

An Introduction to the Multicenter Perioperative Outcomes Group

Version: 2024



What is MPOG?

- Academic and community hospital consortium that includes 150+ hospitals across the United States, Canada (1) and Lebanon (1)
- Platform for collaboration for research and QI
- Formed in 2008
- Data: Perioperative focused EHR data extracted using automated tools



Our Mission

Our mission is to promote safe and evidence-based perioperative care for all patients through collaboration, research, education, and quality improvement.

Please [join us](#) on our mission.



29

Million
Cases



489

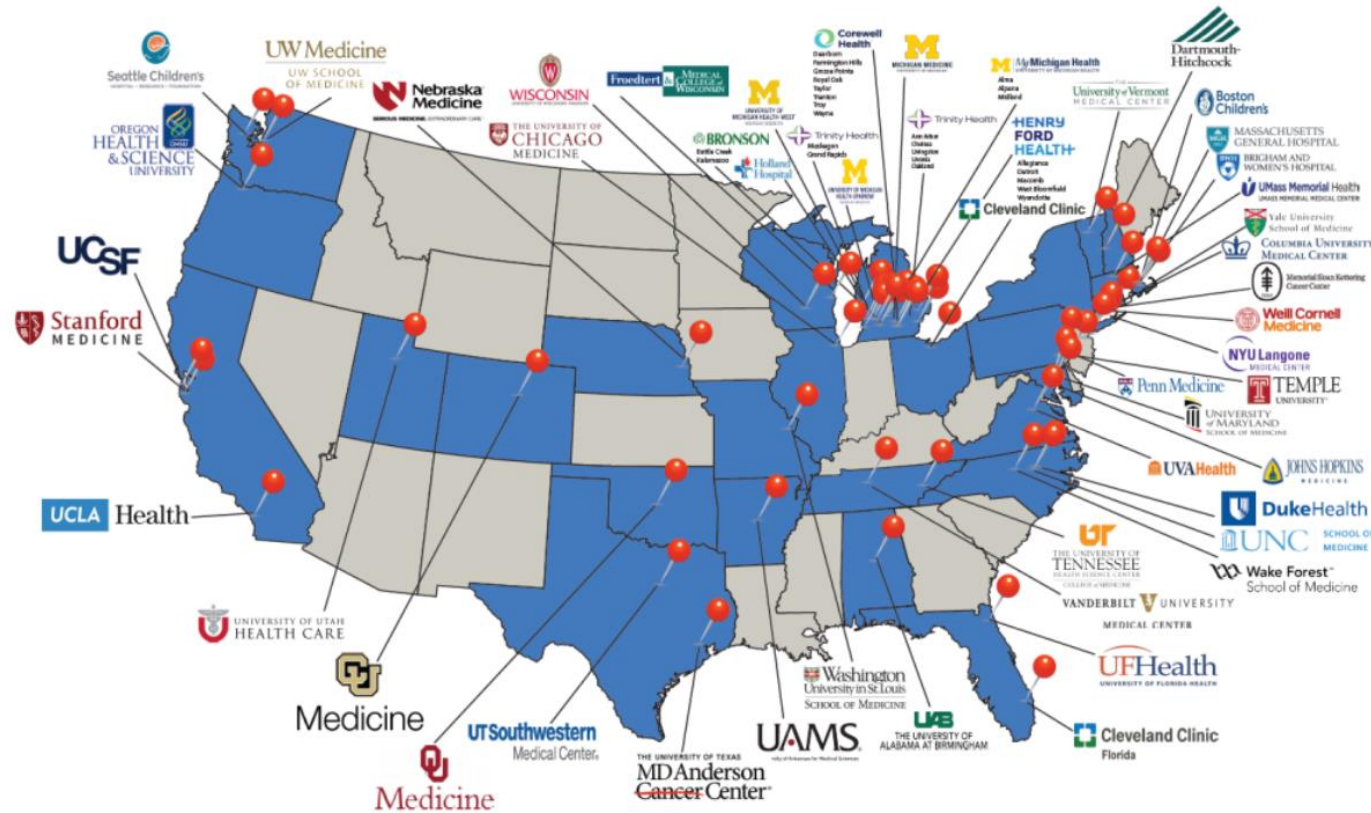
Million
Medication
Records



63

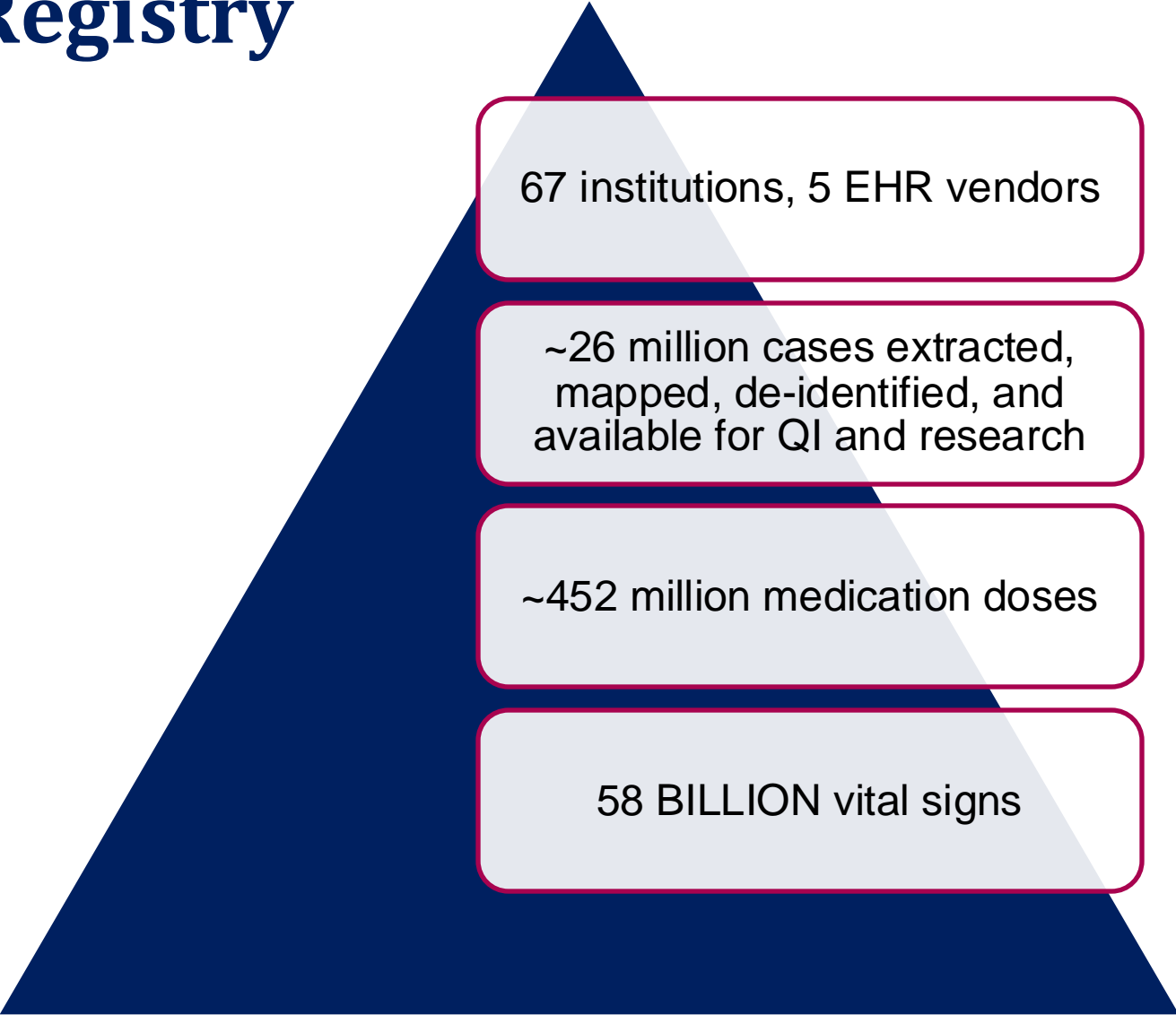
Billion
Physiologic
Observations

MPOG currently consists of over 85 participating hospitals



Data Included in MPOG Registry

- Demographic Information
- Preoperative H&P
- Medications / Infusions / Fluids / Outputs
- Physiologic values/ Laboratory values
- Intraop events
- IV Access
- Staff in / out
- Professional fee CPT codes
- Discharge ICD 9/10 codes
- Outcome record / Outcome registry

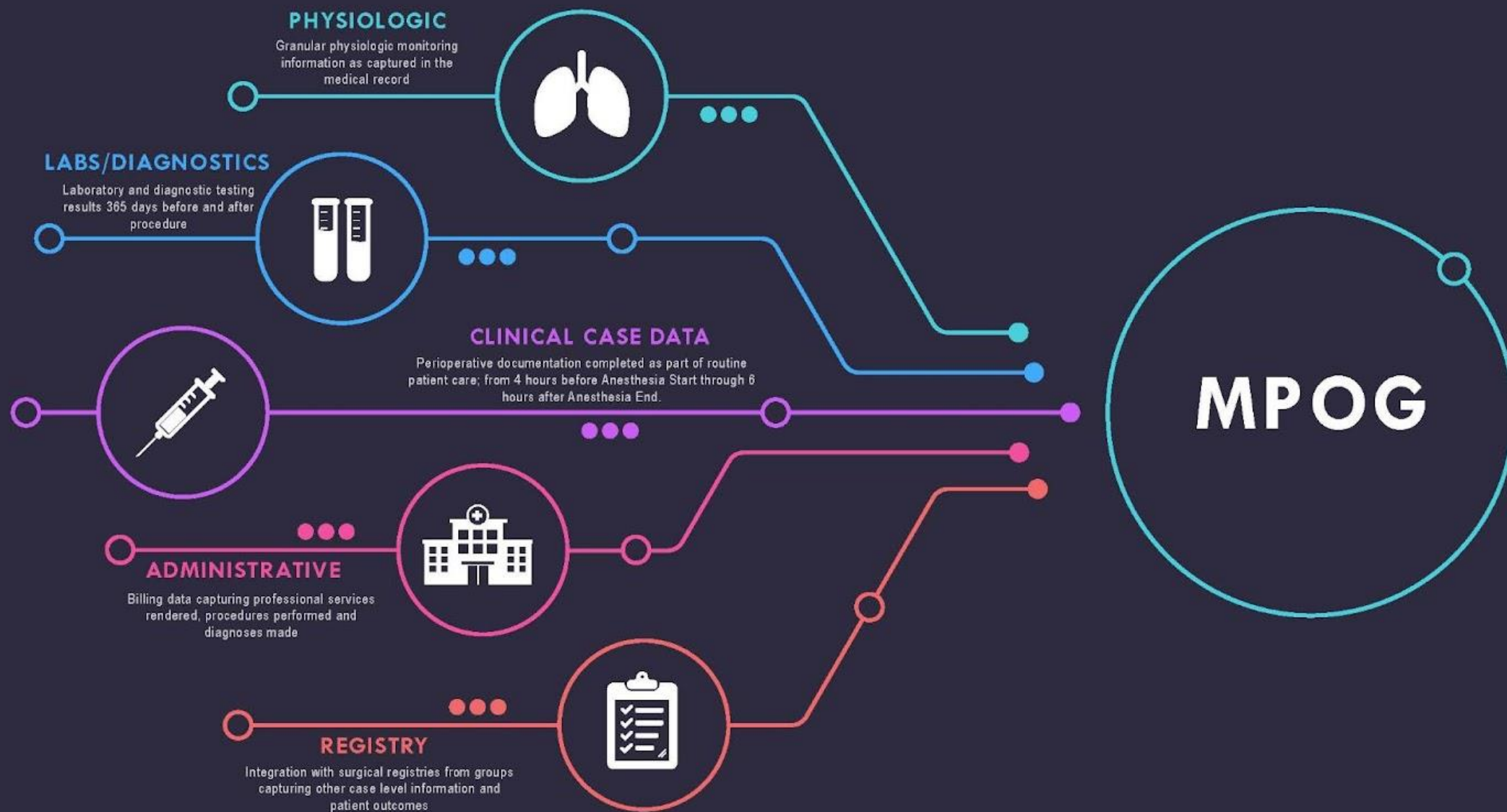


67 institutions, 5 EHR vendors

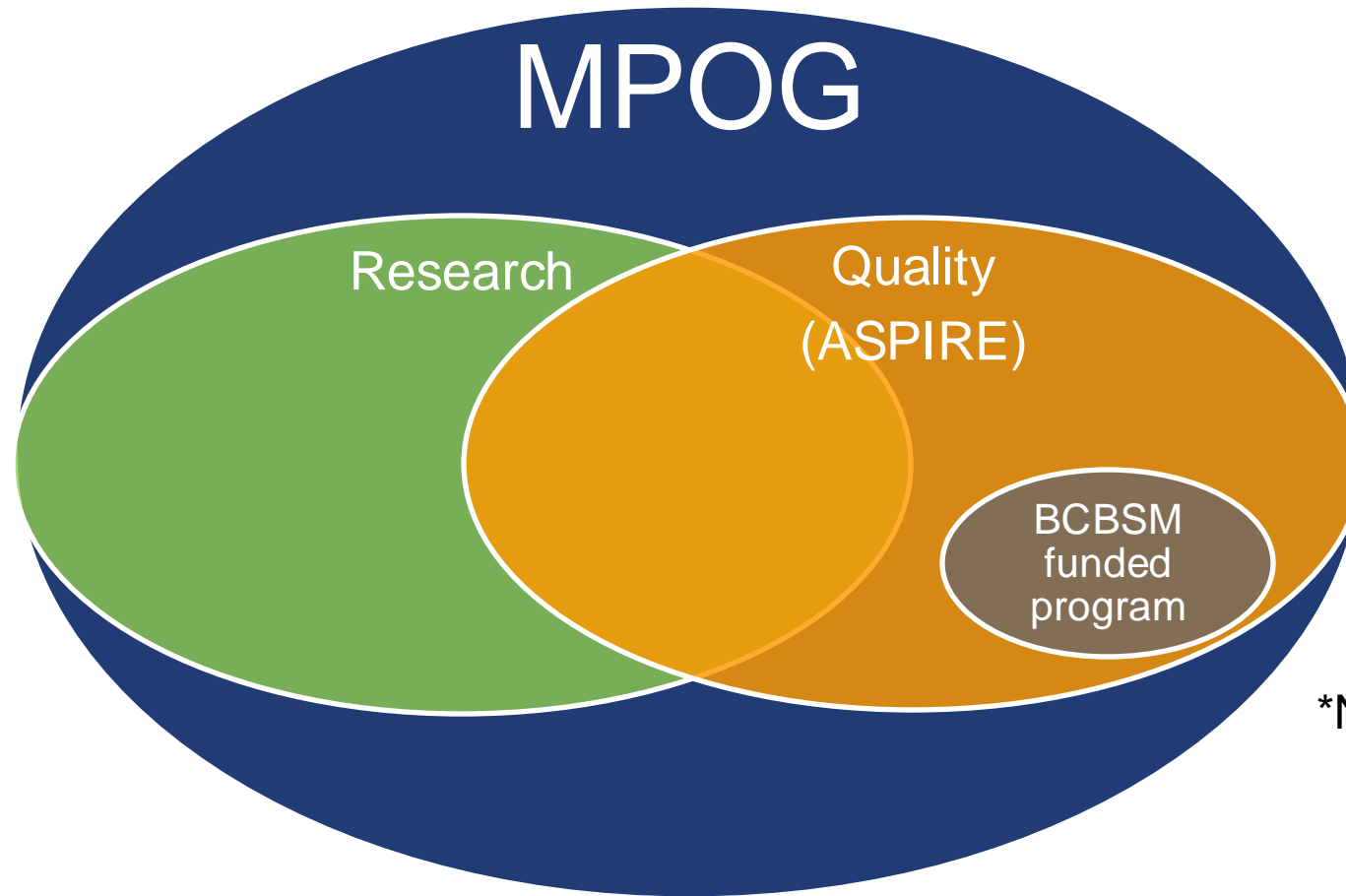
~26 million cases extracted,
mapped, de-identified, and
available for QI and research

~452 million medication doses

58 BILLION vital signs



Overlapping mission of QI and Research is the basis of MPOG as a Learning Health System



*Not drawn to scale



Nonprofit corporations and independent licensees
of the Blue Cross and Blue Shield Association

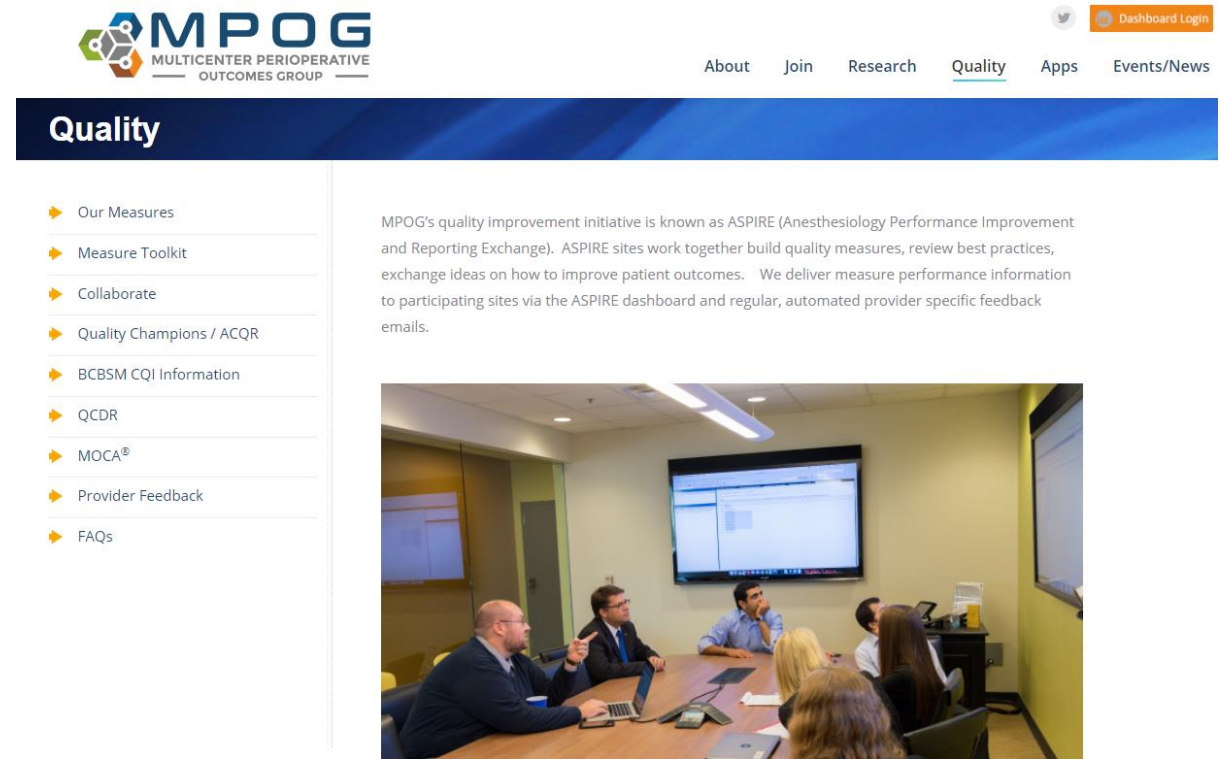


What are BCBSM Collaborative Quality Initiatives?

- Organizations that are developed and administered by providers and hospital partners, and funded in part, by BCBS of Michigan
- Support continuous quality improvement and the development of best practices
- Leverage multicenter data registries
- Able to track performance and provide incentives
- Focus on reduction of errors, prevention of complications, and improvement of patient outcomes

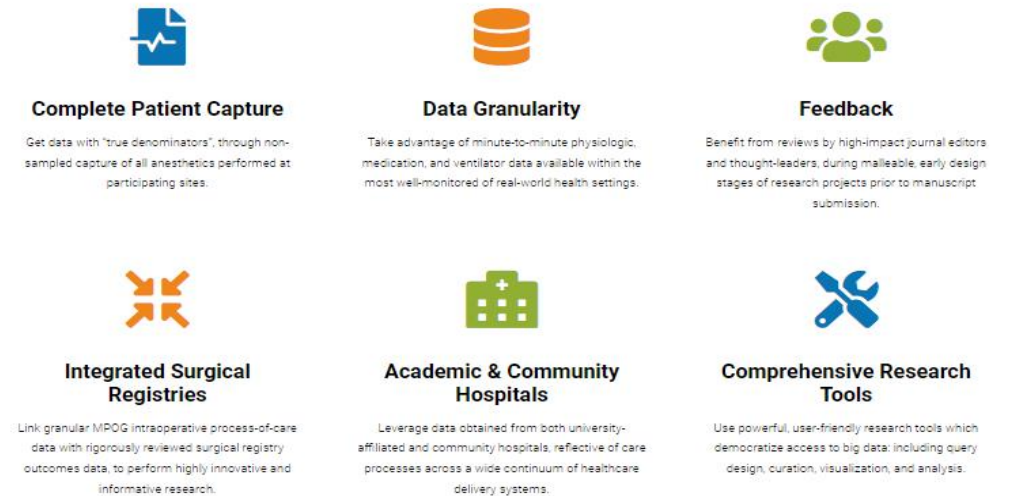
ASPIRE is the BCBSM funded CQI for Anesthesiology

- Anesthesiology quality improvement group
- Goal is to study unexplained variation in practice and determine best practices for anesthesia providers
- Established with support of BCBSM and other funding sources
- Governed by the ASPIRE Quality Committee which consists of members of each institution.
- Built on infrastructure of the Multicenter Perioperative Outcomes Group (MPOG)



MPOG Research

- Goal is to systematically transform real-world perioperative health data into actionable knowledge
- Governed by the Perioperative Clinical Research Committee (PCRC)
- Deep expertise in observational research, with extensive infrastructure for multicenter analyses
- Clinical trials platform, with MPOG Registry as data platform for multicenter pragmatic clinical trials



What does MPOG Research do?

- Collaboration through monthly PCRC meetings (tele-conference)
- Annual retreat before ASA
- High quality data
 - Complete patient capture
 - Data granularity
 - Integrated surgical registries
- Academic and community hospitals
- Comprehensive research tools
 - Use powerful, user-friendly research tools which democratize access to big data; including query design, curation, visualization, and analysis

Submit a Proposal

- Only colleagues from active MPOG sites can submit a research proposal
- Steps to submit a proposal
 1. Determine feasibility
 2. Write research project specific IRB and draft proposal
 3. Data query specification
 4. Estimate MPOG cohort sample size / refine inclusion and exclusions
 5. Institutional PI preview and test data download
 6. Submit proposal to MPOG Coordinating Center
 7. PCRC Review
 8. Inspect and clean data, register study and perform analysis
 9. Create project manuscript

MPOG Research Tools

- Access to research tools
 - MPOG DataDirect
 - Application that allows users to create queries using data submitted to MPOG
 - Contains multiple filters that can easily identify cohort of patients
 - Identify patient, case, and institutional counts
 - MPOG [Concept Browser](#)
 - Complete list of concepts in MPOG registry
 - MPOG [Phenotype Browser](#)
 - Sharable, reproducible algorithm (derived from EHR data) precisely defining a patient characteristic or clinical event

Perioperative Clinical Research Committee (PCRC)

- Meets virtually once a month to review proposals
 - Benefit from reviewers by journal editors, thought leaders and anesthesiology colleagues during malleable, early design stages of research projects prior to manuscript submission
- PCRC Moderator Committee
 - Panel of clinical content and methods experts, serving to enhance the PCRC research review process via invited critiques of research proposals

Tips & Tricks

- Videos created by MPOG team describing how to use research tools and processes for high-impact research
 1. MPOG research process overview
 2. Developing a research question and answerable with MPOG data
 3. Using DataDirect for self-serve access
 4. Developing a research proposal
 5. Transforming raw data into clinical inferences: Phenotypes
 6. Inspecting and curating MPOG data
 7. Big data management
 8. Statistics for large database research

Tips & Tricks

See the video series from the MPOG central team below on how to use research tools and processes to their full potential for high-impact research.



MPOG Research Process Overview

See the MPOG research machine from a "high-altitude" perspective, including a roadmap to tools and processes described in more detail in additional videos.

[Video Presentation](#)
[Presentation Slides](#)

MPOG QI /ASPIRE

- Anesthesiology quality improvement group
- Goal is to study unexplained variation in practice and determine best practices for anesthesia providers
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MPOG Quality Improvement

MPOG QI (also known as the Anesthesiology Performance Improvement and Reporting Exchange [ASPIRE]) aims to improve the care of patients undergoing anesthesia by reducing unexplained variation in practice. Participating sites work together to build quality improvement measures, review best practices, and exchange ideas for improving patient outcomes.



Methodology

We include all cases requiring anesthetic care; no sampling. All data is reviewed and cleaned, and a limited dataset (no PHI, except date-of-service) is uploaded to the MPOG registry.



Data Granularity

Includes physiologic, ventilator, medication, preoperative, and postoperative data; from 4 hours before Anesthesia Start to 6 hours after Anesthesia End.






















Experts

The MPOG Quality Committee is comprised of anesthesia providers and quality experts from around the world to develop metrics and design initiatives to improve the way anesthesia care is delivered.

What Does MPOG QI do?

- Collaboration through monthly Quality Committee meetings (tele-conference)
- In person meetings 3x/year, including annual MPOG Retreat before ASA
- Builds Quality Measures based on feedback from Quality Committee and Subcommittees and data from MPOG Registry
- Shares performance data at practice and provider level through our QI Reporting Tool and Individual Provider Feedback emails
- Builds Toolkits to help sites implement QI Initiatives related to MPOG QI Measures
- Partnership with ABA to award MOCA IV credit through provider feedback program

MPOG QI Measures

	Measures	Flowchart	Date Published	Date Revised	Toolkit
Acute Kidney Injury 	AKI-01: Acute Kidney Injury		06/12/2017	04/11/2023	
	AKI-02-C: Acute Kidney Injury, Cardiac		08/01/2024		
Antibiotic Usage 	ABX-01-OB: Antibiotic Timing for Cesarean Delivery		07/14/2020	06/10/2021	
	ABX-02-C: Antibiotic Timing, Open Cardiac		01/23/2024		
	ABX-03-C: Antibiotic Re-dosing, Open Cardiac		01/23/2024		
	ABX-04-C: Antibiotic Selection, Open Cardiac		10/07/2024		
	ABX-05-C: Antibiotic Prophylaxis Compliance (Composite), Open Cardiac		10/09/2024		
Blood Pressure 	BP-01: Low MAP Prevention < 55 (20 minutes)		11/01/2015	07/12/2022	
	BP-02: Avoiding Monitoring Gaps		11/01/2015	06/21/2021	
	BP-03: Low MAP Prevention < 65 (15 minutes)		09/01/2019	07/12/2022	
	BP-04-OB: SBP < 90 in Cesarean Deliveries		02/12/2021	06/10/2021	
	BP-05: Low MAP Avoidance < 55, Induction		07/05/2022	09/15/2022	
	BP-06: Low MAP Prevention < 55 (10 minutes)		09/05/2023		
Brain Health 	BRAIN-01: Benzodiazepine use in the geriatric population		12/14/2023		

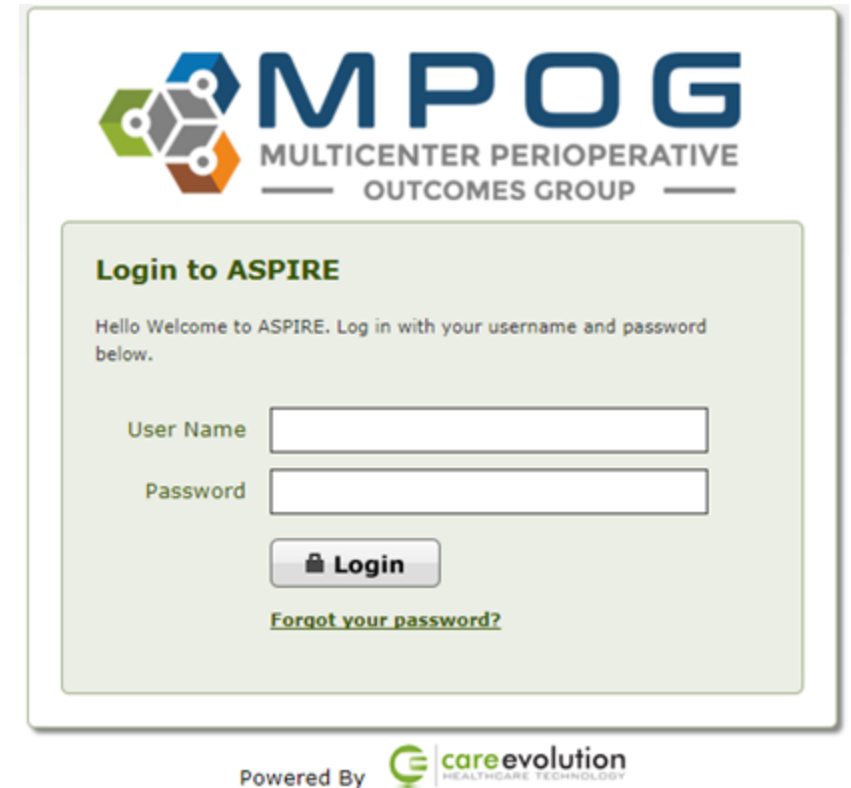
Cardiac 	ABX-02-C: Antibiotic Timing, Open Cardiac ABX-03-C: Antibiotic Re-dosing, Open Cardiac ABX-04-C: Antibiotic Selection, Open Cardiac ABX-05-C: Antibiotic Prophylaxis Compliance (Composite), Open Cardiac AKI-02-C: Acute Kidney Injury, Cardiac FLUID-01-C: Minimizing Colloid Use, Cardiac GLU-06-C: Hyperglycemia Management, Open Cardiac (>180 mg/dL) GLU-07-C: Hypoglycemia Management, Open Cardiac (<70mg/dL) GLU-08-C: Hyperglycemia Treatment, Open Cardiac (>180mg/dL) TEMP-06-C: Hypothermia Avoidance, Cardiac TEMP-07-C: Hyperthermia Avoidance, Cardiac
Obstetrics 	ABX-01-OB: Antibiotic Timing for Cesarean Delivery BP-04-OB: SBP < 90 in Cesarean Deliveries GA-01-OB: General Anesthesia During Cesarean Deliveries GA-02-OB: General Anesthesia after Neuraxial in Cesarean Deliveries GA-03-OB: General Anesthesia Administered after Epidural for Cesareans TEMP-05-OB: Hypothermia in Cesarean Deliveries
Pediatrics 	FLUID-02-Peds-C: Minimizing Colloid Use, Pediatrics (Cardiac) NMB-03-Peds: NMB Dosing, Pediatrics PAIN-01-Peds: Multimodal Analgesia, Pediatrics PONV-04-Peds: PONV Prophylaxis, Pediatrics SUS-05-Peds: Nitrous Avoided, Induction SUS-06-Peds: Low Fresh Gas Flow, Pediatric Induction TEMP-04-Peds: Intraoperative Normothermia, Pediatrics TRAN-03-Peds: Transfusion Vigilance, Pediatrics TRAN-04-Peds: Overtransfusion, Pediatrics

- MPOG has over 70 measures available on the QI measure page.
- The flowchart icon indicates a flowchart is available for that measure.
- Measures that are part of a Toolkit will have a green checkmark on the right column.
- Three measure domains are available for providers who practice in Pediatrics, Cardiac and Obstetrics.

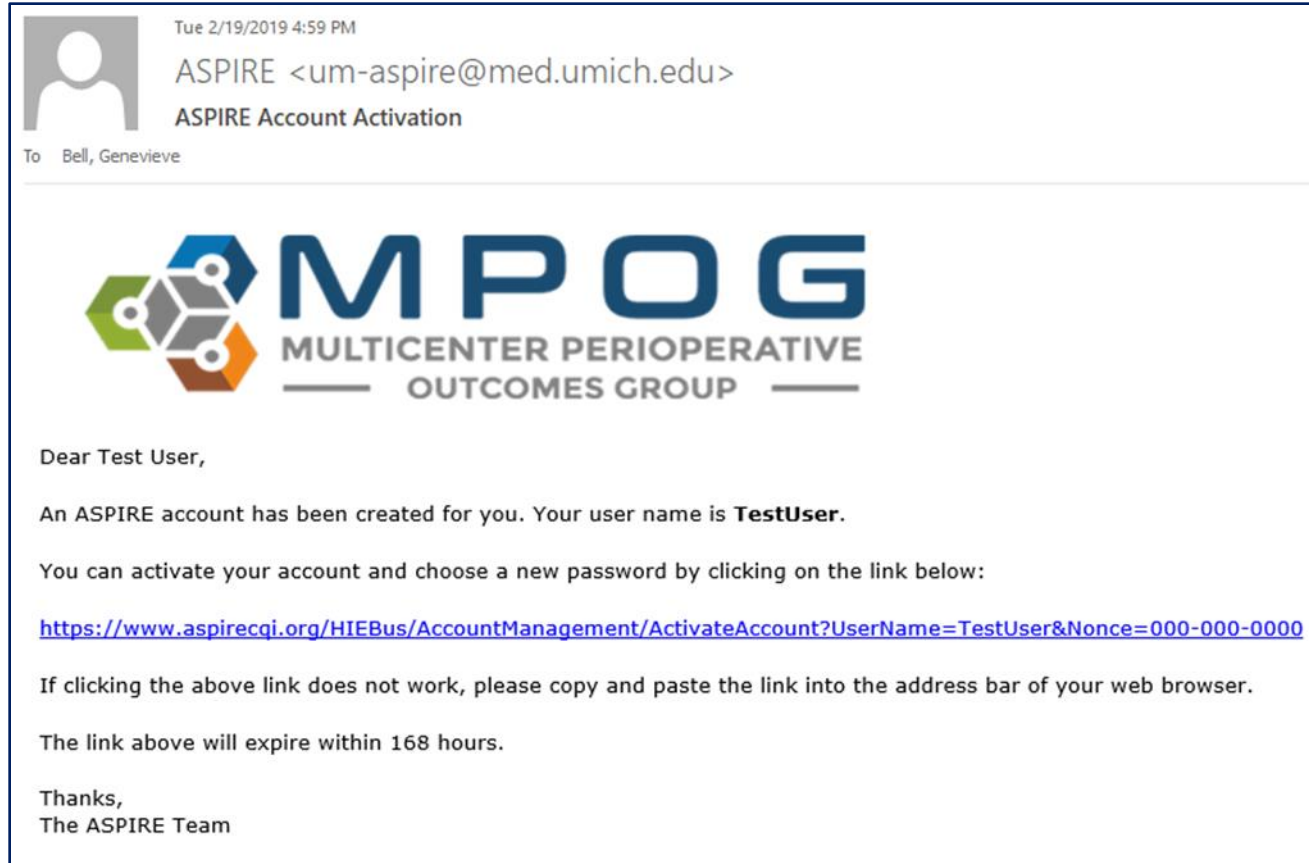
MPOG QI Dashboards: Practice Level Feedback

Individual Provider Dashboard Access

Go to MPOG Website: <https://mpog.org/> and click on blue Dashboard Login button:



ASPIRE Provider Access



- Click on link to activate account:
- Users have one week to active account
- Create password & select 3 security questions.



Reporting Dashboard



Home Dashboards Measure Summary Provider List Case List

Entity

Time Period
Past 12 Months

Additional Filters

- + Location
- + Patient Age
- + Patient Gender
- + Patient Race/Ethnicity
- + Surgical Service

The following measures have been selected as focus areas for your institution.

Past 12 Months

77,973
Cases

538
Providers



BP-01
Low MAP Prevention < 55



BP-02
Avoiding Monitoring Gaps



CARD-02
Myocardial Infarction

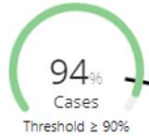
Outcome



GLU-01
High Glucose Treated, Intraop



GLU-02
Low Glucose Treated, Intraop



MED-01
Avoiding Medication Overdose

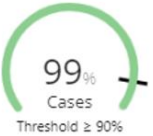
Outcome



NMB-01
Train of Four Taken



NMB-02
Reversal Administered



PONV-01
PONV prophylaxis



PUL-01
Protective Tidal Volume, 10 mL/kg PBW



TEMP-01
Thermoregulation Vigilance - Active Warming



TEMP-02
Thermoregulation Monitoring - Core Temperature



TEMP-03
Perioperative Hypothermia

VBR Outcome



TOC-02
Postoperative Transfer of Care to PACU

VBR



TRAN-01
Transfusion Management Vigilance

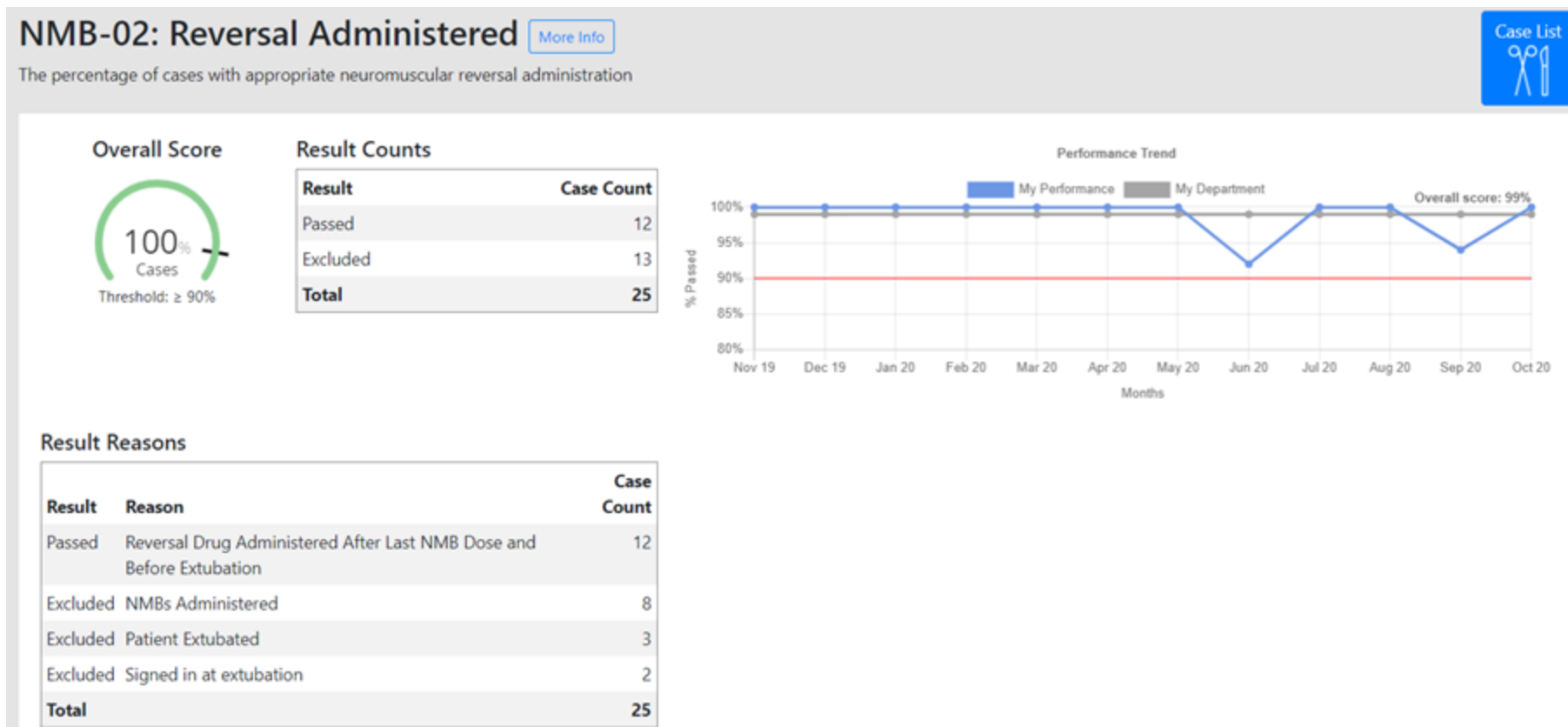


TRAN-02
Overtransfusion

Outcome



Clicking on the measure will result in the specific measure overview, which will include overall performance, case counts, trend graph, and a detailed breakdown of primary cause.



By selecting the ‘Case Lists’ tab, all failed, passed, and excluded will appear for the specific measure.

NMB-02: Reversal Administered Cases

More Info

Summary

The percentage of cases with appropriate neuromuscular reversal administration

Show 10 entries

☒ Passed ☒ Flagged ☐ Excluded

Search:

View Case	Measure Result	Date of Service	Operating Room	Surgical Service	Procedure	Primary Anesthesia CPT	Measure Result Reason	Attributable Attendings	Attributable CRNA/Resident	MPOG Case ID
<div>View Case</div>	Passed	10/28/2020 3:00	U-OR 03	Otolaryngology	(Actual)NECK EXPLORATION	00100	Reversal Drug Administered After Last NMB Dose and Before Extubation: Yes			e43584db-e91c-eb11-910e-005056b4993c

Attribute	Value	Result
Reversal Drug Administered After Last NMB Dose and Before Extubation	Yes	Passed
At least 1 passing criteria met	Yes	Passed
Is Valid Case	Yes	Included
ASA Class	ASA Class 3	Included
Cardiac Surgery	No	Included
NMBs Administered	Yes	Included
Patient Extubated	Yes	Included
Only Defasciculating Doses	No	Included
Signed in at extubation	Yes	Included
Appropriate Time Passed	No	Info
High Acceleromyography Value Taken After Last NMB Dose and Before Extubation	No	Info
Patient Age (Years)	76	Info
Is Non-Operative Case	No	Included

PONV-02: PONV prophylaxis, Pediatrics Cases More Info

The percentage of pediatric cases with appropriate antiemetic administration for postoperative nausea and

Case Report Download

Show 10 entries

View Case	Measure Result	Date of Service	Operating Room	Surgical Service	Procedure
View Case	Passed		M-OR 14	Plastics	MIDLINE ORIF MANDIBLE, POSSIBLE ARCH BAR APPLICATION
View Case	Passed		M-OR 13	Otolaryngology	RIGHT COCHLEAR IMPLANT
View Case	Passed		M-OR 12	Otolaryngology	LEFT COCHLEAR IMPLANT
View Case	Flagged				
View Case	Passed		M-OR 14	Plastics	LEFT NEVUS, LESION, OR HEMANGIOMA EXCISION
View Case	Passed		M-OR 13	Otolaryngology	RIGHT TYMPANOPLASTY AND MASTOIDECTOMY

View Case	Measure Result	Date of Service	Operating Room	Surgical Service	Procedure
View Case	Flagged		M-MRI-BAY2	Surgical Service - Not specified	MR HEAD GENERAL ANESTHESIA
Attribute					
		Value		Result	
Anti-Emetic Class Count		1		Failed	
Is Valid Case		Yes		Included	
Transported to ICU		No		Included	
Patient Age		6		Included	
Labor Epidural		No		Included	
Liver Transplant		No		Included	
Lung Transplant		No		Included	
Labor Room		No		Included	
Medical Exception		No		Included	
Anesthesia CPT		01922		Included	
Received General Anesthetic After Induction		Yes		Included	
Risk Factor Count		2		Included	
Responsible Provider		Yes		Included	
Patient Transported to PACU		Yes		Info	
PONV Risk Factor: Patient Age		Triggered		Info	
Anti-Emetic Classes		Other: PROPOFOL		Info	
Is Non-Operative Case		No		Included	
PONV Risk Factor: History of PONV		Not Triggered [Missing]		Info	
PONV Risk Factor: Strabismus		Not Triggered [No]		Info	
PONV Risk Factor: Surgery Duration		Triggered [53]		Info	

Performance Feedback Methods: Institutional Benchmarking



Or access dashboard via feedback E-mail



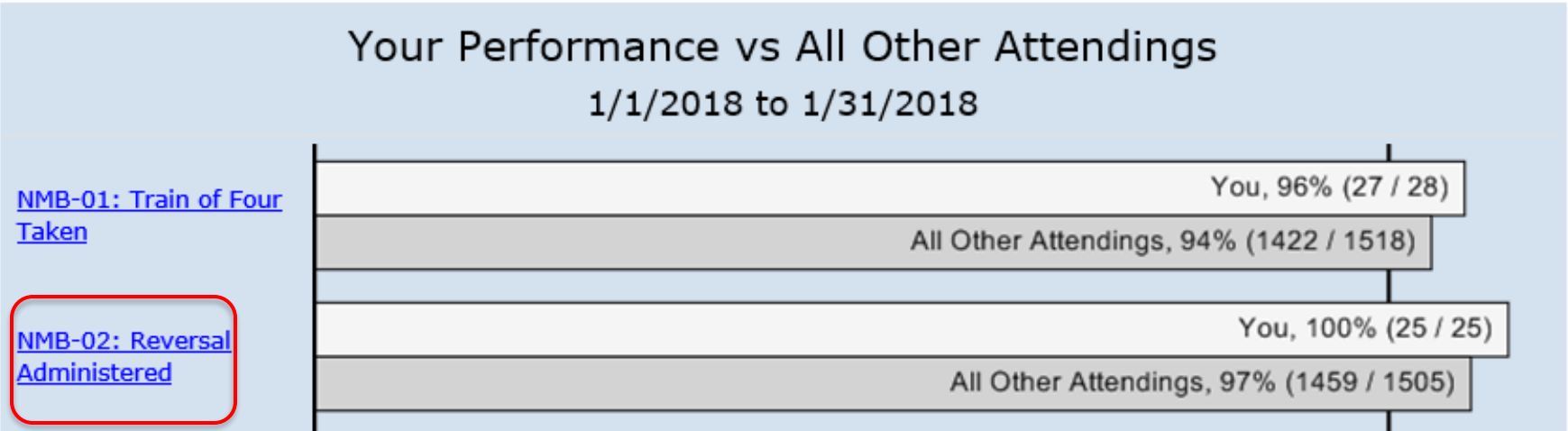
Claim MOCA® Credit

Hello John,

Below is your new MPOG Quality performance report. For a case-by-case breakdown of each measure's result, click on the graph's label and you will be taken to our reporting website (login required).

If you have any questions, please read our [FAQ](#) or send them to QIChampion@example.org. Thank you for your participation in MPOG Quality.

Sincerely,
The MPOG Team



Clicking on the measure title brings the provider to that measure in the individual dashboard



Individual Performance Feedback Email

- Automated emails from central MPOG server
- Sent every month to ~3500 providers nationwide
- “Fresh” – last month’s patients
- Easy access to case review
- *MOCA credit available

*USA Only



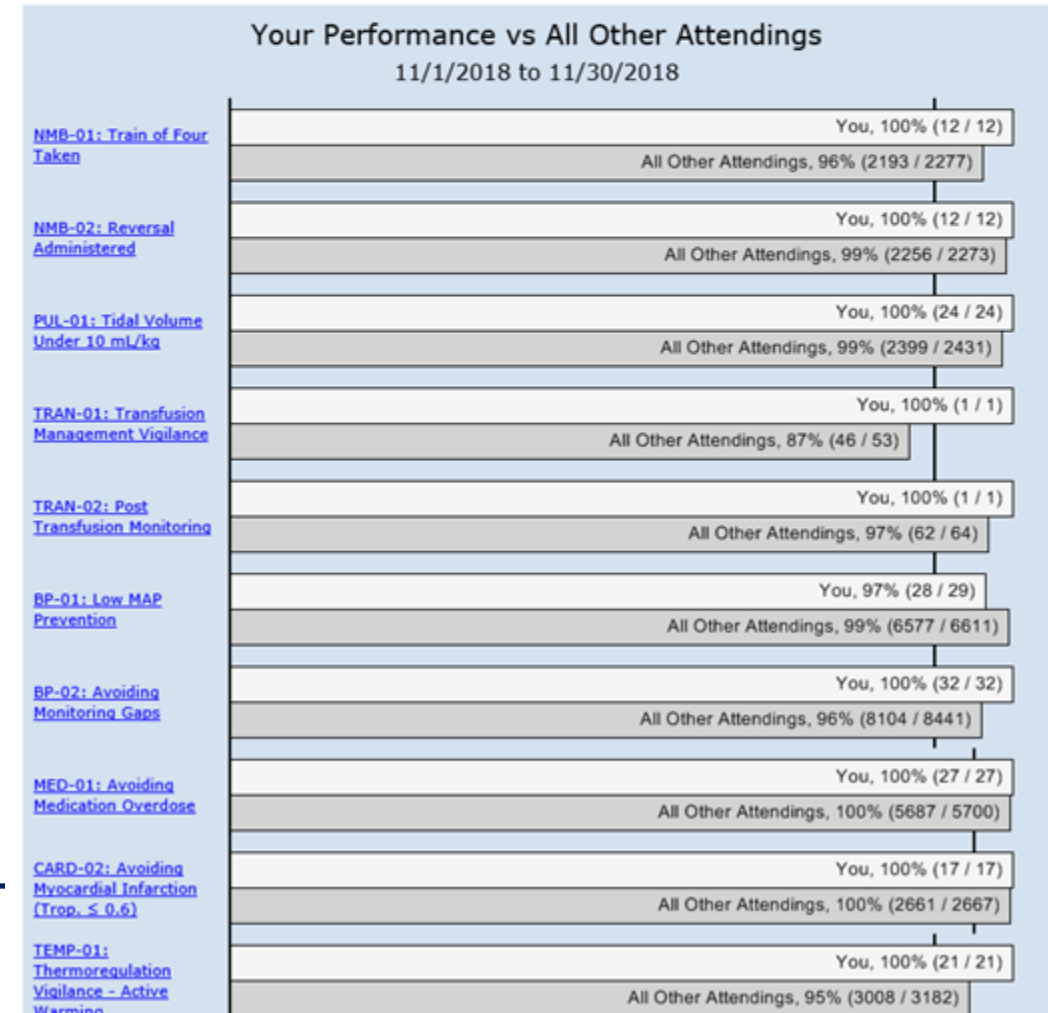
Claim MOCA® Credit

Hello Nirav,

Below is your new MPOG Quality performance report. For a case-by-case breakdown of each measure's result, click on the graph's label and you will be taken to our reporting website (login required).

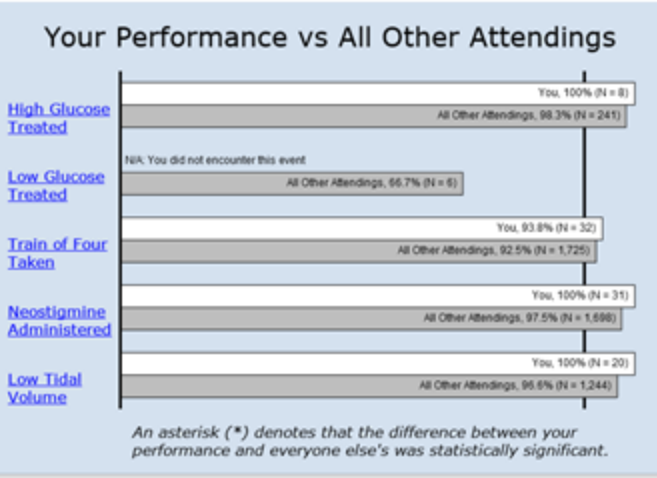
If you have any questions, please read our [FAQ](#) or send them to meridith@med.umich.edu. Thank you for your participation in MPOG Quality.

Sincerely,
The MPOG Team



Our goal is to easily enable clinicians to understand why certain cases did not pass a measure.

1



2

GLU-11: Hyperglycemia Treatment, Periop (>180)
Percentage of adult patients with perioperative blood glucose >180 mg/dL with documentation

Case Report Download

Show 10 entries

View Case	Measure Result	Date of Service	Operating Room	Surgical Service	Procedure
View Case	Flagged			Oral / Maxillofacial	(Actual)Radial Free Flap (Unknown); FF
View Case	Flagged			Radiology - Unspecified	(Actual)G tube placement
View Case	Flagged			Medical - gastroenterology	(Actual)EGD WITH COLONOSCOPY W,
View Case	Flagged			Otolaryngology	(Actual)OPEN SKULL BASE WITHOUT ! placement (infrastructure dental rehat left fibula free flap, split thickness skin

3

Measure Details - GLU11

Glucose Treated	Glucose 183 mg/dL (10.16 mmol/L) at 10:23, not treated Failed within 90 minutes
-----------------	---------------------------------------------------------------------------------

Case Report

BP-03: Low Map Prevention < 65 Cases

[More Info](#)

Percentage of cases where sustained intraoperative hypotension (MAP < 65 mmHg for 15 mins or more) was avoided

Summary



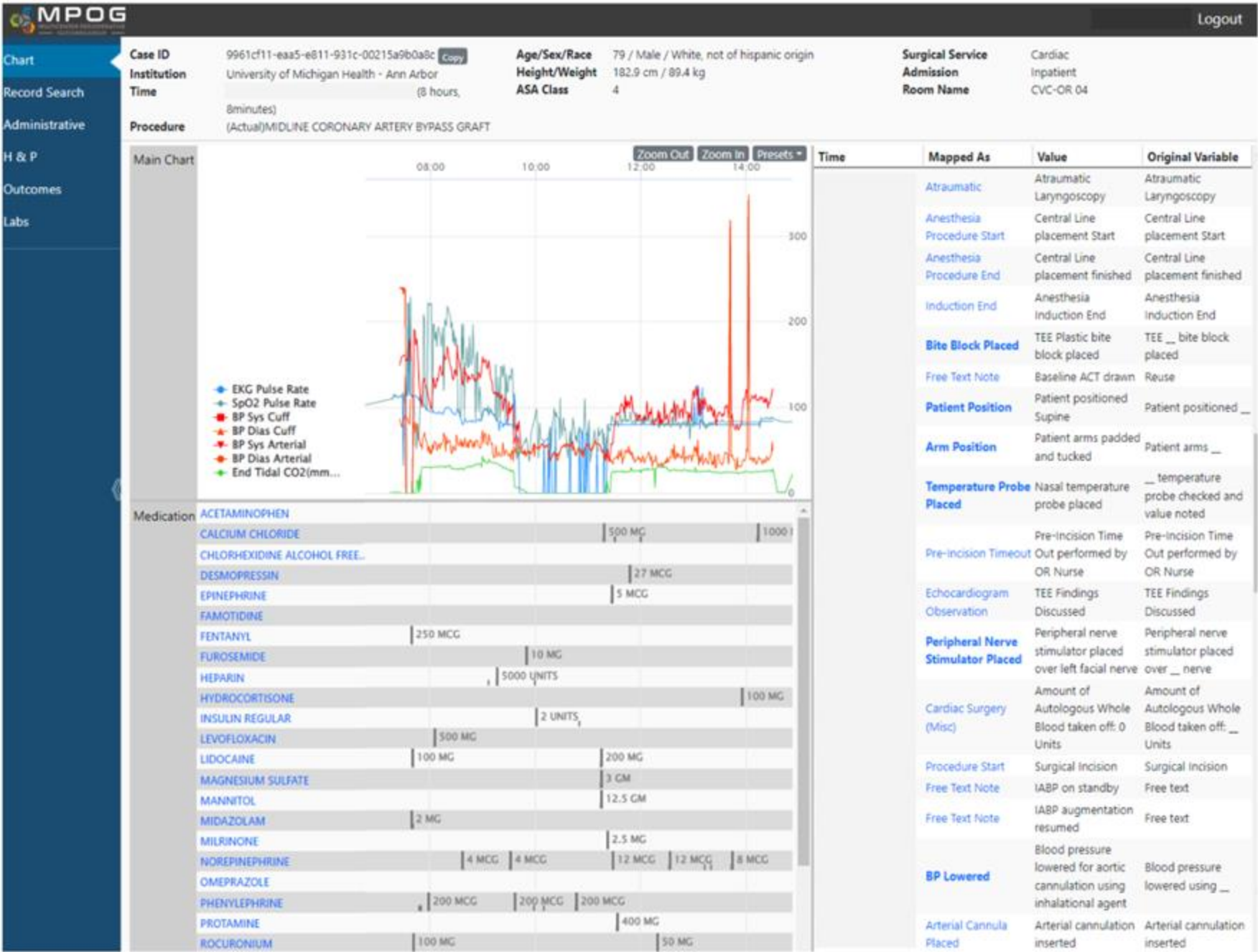
Show 10 entries

☒ Passed ☒ Flagged ☒ Excluded

Search:

View Case	Measure Result	Date of Service	Operating Room	Surgical Service	Procedure	Primary Anesthesia CPT	Measure Result Reason	Attributable Attendings	Attributable CRNA/Resident	MPOG Case ID
View Case	Passed		U-OR 02	Otolaryngology	(Actual)MIDLINE CLOSURE/RECONSTRUCTION OF MOH'S DEFECT	00300	Minutes below 65: 0			2c1cb970-a2e1-ec11-9128-005056b4993c
View Case	Flagged		U-OR 01	General	(Actual)THYROIDECTOMY	00320	Minutes below 65: 18			d31cb970-a2e1-ec11-9128-005056b4993c
View Case	Passed		U-OR 10	Oral / Maxillofacial	(Actual)DENTAL - OBTURATOR ADJUSTMENT BILATERAL WLE W NECK DISSECTIO	00320	Minutes below 65: 0			f11cb970-a2e1-ec11-9128-005056b4993c
View Case	Passed		U-OR 02	Otolaryngology	(Actual)MIDLINE CLOSURE/RECONSTRUCTION OF MOH'S DEFECT	00300	Minutes below 65: 0			221cb970-a2e1-ec11-9128-005056b4993c

Ability to review individual cases and measure performance through MPOG view of anesthetic record

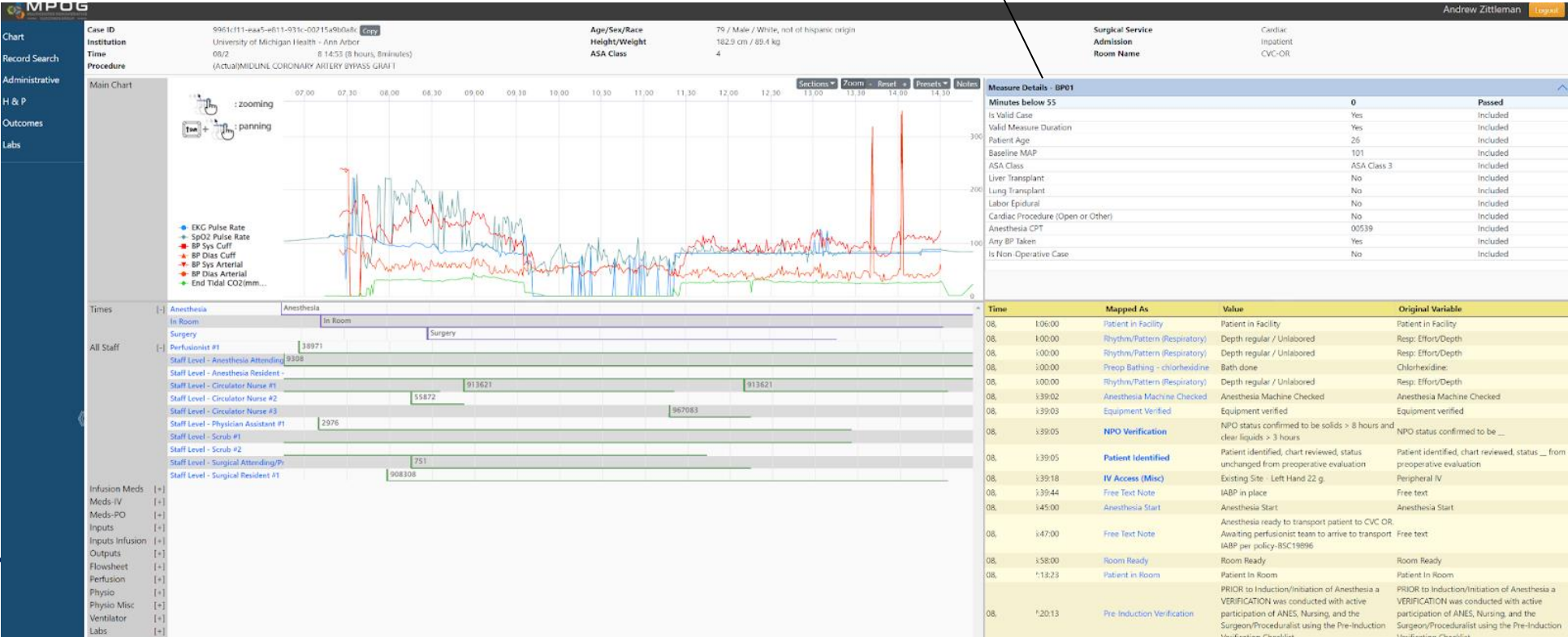


Web Case Viewer

Measure Details

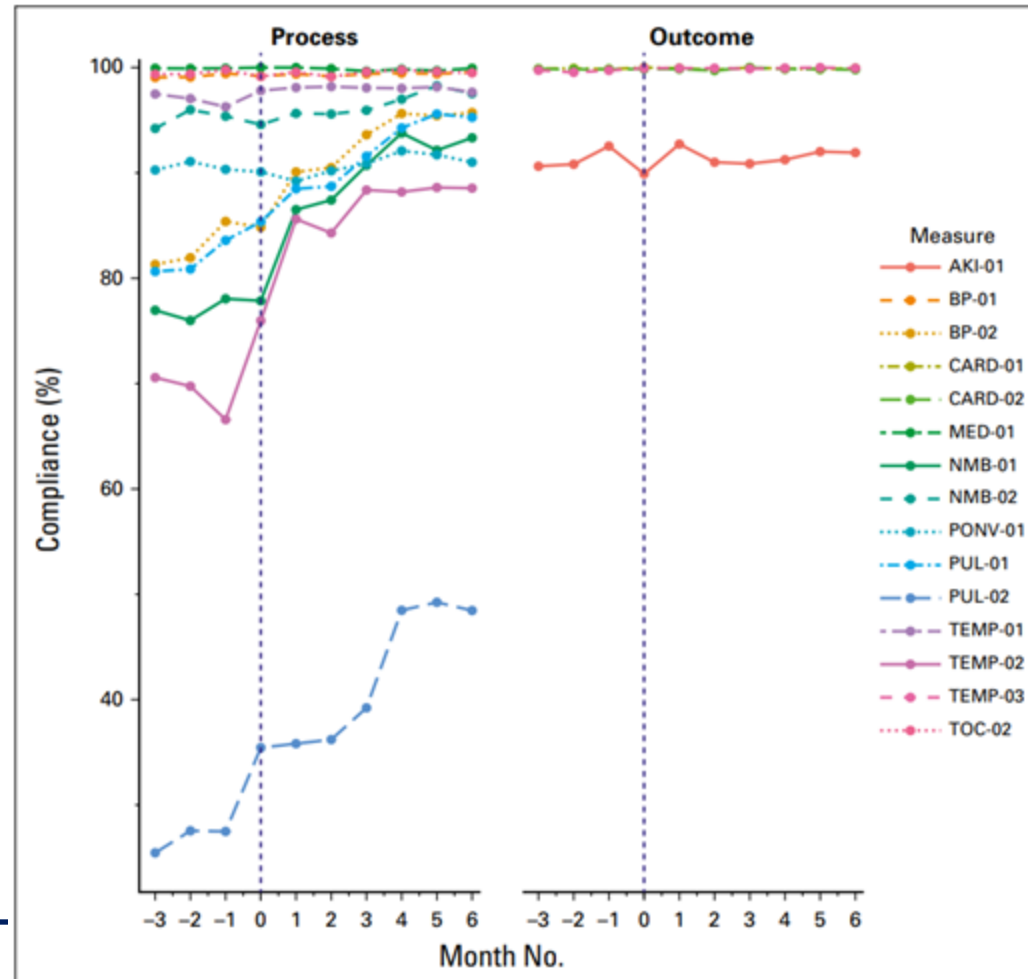
The concepts used in the measure are brought to the top above the notes section for easy review

Measure Details - BP01			
Minutes below 55	0	Passed	
Is Valid Case	Yes	Included	
Valid Measure Duration	Yes	Included	
Patient Age	26	Included	
Baseline MAP	101	Included	
ASA Class	ASA Class 3	Included	
Liver Transplant	No	Included	
Lung Transplant	No	Included	
Labor Epidural	No	Included	
Cardiac Procedure (Open or Other)	No	Included	
Anesthesia CPT	00539	Included	
Any BP Taken	Yes	Included	
Is Non-Operative Case	No	Included	



Improved Compliance With Anesthesia Quality Measures After Implementation of Automated Monthly Feedback

Patrick J. McCormick, MD¹; Cindy Yeoh, MD¹; Raquel M. Vicario-Feliciano²; Kaitlin Ervin³; Kay See Tan, PhD¹; Gloria Yang¹; Meghana Mehta, MS¹; and Luis Tollinche, MD¹





Thank you