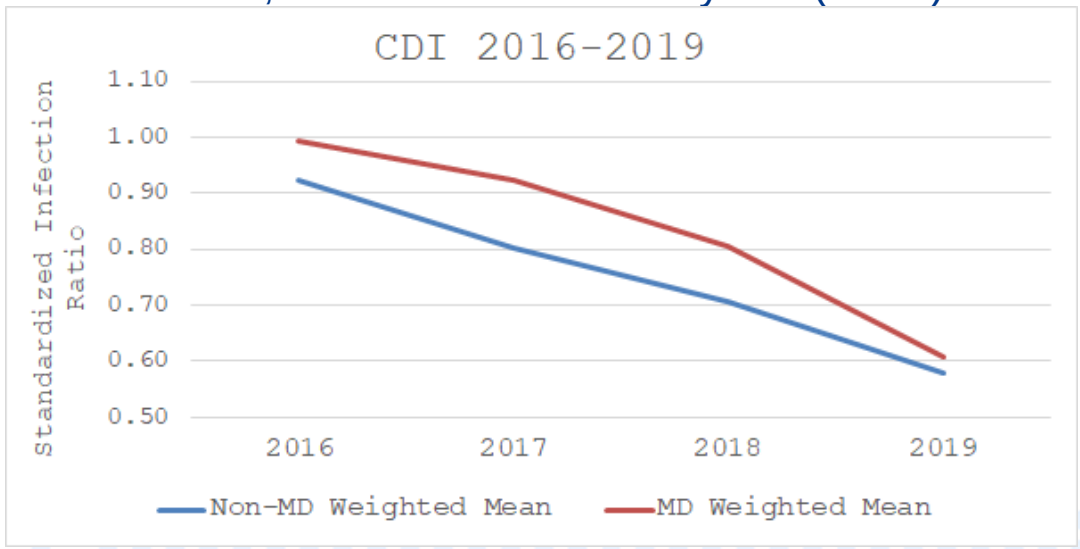


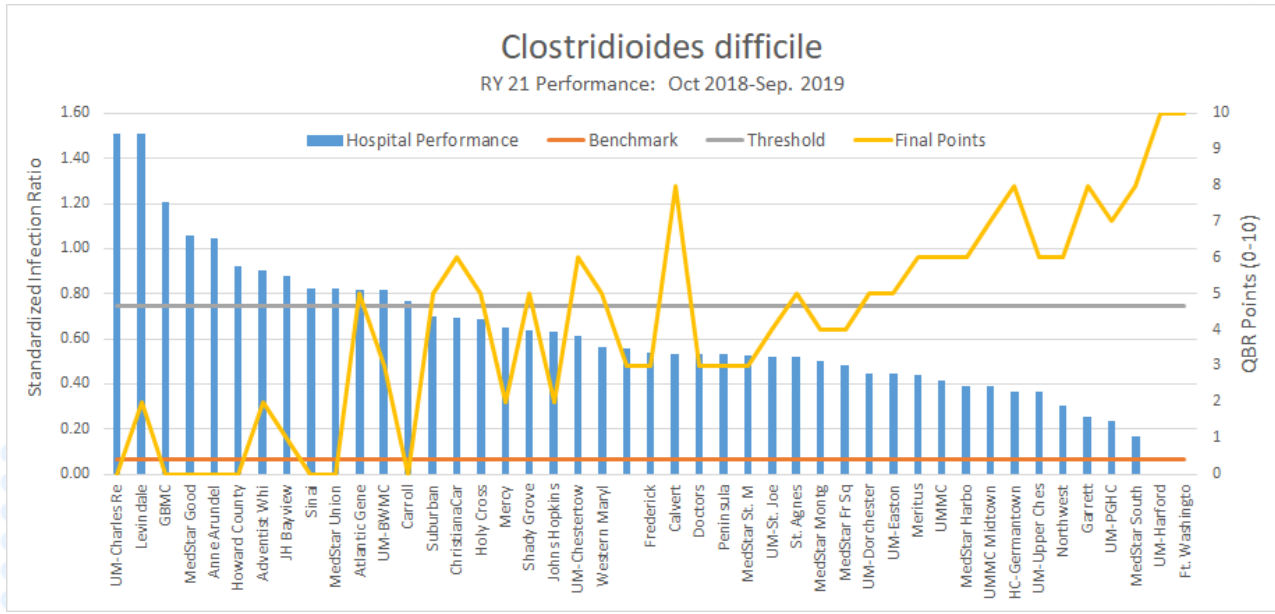
*National data is all non-Maryland hospitals subject to VBP

C. Dif Snapshot

- Maryland performs worse than nation* (weighted mean)
- Median Maryland hospital performs worse than median non-MD hospital
- By hospital graph shows distribution in performance; some hospitals are receiving improvement points despite poor performance
- 2019: State rank #26 (weighted mean); 19 (unweighted)
- 2019: 1,065 CDI events in Maryland (N=43)







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Peer Group Comparison

- **Purpose:** To assess MD performance relative to similar national hospitals

- For each Maryland hospital, Mathematica used the K-nearest neighbor approach to assign a peer group of 15 national hospitals most similar to the MD hospital on the following key hospital characteristics:
  - Number of teaching residents,
  - Urban location,
  - Number of beds,
  - Case mix index,
  - Proportion of stays involving patients with Supplemental Security Income, and
  - Nonprofit status.

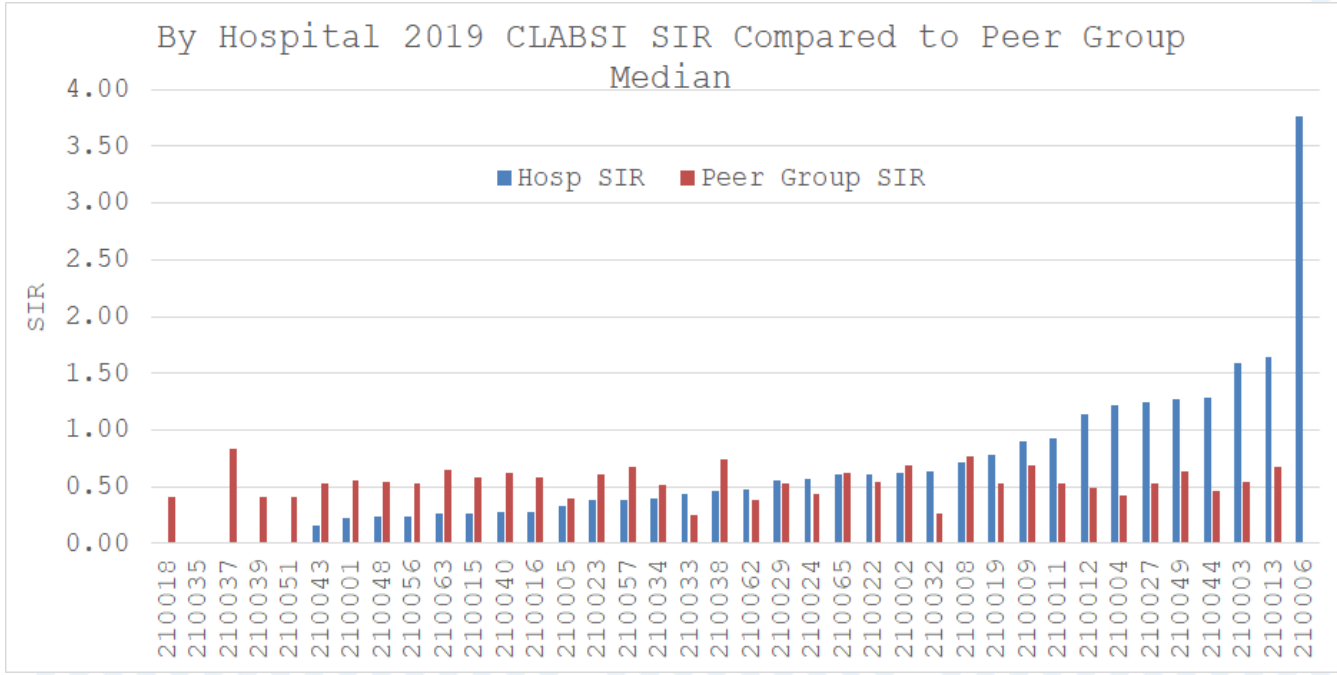
Peer Group Results

- Peer group analysis indicates similar findings as national analysis
  - In 2019, approximately half the hospitals performed better and half worse than their peer group
  - There have been strong improvements 2016-2019 compared to peers
  - By hospital CLABSI example shows variation in performance

Percent of Maryland hospitals with SIR above and below peer group median

Measure	MD SIR vs. Peer Group	2016	2017	2018	2019
CLABSI	Above	47.2%	56.4%	56.4%	47.4%
	Below	52.8%	43.6%	43.6%	52.6%
CAUTI	Above	69.4%	59.0%	54.1%	39.5%
	Below	30.6%	41.0%	45.9%	60.5%
SSI-COL	Above	56.3%	62.9%	46.9%	54.5%
	Below	43.8%	37.1%	53.1%	45.5%
SSY-HYS	Above	62.5%	55.6%	70.0%	70.0%
	Below	37.5%	44.4%	30.0%	30.0%
MRSA	Above	71.9%	63.9%	54.5%	42.9%
	Below	28.1%	36.1%	45.5%	57.1%
CDI	Above	61.0%	68.2%	63.6%	50.0%
	Below	39.0%	31.8%	36.4%	50.0%
Average*	**Above**	**61.1%**	**61.9%**	**56.4%**	**48.0%**
	Below	**38.9%**	**38.1%**	**43.6%**	**52.0%**

*Average calculated as the number of Maryland hospitals with an SIR above (below) its peer group median divided by the number of Maryland hospitals with an SIR across the six HAI measures.



CDC 2019 National and State HAI Progress Report

- CDC data indicate majority (64-94 percent) of Maryland hospitals have SIRs that are not statistically different than the national rate

	No. of Infections			95% CI for SIR		Facility-specific SIRs				Facility-specific SIRs at Key Percentiles				
Measure	Observed	Predicted	SIR	Lower	Upper	No. of facilities with at least 1 predicted	% of facilities with SIR sig higher than national SIR	% of facilities with SIR sig lower than national SIR	% of facilities with SIR similar to natiional SIR	10%	25%	Median (50%)	75%	90%
CLABSI	328	449.26	0.730	0.654	0.812	42	10%	7%	83%	0.000	0.173	0.548	0.860	1.267
CAUTI	348	443.58	0.785	0.705	0.870	41	7%	2%	90%	0.017	0.294	0.631	0.908	1.176
SSI-Hyst*	44	37.20	1.183	0.870	1.573	8	.	.		.	.	.	.	.
SSI-Colon	137	160.74	0.852	0.718	1.004	32	3%	6%	91%	0.000	0.000	0.676	1.244	1.746
MRSA	143	186.91	0.765	0.647	0.898	35	6%	0%	94%	0.000	0.309	0.574	0.863	1.252
CDI	1,107	1,778.81	0.622	0.586	0.660	47	21%	15%	64%	0.130	0.304	0.546	0.797	0.903

*Not enough hospitals reporting for comparison to nation or percentile analysis

- CDC data also indicates that there was not a statistically significant change on any NHSN measure between 2018 and 2019 for Maryland

Data used by CDC includes some hospitals in Maryland not in TCOC model and does not restrict to those in QBR/VBP

MPR Literature Review Findings (see handout with references)

- CAUTI and CLABSI surveillance validation studies are the most abundant in NHSN surveillance literature.
  - Both systematic reviews and primary analyses found that both measures are generally underreported

Table 3: Reasons for CAUTI and CLABSI Misclassification

Author, year and Description	Reasons for infection misclassification or inconsistent reporting
Bagchi, 2018 and Bagchi, 2019 Retrospective cohort studies on CLABSI and CAUTI misclassification in state health departments **Larsen, 2019** Review of cohort studies with publicly reported CLABSI rates	• misapplication of NHSN CAUTI/CLABSI definition • missed case findings • misapplication of general NHSN HAI definition • application of clinical judgment over surveillance definition, including subjective clinician reporting • inadequate physician education • insufficient hospital resources

- Several studies indicate that surveillance definitions and clinical practice definitions differ, suggesting that further clinician education and auditing interventions need to be consistently applied for fair comparisons.
- HAI measures are susceptible to surveillance bias, which should be considered when assessing quality across facilities.

Summary of MD vs National performance

- **Descriptive Statistics:** Performance varies by NHSN measure and statistic, but for 5 out of 6 NHSN measures the median hospital in MD performs better or similar to national median hospital
- **Trend Analysis Over Time:** Most measures have shown improvement over time, except SSI measures
- **Peer Hospitals:** Story does not change substantially when looking at peers
  - MD Above (worse) than peers 50-60% of the time, CY 2016-18;
  - MD Below (better) than peers just over 50% of the time, CY 2019
- **CDC Progress report**: Similar results but further indicates that majority of MD hospitals do not perform statistically significantly worse than nation
- **Literature Review:** Studies indicate HAI rates vary across facilities in part because of differences in the application of NHSN criteria, clinical definitions, and surveillance bias, but that auditing and clinical education can reduce over- and under-reporting of HAIs.

Expanding the Safety Domain to Other “Safety” Measures?

- Other NHSN Measures, not included in VBP
  - Additional SSI Categories on MHCC Quality Report Website:
    - CABG
    - Hip Replacement
    - Knee Replacement
  - Other NHSN HAI SSI procedure categories (39 procedure categories)
  - Ventilator Associated Events
- Other Safety measures
  - Sepsis Bundles (currently in IQR); CMS required measure
  - Severe Maternal Morbidity (SMM); CDC defined measures
  - Hospital-onset Bacteremia (HOB); CDC developing pilot for measure
  - Antibiotic Stewardship; CDC structural survey measure
  - Other claims based measures?

CDC NHSN SSI Procedure Categories*

Abdominal aortic aneurysm repair
Limb amputation
Appendix surgery
AV shunt for dialysis
Bile duct, liver or pancreatic surgery
Breast surgery
Cardiac surgery
Coronary bypass with chest & donor incisions
Coronary bypass graft with chest incision
Carotid endarterectomy
Cholecystectomy and cholecystotomy
Colon surgery+
Craniotomy
Cesarean section
Spinal fusion
Open reduction of fracture
Gastric surgery
Herniorrhaphy
Hip prosthesis
Heart transplant
Abdominal hysterectomy+
Knee prosthesis
Kidney transplant
Laminectomy
Liver transplant
Neck surgery
Kidney surgery
Ovarian surgery
Pacemaker surgery
Prostate surgery
Peripheral vascular bypass surgery
Rectal surgery
Small bowel surgery
Spleen surgery
Thoracic surgery
Thyroid and/or parathyroid surgery
Vaginal hysterectomy
Ventricular shunt
Exploratory laparotomy

*Procedure code lists and protocols found at:
https://www.cdc.gov/nhsn/psc/ssi/index.html?CDC_AA_refVal=https%3A%2F%2Fwww.cdc.gov%2Fnhsn%2Facute-care-hospital%2Fssi%2Findex.html ; last accessed 4/12/21.
+BOLDED indiates part of VBP and QBR programs

Sepsis Bundle

- Sepsis Bundle (SEP_1) came online in CY 2017; additional process measures added CY 2019
  - SEP_1 - Percentage of patients who received appropriate care for severe sepsis and septic shock composite measure: Applies to patients 18 years and older with a diagnosis of severe sepsis and septic shock
    - SEP_SH_3HR - Septic Shock 3-Hour Bundle
    - SEP_SH_6HR - Septic Shock 6-Hour Bundle
    - SEV_SEP_3HR - Severe Sepsis 3-Hour Bundle
    - SEV_SEP_6HR - Severe Sepsis 6-Hour Bundle

Measures	Population	2017	2018	2019
[SEP_1]	Maryland	55	57	59
	National	50	57	60
Septic Shock 3-Hour Bundle [SEP_SH_3HR]	Maryland			86
	National			86
Septic Shock 6-Hour Bundle [SEP_SH_6HR]	Maryland			73
	National			69
Severe Sepsis 3-Hour Bundle [SEV_SEP_3HR]	Maryland			79
	National			80
Severe Sepsis 6-Hour Bundle [SEV_SEP_6HR]	Maryland			88
	National			89

- NOTE: Experienced increase in PPCs 9 and 35 (Shock; Septicemia and Severe Infection) during CY 2020 for non-COVID patients

CDC Severe Maternal Morbidity Indicators*

- Uses administrative hospital discharge data and International Classification of Diseases (ICD) diagnosis and procedure codes.
- In October 2015, with the transition to ICD 10, the CDC updated list of 21 indicators and corresponding ICD codes used to identify delivery hospitalizations with SMM

Severe Maternal Morbidity Indicator		
1. Acute myocardial infarction	8. Disseminated intravascular coagulation	15. Shock
2. Aneurysm	9. Eclampsia	16. Sickle cell disease with crisis
3. Acute renal failure	10. Heart failure/arrest during procedure	17. Air and thrombotic embolism
4. Adult respiratory distress syndrome	11. Puerperal cerebrovascular disorders	18. Blood products transfusion
5. Amniotic fluid embolism	12. Pulmonary edema / Acute heart failure	19. Hysterectomy
6. Cardiac arrest/ventricular fibrillation	13. Severe anesthesia complications	20. Temporary tracheostomy*
7. Conversion of cardiac rhythm	14. Sepsis	21.Ventilation

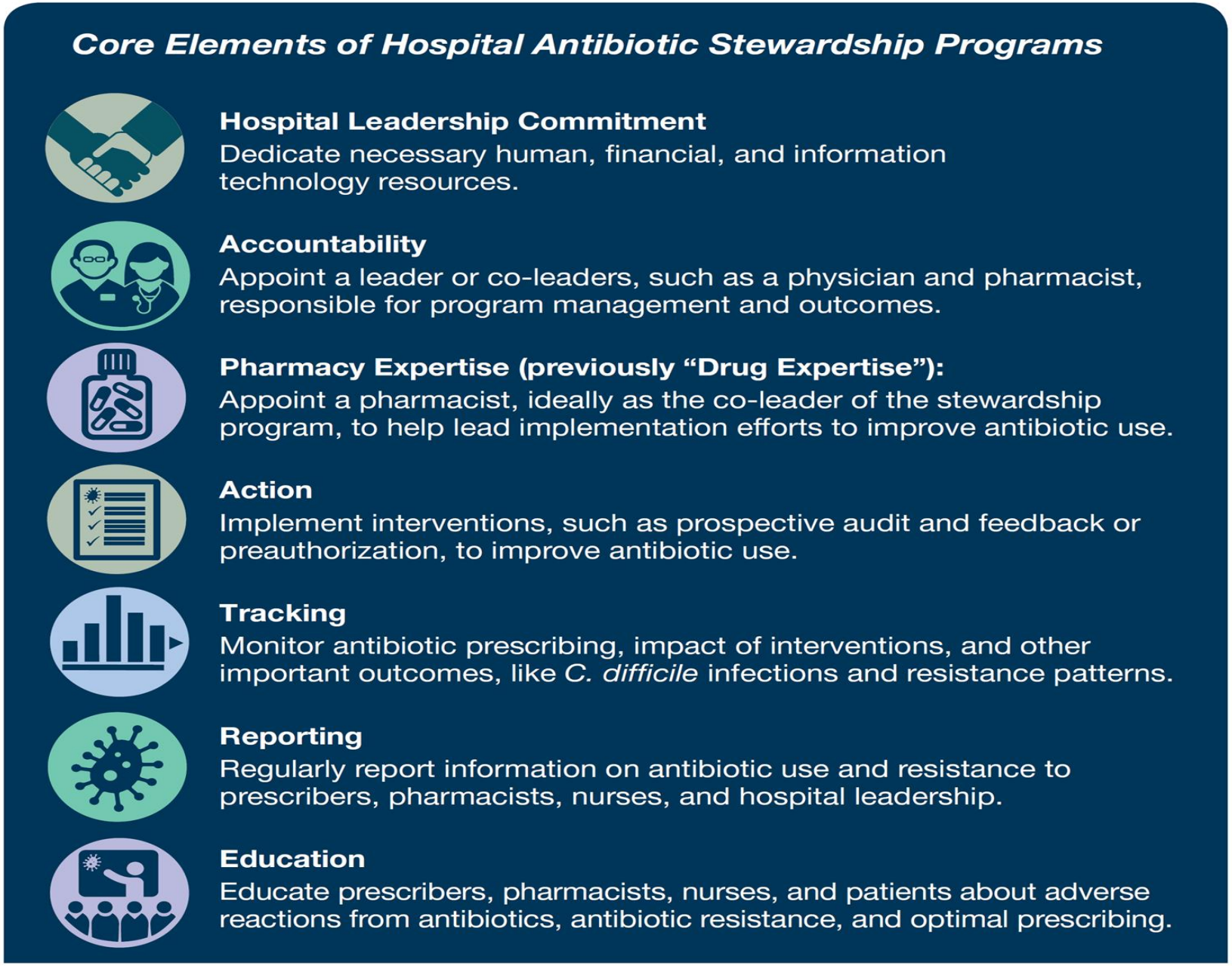
*For more information:
https://www.cdc.gov/reproductivehealth/maternalinfanthealth/severematernalmorbidity.html#icd

Hospital Onset Bacteremia Pilot *

- A web-based, multiple-choice survey was administered via the SHEA Research Network to 133 hospitals.
- Results: A total of 89 surveys were completed (67% response rate).
  - 60% of respondents defined HOB as a positive blood culture on or after hospital day 3.
  - Central line-associated bloodstream infections and intra-abdominal infections were perceived as the most frequent etiologies.
  - 61% of participants thought that most HOB events are preventable,
  - 54% viewed HOB as a measure reflecting a hospital's quality of care.
  - 29% of respondents' hospitals already collect HOB data for internal purposes.
  - Given a choice to publicly report central-line–associated bloodstream infections (CLABSIs) and/or HOB, 57% favored reporting either HOB alone (22%) or in addition to CLABSI (35%) and 34% favored CLABSI alone.
- Conclusions: Among the majority of SHEA Research Network respondents, HOB is perceived as preventable, reflective of quality of care, and potentially acceptable as a publicly reported quality metric.
- Further studies on HOB are needed, including validation as a quality measure, assessment of risk adjustment, and formation of evidence-based bundles and toolkits to facilitate measurement and improvement of HOB rates.

*For more information: https://pubmed.ncbi.nlm.nih.gov/30932802/

CDC Antibiotic Stewardship Program Core Elements*



*For more information: https://www.cdc.gov/antibiotic-use/core-elements/hospital.html

Safety Domain: Next Steps

- Should QBR subgroup further explore any additional safety measures?
  - Which ones?
- Should safety domain remain weighted at 35 percent?
  - While slightly higher weight in QBR than VBP, the NHSN and PSI measures also included in HACRP program
  - CMMI commented on NHSN performance in latest exemption approval
  - Concerns remain on cross-hospital comparisons of NHSN performance

Meeting Topic 2: Emergency Department Throughput

Emergency Department Utilization: A Snapshot

Maryland:

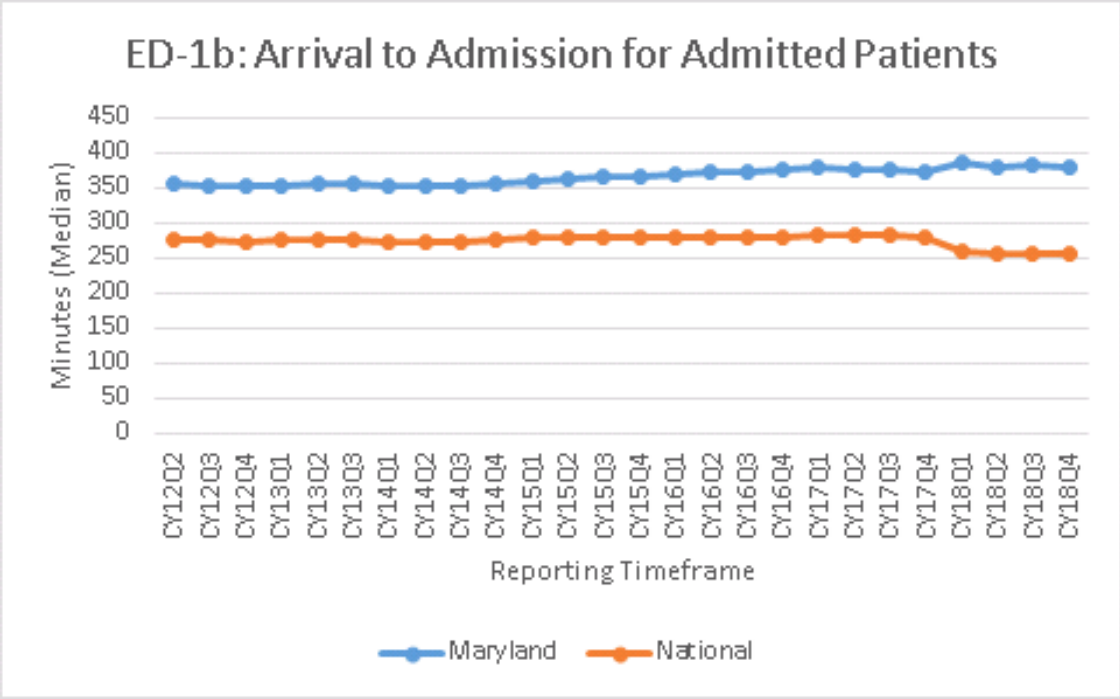
- ~2.38M Annual ED Visits (Avg CY16-19)
  - NOTE: CY 2020 experienced sustained volume decline to 1.78M visits
- 39.45 visits per 100 Marylanders per year
- 17.9% arrive by ambulance (CY19)
- ~85.5% of patients are discharged **without** being admitted
  - NOTE: 2020 this figure dropped to 83.3%

National:

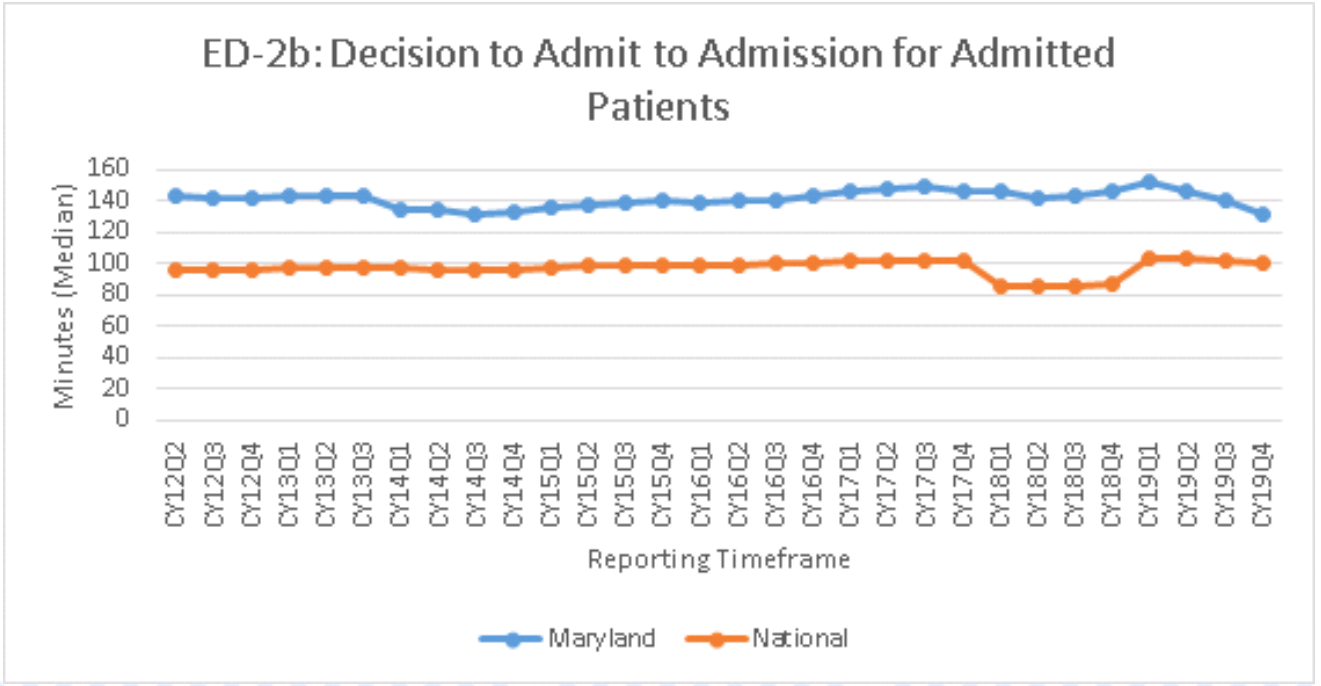
- 130M Annual ED Visits
- 42 visits per 100 Americans per year
- ~15% of patients arrive by ambulance
- Common Complaints are:
  - Stomach/abdominal pain
  - Chest Pain
  - Fever/Headache
- ~80% of patients are discharged **without** being admitted

Emergency Department - ED Throughput a Consistent Concern

This measure remained in the QBR program until its sunset from IQR, following CY 2018.

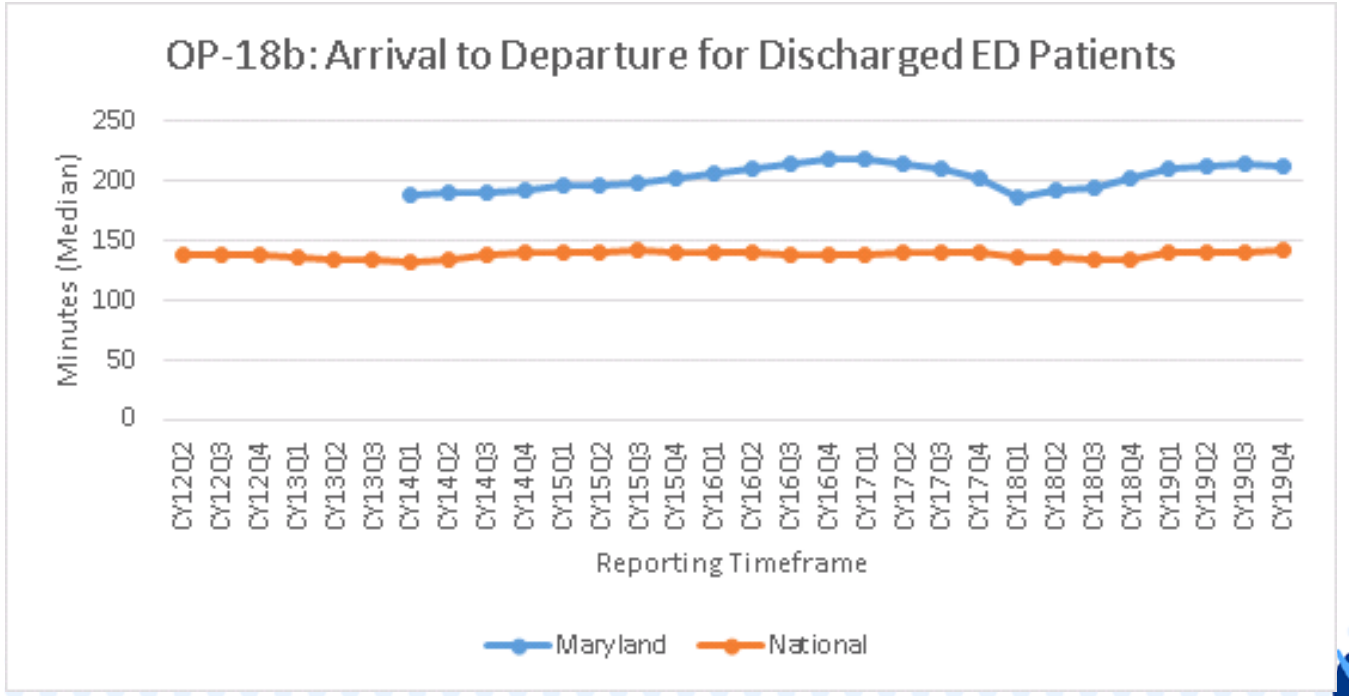


This measure remained in the QBR program until its sunset from IQR, following CY 2019.

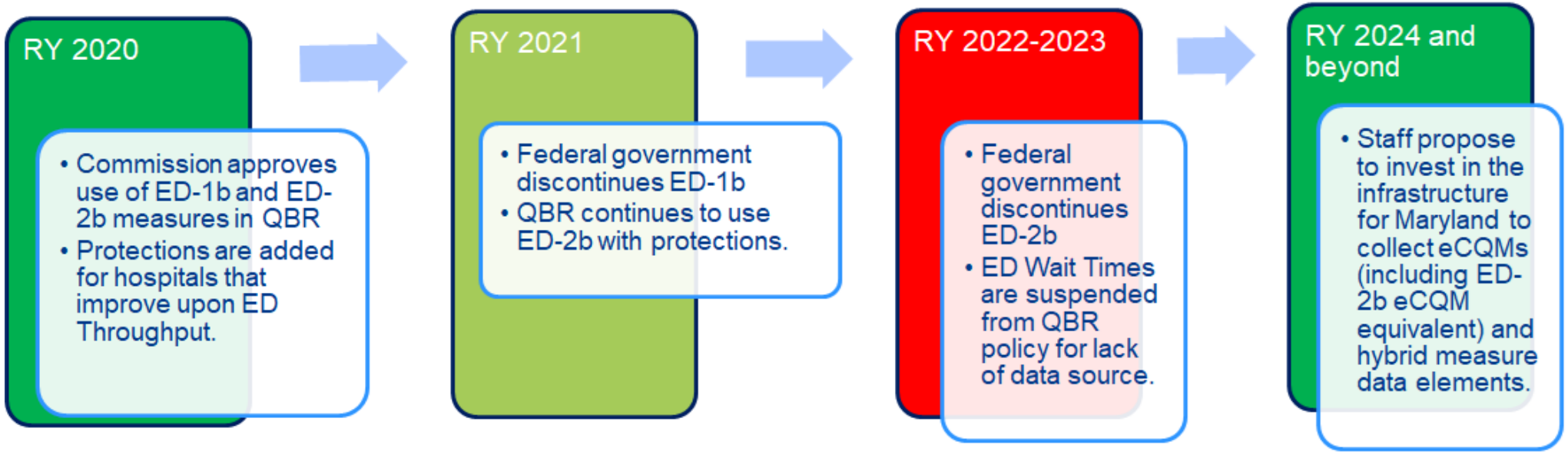


OP-18b: Arrival to Departure for Patients Discharged to Home

- OP-18b remains an OQR-included measure
- Due to concerns that OP ED Visits may include patients whose ED Visit was avoidable, the Commission decided to keep OP-18b as a monitored measure and not include it in the QBR program.



Timeline of ED Wait Times in QBR



Given ED Wait Times' positive correlation with HCAHPS, Commissioners and Staff are interested in resuming inclusion of an ED Wait time measure for IP admissions

electronic Clinical Quality Measures (eCQMs) and Hybrid Measures

Federally Specified eCQMs

1. Anticoagulation Therapy for Atrial Fibrillation/Flutter
2. Antithrombotic Therapy By End of Hospital Day 2
3. Discharged on Antithrombotic Therapy
4. Discharged on Statin Medication
5. Exclusive Breast Milk Feeding
6. Intensive Care Unit Venous Thromboembolism Prophylaxis
7. **Median Admit Decision Time to ED Departure Time for Admitted Patients**
8. Venous Thromboembolism Prophylaxis
9. NEW in CY 2021! Safe Opioid Use

Hybrid Hospital Wide Readmission Measure:

- Voluntary reporting since 2018
- Relies on 13 core clinical data elements (CCDE) and six linking variables to help CMS match the EHR data to the CMS claims data.
- NOTE: ~70% of Maryland hospitals report currently having the capability to collect these core clinical data elements for the hybrid HWR measure

Interested in stakeholder input on including this measure in QBR pending development of CRISP infrastructure to capture QRDA I files from hospitals.

eCQM as suitable source of ED Throughput data

Advantages of eCQM ED-2b measure:

- Nationally specified measure
- Aligns with CMS requirements for submission of eCQMs
- Infrastructure investment will allow for potential use of eCQMs and hybrid data from EHR for other purposes

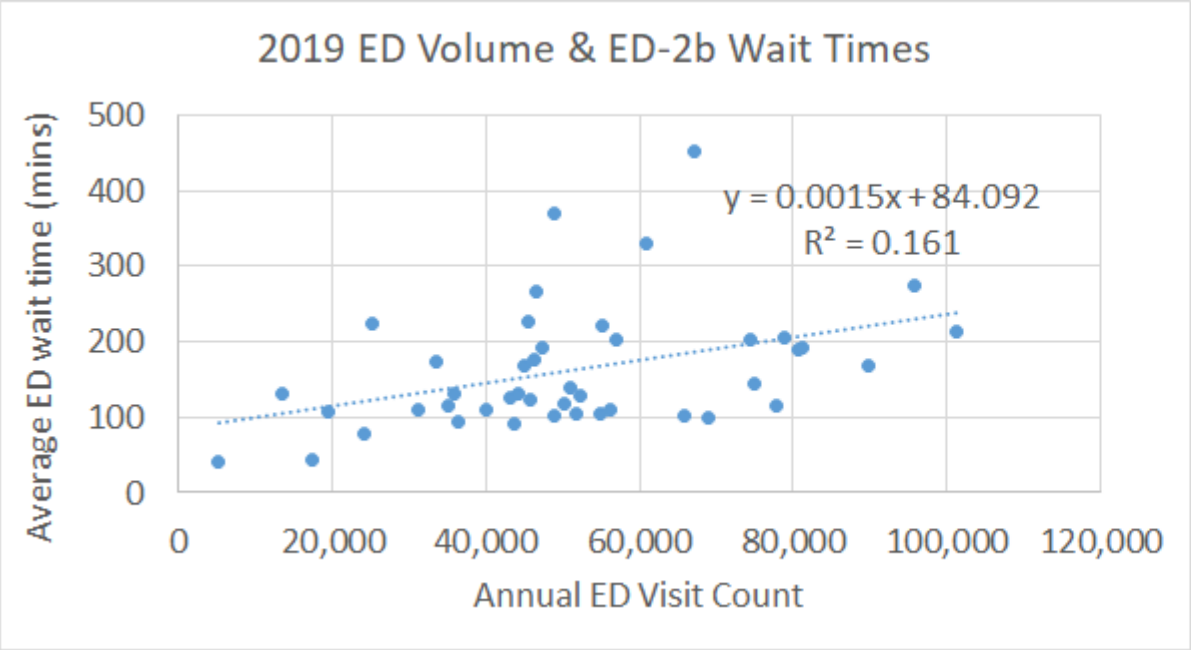
Alternative Data Source:

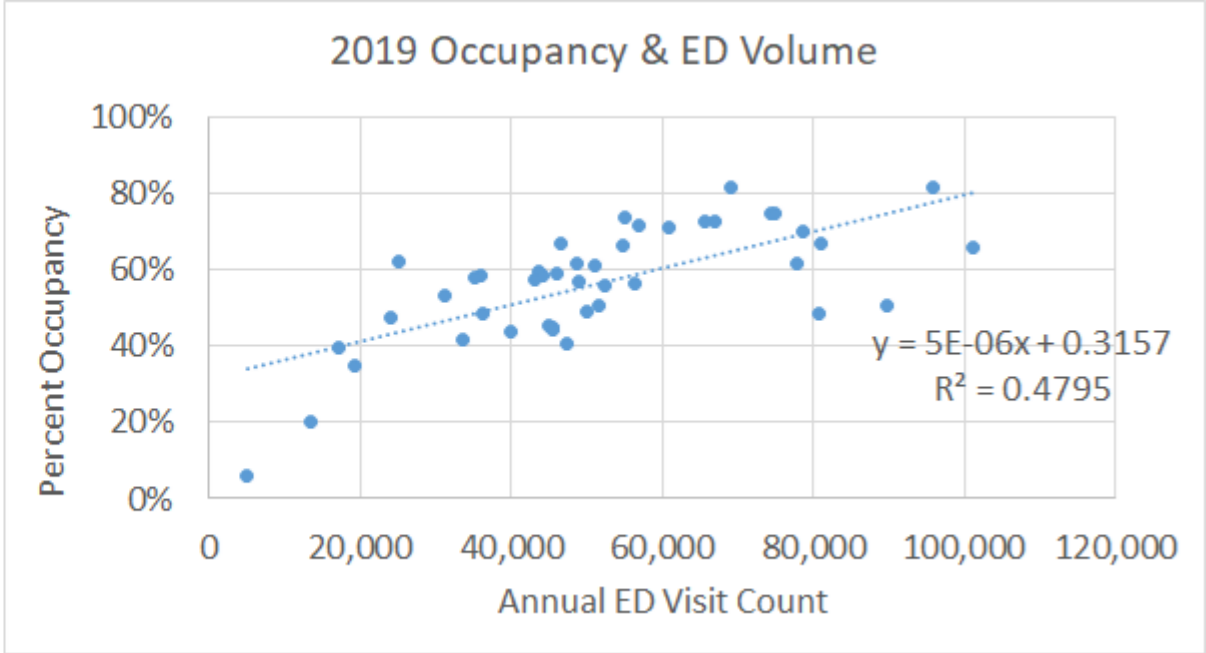
- ADT Feeds (Admit, Discharge, Transfer) - from CRISP
  - Would need to discern interoperability of ADT feeds with federally specified measure, timestamp generation, etc.
    - “Decision to Admit” is not a specified field within ADT; at best we would approximate ED-1
  - Currently CRISP is working with hospitals through the RAC to increase utilization of ADT feeds for other use cases such as flagging acute exacerbation of chronic conditions for the SIHIS follow-up measure

Risk Adjustment Concerns

- Previously Commissioners and stakeholders have raised concerns on risk-adjustment of ED wait time measures
  - To address this, approved policy compared hospitals within peer groups stratified by ED volume; provided protections from improvement that worsens overall QBR score.
  - Commissioners and other stakeholders have also raised high occupancy rates as a driver of longer ED wait times
  - To address the volume and occupancy concerns, staff conducted correlation and regression analyses
    - Volume measured as number of annual ED visits grouped into low, medium, high, very high
    - Occupancy measured as 2019 beds days including observation >24 hours divided by 2018 reported physical capacity

Volume and Occupancy Results





Preliminary Regression Results:

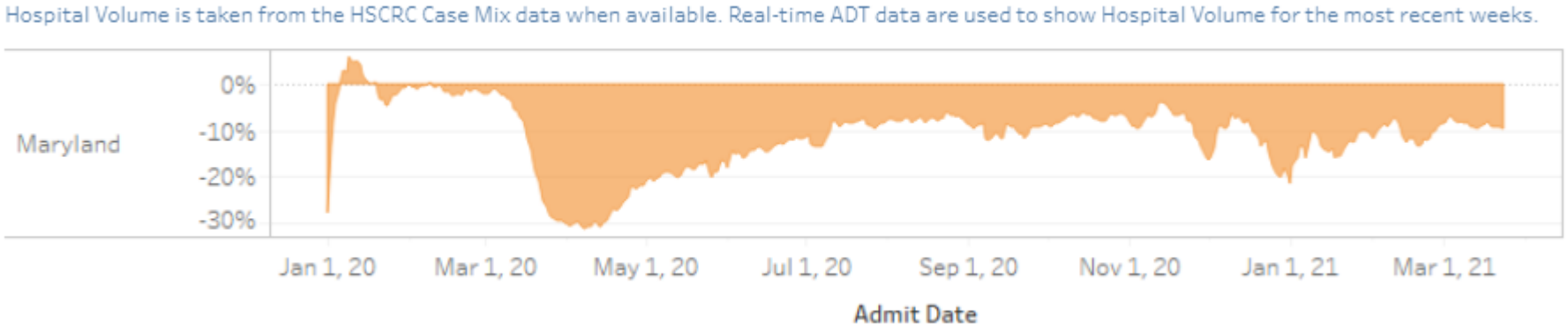
- Both ED visit volume and occupancy statistically significantly associated with ED-2b in univariate regression analysis (p-values <0.05)
- Controlling for ED volume, occupancy is no longer statistically significant
- May want to consider continuous volume adjustment in future

Emergency Department - Patient Experience - ED CAHPS

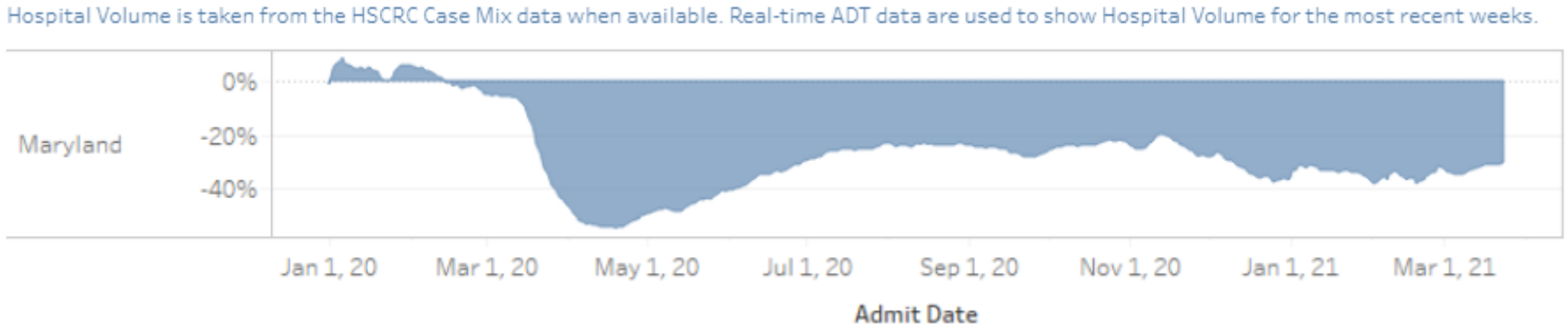
- New Patient Experience tool from CAHPS - ED CAHPS
  - Created 2012-2020; received CAHPS designation Mar 2020
- ED CAHPS interviews patients discharged from ED to Home (~80% of ED patients)
  - These patients would be captured under the OP-18b “ED Throughput Metric”
- Voluntary utilization at this time; no plans for centralized federal data collection
- There are 35 Questions under six composite measures:
  - Getting Timely Care; How well nurses and doctors communicate; Communication about medications; Communication about follow-up care; Overall ED Rating; Willingness to recommend the ED
- ...captured under the following facets of an ED Visit and Survey Responder:
  - Going to ED; During Visit; People who cared for you; Leaving ED; Overall Experience; Your Health Care; About you

COVID and ED Volume Reduction

While IP Volumes have predominantly recovered following Apr-Jun 2020 declines… (~10% current decline)



...We see a persistent decline in year-over-year Emergency Department volume (~25% current decline)



Source: CRS Portal, COVID-19 Dashboard: Hospital Volume Trend

Other HSCRC initiatives and ED Throughput Factors

- Avoidable ED Utilization
  - Convening Summer Subgroup
    - Goal: development and implementation of an Avoidable ED methodology
- PRPA Initiatives Regarding ED Utilization
  - Regional Partnerships - Scale Targets also looking at (sub-strata) of ED-2b
  - Initiative to reduce avoidable ED use through EMS
  - Additional exploratory analysis
- EDAC development for RRIP - ongoing
- American Rescue Plan - 2021
  - “State Option for Community-based Mobile Crisis Interventions” - focused on Medicaid beneficiaries experiencing a mental health or substance use disorder crisis
  - Source: State Health and Value Strategies at Princeton University, Timetable-of-Key-Healthcare-Provisions-in-American-Rescue-Plan_Final_03.26.2021.pdf (shvs.org)

Re-Adopting ED Wait Times - Next Steps

- Strong commission support for re-adoption of ED wait times
  - Stakeholder perspective?
- Development of eCQM infrastructure will take time
  - Potential implementation in CY 2022 or CY 2023
  - No baseline data - attainment-only?
  - No National data - how to set performance standards?
- HSCRC to continue to work to acquire eCQM ED-2b data reporting capabilities; estimated timeline of CY 2022 at the earliest
- Continue to examine ED Throughput and potential impact of:
  - COVID-19
  - Urgent care utilization
  - Telehealth utilization
- Interested parties to attend or listen to “Avoidable ED” subgroup this summer

Follow-up from Prior Meeting

HCAHPS Recap

- HCAHPS performance on individual categories has been improving but still lags behind the nation
  - This is despite Maryland having higher domain weight on Patient and Community Experience domain and all-payer revenue adjustments

FY 2013=30% (Year Adopted; CMS weighted HCAHPS at 30% and process measures 70%)

FY 2014=50% (CMS weighted HCAHPS at 30%, Outcomes at 25% and process measures at 45%)

FY 2015=50%

FY 2016=40%

FY 2017=45%

FY 2018 through 2023=50%

Changes in domain weight were accompanied by other methodological changes (e.g., switch to national performance standards, removal of revenue neutral rewards)

Potential Changes to the QBR Program to Spur HCAHPS Improvement

- Addition of linear scores
- Upfront rewards for anticipated improvements
- Other ideas?

- Presentation on regional bias concerns--Rockburn Institute, Dr. Dale Schumacher

Options for Adding of Linear Scores

Reweight Person and Community Engagement Domain		
Measure	Current Weight	Proposed Weight
Top Box (8 measures + consistency points)	45.45 Percent	35 Percent
Follow-up measure	4.55 Percent	5 Percent
Linear	--	10 Percent
Total	50 Percent	50 Percent

- Should linear portion of domain weight be focused on specific measures? If so how to pick:
  - Measures where Maryland wants to be leader?
  - Measures with biggest gaps from national average?
  - Measures with known interventions?
  - Measures with correlations to other important outcomes
  - Measures aligned with other ratings like Leapfrog?
  - How many measures?
  - Other considerations?

Looking for QBR Subgroup member input on whether to focus and on which measures

Discussion on Upfront Rewards

- HSCRC staff exploring idea of upfront financial incentives contingent on improvements in HCAHPS scores
  - Concept is to provide resources for investments in activities to improve HCAHPS and take back these financial rewards if improvements are not achieved (i.e., claw back)
    - Theory is loss aversion is salient negative consequence and thus the incentive for improvement will be greater without raising percent at-risk
- Considerations:
  - Link to improvement in linear, top box, both?
  - Require financial incentives to be used for HCAHPS interventions?
  - How to calculate potential improvement and associated reward? Size of reward?
  - Calculation of QBR revenue adjustment taking into account upfront reward?
  - Mechanism for pay back if HCAHPS do not improve?

HCAHPS Next Steps

- Model inclusion of linear scores (all and focused--stakeholder defined)
- Model improvement opportunity and potential financial gain that could be used as up front money and develop proposal for pilot program
- Explore with MHCC development of infrastructure to collect HCAHPS data directly from hospitals, including patient level data

Regional Bias in HCAHPS

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HCAHPS and Value-Based Purchasing
Comparing National and Mid-Atlantic Summary Results

QBR Redesign, April 21, 2021

Dale N. Schumacher, MD, MPH
Jean James
Fern Nerhood
Mike Tennor

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Value-Based Purchasing (VBP) – Unweighted Average Domain Scores and Total Performance Score (TPS), for Hospitals in Four States (New York, Pennsylvania, New Jersey and Connecticut) vs All VBP Participating Hospitals

Fiscal Year (FY) & Hospital Geographic Group	PPS Hospitals	Person and Community Engagement (PCE)*	Efficiency & Cost Reduction, Medicare Spending Per Beneficiary (MSPB)* **	Safety*	Clinical Outcomes*	Total Performance Score (TPS)
FY 2019						
ALL	2775	34.8	20.0	43.7	54.3	38.1
NY, PA, NJ, CT	356	**28.3**	**14.8**	42.2	57.9	35.7
FY 2020						
ALL	2721	32.0	19.8	44.2	58.5	38.5
ALL minus 4 states	2375	32.9	20.6	44.5	57.9	38.9
NY, PA, NJ, CT	346	**25.5**	**14.2**	41.9	62.3	35.9
FY 2021						
ALL	2669	31.9	20.5	39.8	43.5	33.9
NY, PA, NJ, CT	343	**25.6**	**15.2**	36.9	45.6	30.7

* Average unweighted normalized scores; out of 100

** Efficiency MSPB episode begins 3 days prior to admission and ends 30 days post discharge

https://qualitynet.cms.gov/files/5ee388cbb5d5c400239ab548?filename=MSPB_FAQs_May_2020.pdf

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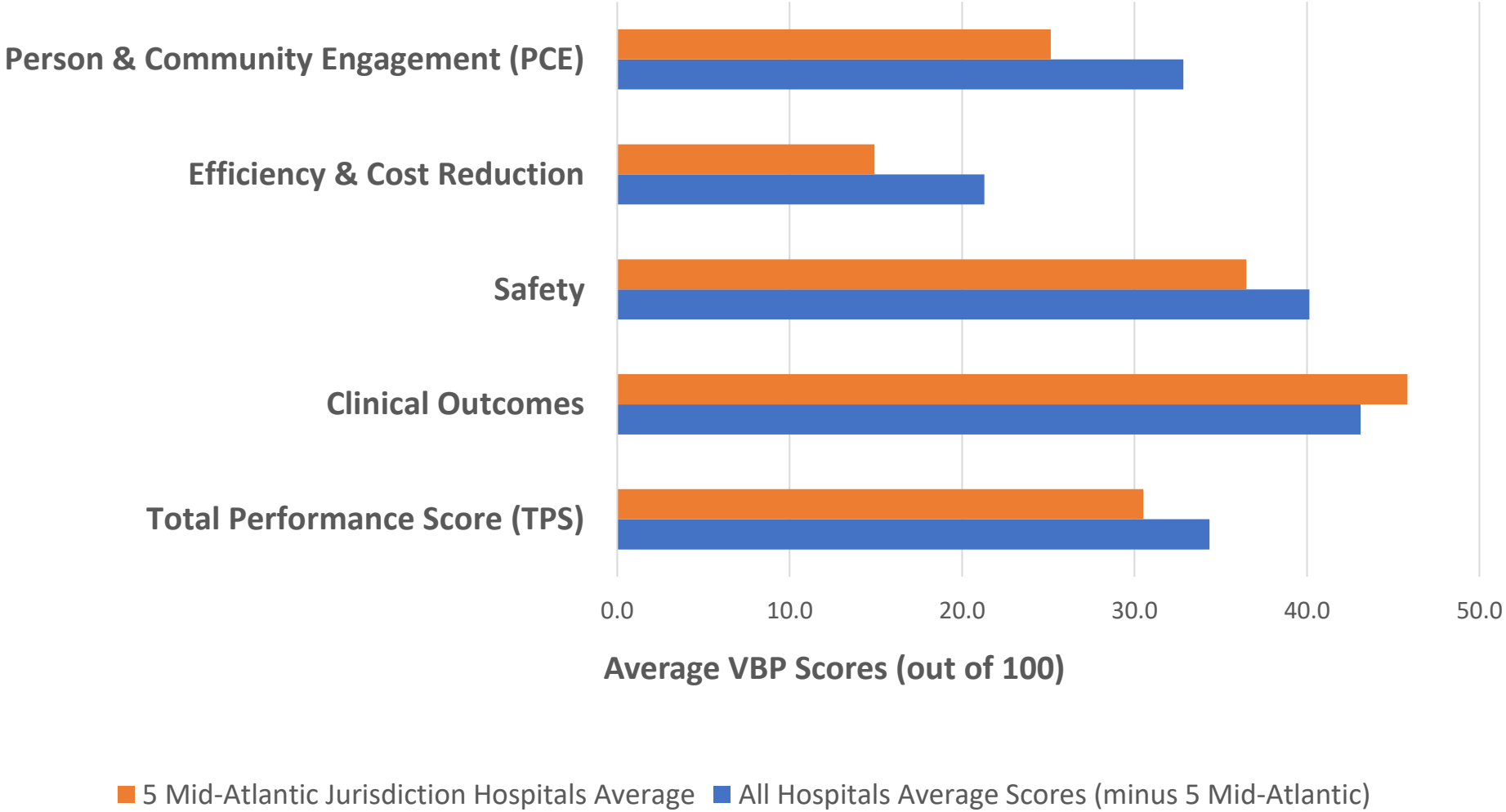
VBP Average Domain Scores and Total Performance Score for 5 Mid-Atlantic Jurisdictions (DC, DE, NJ, NY, PA) vs All Other Hospitals, FY 2021



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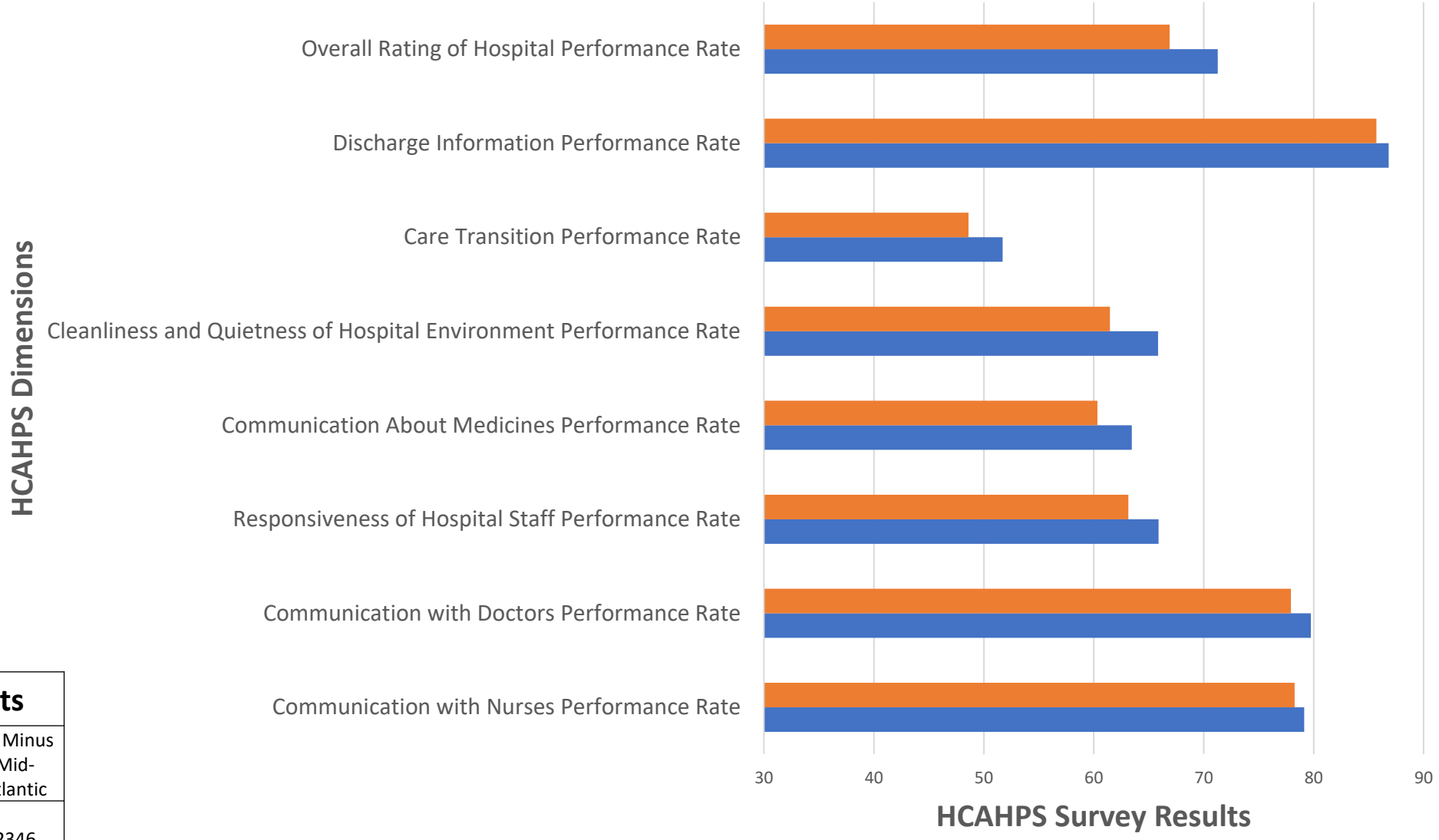
HCAHPS Average Dimension Results for 5 Mid-Atlantic Jurisdictions (DC, DE, NJ, NY, PA) vs All Other Hospitals, FY 2021



Hospital Counts		
5 Mid-Atlantic	All	All Minus Mid-Atlantic
330	2676	2346

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VBP and HCAHPS Data FY 2021. Comparison Selected Correlations

	A	B	C	D	E	F	G
1	**Mid-Atlantic Excludes Maryland n=329 DC,DE,NY,NJ, PA**	Efficiency (MSPB)	Nurse Comm	Doc Comm	Discharge Info	Care Transition	Overall Hospital score
2	Efficiency	1.00					
3	Nurse Communication	0.18	1.00				
4	Doc Communication	0.20	0.58	1.00			
5	Discharge Info	0.25	0.43	0.28	1.00		
6	Care Transition	0.14	0.55	0.45	0.49	1.00	
7	Overall Hosp Score	0.19	0.64	0.47	0.46	0.61	1.00
8	**All Hospitals minus Mid-Atlantic excludes Maryland n=2340**	Efficiency (MSPB)	Nurse Comm	Doc Comm	Discharge Info	Care Transition	Overall Hospital score
9	Efficiency	1.00					
10	Nurse Communication	0.23	1.00				
11	Doc Communication	0.26	0.66	1.00			
12	Discharge Info	0.23	0.48	0.36	1.00		
13	Care Transition	0.17	0.58	0.51	0.48	1.00	
14	Overall Hosp Score	0.15	0.60	0.48	0.40	0.71	1.00

Gold – Mid-Atlantic exceeds All minus Mid-Atlantic
Green – Mid-Atlantic improvement opportunities comparison

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Definitions

Hospital Value Based Purchasing (VBP or HVBP) – A Medicare quality measure for hospitals consisting of four equally weighted domains. Paid for by a 2% withholding of hospitals' Medicare Base Operating Payment. The VBP total performance score dictates if a hospital will receive back some, all, or more than the 2% withholding.

HCAHPS – Hospital Consumer Assessment of Healthcare Providers and Systems

HCAHPS Survey – A national survey of patient perspectives of care received during a recent hospital stay; publicly reported and consistent survey allows for national comparisons; 29 questions

HCAHPS Dimensions – These are the eight HCAHPS measures included in Hospital VBP.

Six areas of the survey are summarized into composite measures such as "Communication with Nurses." There is also a combined cleanliness and quietness score and an overall rating of the hospital. The scores are also compared with national scores and a baseline score for the hospital from two years prior. A score is also added for consistency.

> "Eight HCAHPS measures, or 'dimensions,' are included in Hospital VBP: six HCAHPS composite measures (Communication with Nurses, Communication with Doctors, Staff Responsiveness, Communication about Medicines, Discharge Information, and Care Transition); a dimension that combines the Cleanliness and Quietness items; and one global item (Hospital Rating). The PCE domain score is based on the percentage of a hospital's patients who chose the most positive, or top-box, survey response."
>
> *HCAHPS Fact Sheet, October 2019, accessed at https://www.cms.gov/Medicare/Quality-Initiatives-Patient-Assessment-Instruments/HospitalQualityInits/HospitalHCAHPS*

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Definitions (continued)

HCAHPS Points – As used in VBP, the eight HCAHPS dimensions are reported as whole number scores out of ten possible points. E.g., "4 out of 10." The scores are summed to create an HCAHPS Base Score. This is added to a Consistency Score to arrive at the final Person and Community Engagement score used in VBP.

Person and Community Engagement (PCE) – One of the four domains in VBP. Based solely on HCAHPS as described in HCAHPS Points.

Medicare Spending Per Beneficiary (MSPB) – A measure of a hospital's Medicare claims compared to expected claims. This is then compared to national efficiency rates. A ratio score over 1.00 shows inefficiency.

Efficiency and Cost Reduction – One of the four domains in VBP. Based solely on MSPB. The hospital's current score is compared to their score two years prior and national results.

Safety – One of the four domains in VBP.

Clinical Outcomes – One of the four domains in VBP.

Thank you and Next Meeting

- Thank you for your participation in the inaugural Subgroup Meeting.
- Next month's meeting will be held on **May 19, 2021**
  - The main Meeting Topics will be:
    1. **SIHIS Measure Alignment (present and future)**
    2. **Refinement of Existing QBR Measures (especially Mortality and THA-TKA)**
  - We will also incorporate feedback from today's meeting, as appropriate
- We appreciate your comments! Please continue to submit feedback through hscrc.quality@maryland.gov

APPENDIX

CDC NHSN Ventilator Associated Event Measures*

Measure	Calculation	Application
VAE SIR	The number of Observed VAEs / The number of Predicted VAEs	Both location specific and summarized measure
VAE Rates	The number of VAEs for a location / The number of Ventilator Days for a location x 1000	Location specific measure only
Ventilator SUR	The number of Observed Ventilator Days / The number of Predicted Ventilator Days	Both location specific and summarized measure
DUR	The Ventilator Days for a location / The Patient Days for that location	Location specific measure only

Information found at: https://www.cdc.gov/nhsn/pdfs/pscmanual/10-vae_final.pdf ; last accessed 4/12/21.

Ventilator Associated Events Algorithm

Patient has a baseline period of stability or improvement on the ventilator, defined by ≥ 2 calendar days of stable or decreasing daily minimum* FiO_2 or PEEP values. The baseline period is defined as the 2 calendar days immediately preceding the first day of increased daily minimum PEEP or FiO_2.

*Daily minimum defined by lowest value of FiO_2 or PEEP during a calendar day that is maintained for > 1 hour.

After a period of stability or improvement on the ventilator, the patient has at least one of the following indicators of worsening oxygenation:

1) Increase in daily minimum* FiO_2 of ≥ 0.20 (20 points) over the daily minimum FiO_2 of the first day in the baseline period, sustained for ≥ 2 calendar days.
2) Increase in daily minimum* PEEP values of ≥ 3 cmH_2O over the daily minimum PEEP of the first day in the baseline period†, sustained for ≥ 2 calendar days.

*Daily minimum defined by lowest value of FiO_2 or PEEP during a calendar day that is maintained for > 1 hour.

†Daily minimum PEEP values of 0-5 cmH_2O are considered equivalent for the purposes of VAE surveillance.

Ventilator-Associated Condition (VAC)

On or after calendar day 3 of mechanical ventilation and within 2 calendar days before or after the onset of worsening oxygenation, the patient meets <u>both</u> of the following criteria:

1) Temperature > 38 °C or < 36°C, **OR** white blood cell count ≥ 12,000 cells/mm^3 or ≤ 4,000 cells/mm^3.

AND

2) A new antimicrobial agent(s) (see Appendix for eligible antimicrobial agents) is started and is continued for ≥ 4 qualifying antimicrobial days (QAD).

Ventilator Associated Events Algorithm

Infection-related Ventilator-Associated Complication (IVAC)

On or after calendar day 3 of mechanical ventilation and within 2 calendar days before or after the onset of worsening oxygenation, ONE of the following criteria is met (**taking into account organism exclusions specified in the protocol**):

1) Criterion 1: Positive culture of one of the following specimens, meeting quantitative or semi-quantitative thresholds† as outlined in protocol, without requirement for purulent respiratory secretions:
   - Endotracheal aspirate, ≥ 10^5 CFU/ml or corresponding semi-quantitative result
   - Bronchoalveolar lavage, ≥ 10^4 CFU/ml or corresponding semi-quantitative result
   - Lung tissue, ≥ 10^4 CFU/g or corresponding semi-quantitative result
   - Protected specimen brush, ≥ 10^3 CFU/ml or corresponding semi-quantitative result
2) Criterion 2: Purulent respiratory secretions (defined as secretions from the lungs, bronchi, or trachea that contain ≥ 25 neutrophils and ≤ 10 squamous epithelial cells per low power field [lpf, x100])† **PLUS** organism identified from one of the following specimens (to include qualitative culture, or quantitative/semi-quantitative culture without sufficient growth to meet Criterion #1):
   - Sputum
   - Endotracheal aspirate
   - Bronchoalveolar lavage
   - Lung tissue
   - Protected specimen brush
3) Criterion 3: One of the following positive tests:
   - Organism identified from pleural fluid (where specimen was obtained during thoracentesis or initial placement of chest tube and NOT from an indwelling chest tube)
   - Lung histopathology, defined as: 1) abscess formation or foci of consolidation with intense neutrophil accumulation in bronchioles and alveoli; 2) evidence of lung parenchyma invasion by fungi (hyphae, pseudohyphae, or yeast forms); 3) evidence of infection with the viral pathogens listed below based on results of immunohistochemical assays, cytology, or microscopy performed on lung tissue
   - Diagnostic test for *Legionella* species
   - Diagnostic test on respiratory secretions for influenza virus, respiratory syncytial virus, adenovirus, parainfluenza virus, rhinovirus, human metapneumovirus, coronavirus

† If the laboratory reports semi-quantitative results, those results must correspond to the quantitative thresholds. Refer to Table 2 and 3.

Possible Ventilator-Associated Pneumonia (PVAP)