



ASPIRE Pediatric Subcommittee Meeting
December 17, 2019



Agenda

- Introductions & Background of MPOG/ASPIRE
- Current Status of Pediatric Data/Measures
- 2020 Plans
 - Measure Goals
 - Call for Measure Survey Results
- Subcommittee Membership and Meeting Schedule



Introductions

- **ASPIRE Quality Team**

- **Nirav Shah, MD** – MPOG Director of Quality
- **Kate Buehler, MSN** – Clinical Program Manager
- **Meridith Bailey, MSN** – QI Coordinator
- **Brooke Szymanski, MSN** – QI Coordinator

- Pediatric Representatives joining us from around the US and Netherlands!

- Roll Call

Arkansas Children's
Beaumont Royal Oak*
Bronson Healthcare Group*
Children's Hospital of Philadelphia
Cincinnati Children's
Cleveland Clinic*
Colorado Children's
Duke University*
Erasmus MC- Netherlands
Henry Ford-Detroit*
Mass General Hospital*
Memorial Sloan Kettering*
NYU Langone*
OHSU*
Oklahoma University*
Penn State Children's
Stanford (Lucile Packard Children's)*
UCLA*
UCSF*
University of Chicago
University of Maryland
University of Michigan*
University of Virginia*
Seattle Children's Hospital
University of Wisconsin
Weill-Cornell*
Yale - New Haven Children's*

What is MPOG?

- Formed in 2008
- Academic and community hospital consortium. Includes over 40 hospitals across the country (and 2 in the Netherlands)
- Aggregates data
- Dual mission of research and quality improvement



Our Mission

We are a group of passionate individuals from more than 50 hospitals across 18 states and 2 countries, working together to improve care for patients undergoing surgery. Our members include clinicians, quality improvement experts, software developers, statisticians, researchers, and administrators. Over the last decade, we have built a comprehensive perioperative patient registry based on electronic healthcare data to improve quality of care, conduct research, educate caregivers and guide healthcare administration.

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



12

Million
Cases



170

Million
Medication
Records



24

Billion
Physiologic
Observations



What we have achieved so far

- 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

49 institutions, 5 EHR vendors

~12 million cases extracted, mapped, de-identified, and available for QI and research

~75 million medication doses

24 billion physiologic observations

Reporting Dashboard

- Overview
- Neuromuscular Monitoring
 - NMB-01
 - NMB-02
- Glucose Management
 - GLU-01
 - GLU-02
- Transfusion Management
 - TRAN-01
 - TRAN-02
- Blood Pressure
 - BP-01
 - BP-02
- Pulmonary
 - PUL-01
 - PUL-02
- Medication Overdose
 - MED-01
- Fluids
 - FLUID-01-NC
 - FLUID-01-C
- Normothermia
 - TEMP-01
 - TEMP-02
 - TEMP-03
- Avoiding MI
 - CARD-01
- AKI
 - AKI-01
- Transfer of Care
 - TOC-02
- PONV
 - PONV-01

Neuromuscular Monitoring

NMB-01
✓ 98% Target 90%

NMB-02
✓ 99% Target 90%

Glucose Management

GLU-01
✓ 97% Target 90%

GLU-02
✓ 93% Target 90%

Transfusion Management

TRAN-01
✗ 82% Target 90%

TRAN-02
✓ 91% Target 90%

Blood Pressure

BP-01
✓ 99% Target 90%

BP-02
✓ 93% Target 90%

Pulmonary

PUL-01
✓ 98% Target 90%

PUL-02
✗ 78% Target 90%

Fluids

FLUID-01-NC
i 99%

FLUID-01-C
i 84%

Medication Overdose

MED-01
✓ 100% Target 95%

Normothermia

TEMP-01
✗ 90% Target 90%

TEMP-02
✗ 86% Target 90%

TEMP-03
✓ 99% Target 90%

Avoiding MI

CARD-01
✓ 100% Target 95%

AKI

AKI-01
✓ 94% Target 90%

Transfer of Care

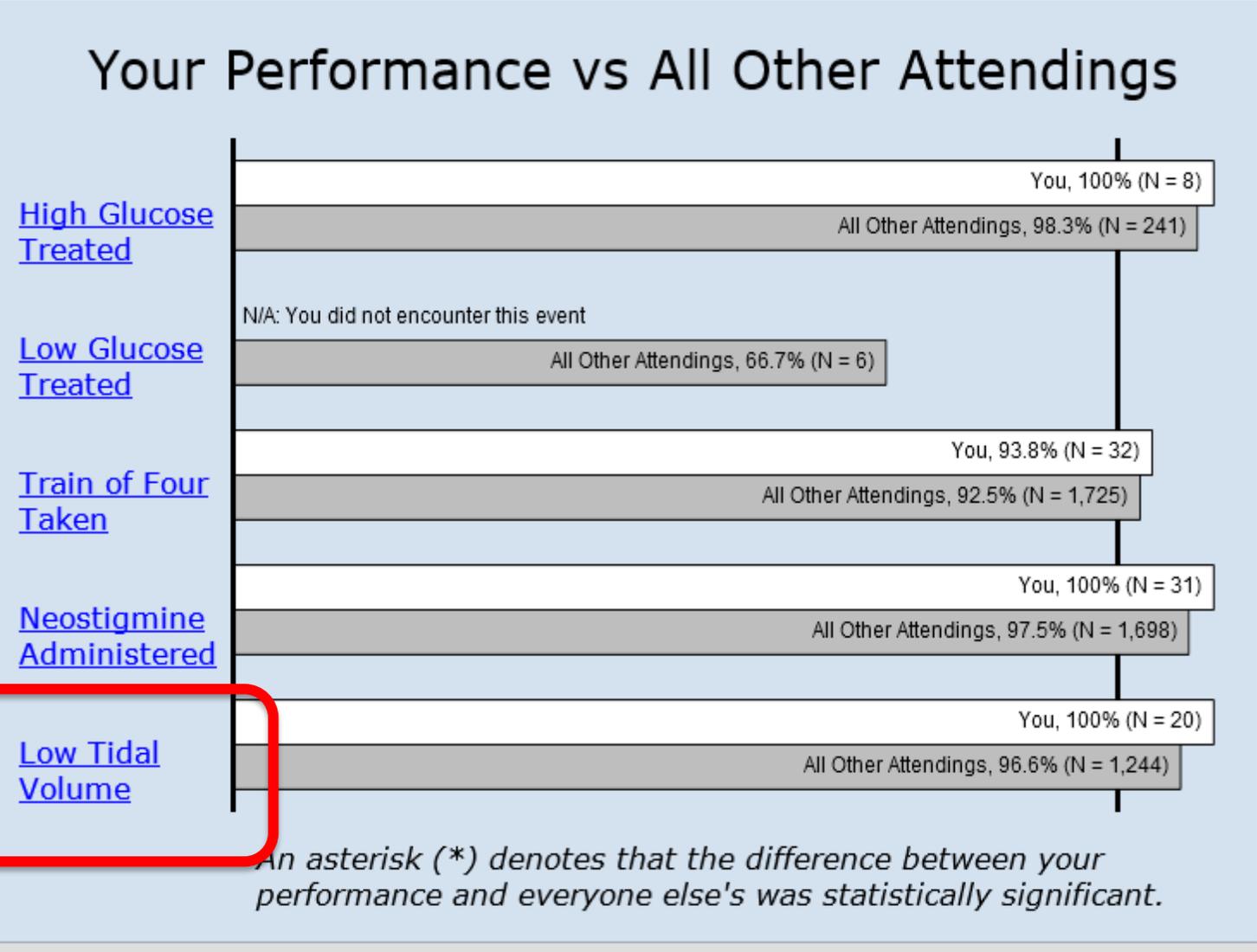
TOC-02
✓ 96% Target 90%

PONV

PONV-01
✗ 82% Target 90%



Individual Performance E-mail



ASPIRE Pediatrics – Current State

- 8% of total cases in MPOG Registry
- 1 Pediatric Specific Measure (PONV 02)
- 0 Sites contributing NSQIP-peds or CCAS-STS registry data
- SPA and Wake up Safe Discussions

Date Range	Case Count
Total	1,430,738
1/2014- 9/2019 (recent 5 years)	907,077
2018 – 2019 (last year)	118,617

Top 10 Sites Contributing Pediatric Data

Institution	Age < 18
Vanderbilt University Medical Center	250,430
University of Michigan Health System	218,740
University of Oklahoma Health Sciences Center	105,648
Washington University School of Medicine	87,700
University Medical Center - Utrecht	68,266
Oregon Health and Science University	67,276
Cleveland Clinic	52,834
NYU Langone Medical Center	48,854
University of Vermont - Fletcher Allen Health Care	40,254

Pediatric Subcommittee (2017): Where we left off...

- Set pediatric measure exclusion to patients < 12yo. Still relevant? Interest in more specific age exclusion?
 - **Neonate:** < 1 mo , **Infant:** 1 mo – 1y
 - **Toddler:** 1-3y , **Child:** 4-7y
 - **Adolescent:** 8-11y , **Pre-teen:** 12-17y
- Additional exclusions for measures added after 2017?

**Measures Published
after 2017**

Measure	Description	Pediatric Exclusion
AKI 01	Postop AKI	Not discussed
BP-01	MAP <55	Exclude < 12yo
BP-02	Monitoring Gap	None
NMB-01	TOF checked	None
NMB-02	Reversal administered	None
GLU-01	Hyperglycemia	Exclude < 12yo
GLU-02	Hypoglycemia	None
PUL-01	Tidal Volume < 10	Exclude <12yo
FLUID-01	Colloids	None
TRAN 01	Hgb/Hct checked	Exclude CHD < 21yo
TRAN 02	Overtransfusion	Exclude < 2yo
TEMP 01	Active Warming	None
TEMP 02	Core Temp Monitoring	None
CARD 01	Postop Troponin I > 1.0	None
MED 01	Overdose (opioid/benzo)	Not discussed
PUL 02	TV < 8mL/kg	Exclude <12yo
PUL 03	PEEP utilization	Exclude <12yo
SUS 01	FGF > 3L/min	None
TOC 01-03	Transfer of Care	None
PONV 02	PONV Process	None
PONV 03	PONV Outcomes	None
CARD 02-03	Troponin I >0.6	None
TEMP 03	Hypothermia postop	None

ASPIRE Pediatrics - 2020 Tentative Plans

- Extending Glucose measures to preop and PACU. Measure preoperative glucose checking.
- Peds hypotension measures (informational)
- Prioritize 2-3 additional measures that are peds focused
 - #1: % of cases with sustained postoperative hypothermia (4.08/5)
 - #2: % of cases where the patient is re-intubated in PACU (4.04/5)
 - #3: % of cases where non-opioid adjunct was used (3.79/5)
 - #4: Other Medication Dosing (3.75/5)

Glucose Management

- Extending hypoglycemia measure (GLU-02) to preop and PACU
 - Glucose < 60 mg/dL treated or re-checked within 90 minutes
- Preoperative glucose check on diabetes patients or high-risk cases
- Treatment of Glucose > 200 mg/dL: limited evidence in non-diabetic patients < 12yo
 - Include Diabetic patients <12yo?



Blood Pressure Informational Measure

- Informational measure displaying the lowest, highest and average MAP values per age group
 - < 1 mo
 - 1 mo – 1 yo
 - 1-3 yo
 - 4-7 yo
 - 8-11 yo
 - 12-17 yo
- Measure Time Period
 - Intraoperative
- Inclusions:
 - All patients requiring general anesthesia or monitored anesthesia care (MAC)
- Exclusions:
 - Patients > 18 years old
 - ASA 5 and 6 cases
 - Organ Harvest, liver transplant, lung transplant and Cardiac surgeries

Call for Measure Survey Results

- 24 Providers completed the survey – Thank You!
- Highest rated measures (no overwhelming consensus)
 - #1: % of cases with sustained postoperative hypothermia (75% of providers interested or very interested)**
 - #2: % of cases where the patient is re-intubated in PACU (75%)**
 - #3: % of cases with ≥ 2 intubation attempts (65%)
 - #4: % of cases where non-opioid adjunct was used (65%)
 - #5: Other Medication Dosing (80%)**
- FYI: MPOG data capture - measure limitations
 - 4 Hours before Anesthesia Start → 6 hours after Anesthesia End
 - What can't we do?

Temperature Management

- **Proposal 1:** % of cases where patient's temperature was < 36 C during immediate postoperative period
 - Time bounds: patient out of OR, patient in recovery room, PACU discharge, 6 hours after Anesthesia End
 - Inclusion criteria: All patients regardless of postop disposition?
- **Proposal 2:** Informational Measure: temperature < 36 C at specific times
 - Patient In Room, Induction End, Procedure Start, Procedure End, PACU Arrival

	No Interest	Mild Interest	Very Interested
% of cases with hypothermia at procedure start	21%	16%	63%
% of cases with intraoperative hyperthermia	30%	25%	45%
% of cases with sustained postoperative hypothermia	8%	17%	75%

Airway Management

- Reintubation rates in PACU

- **Proposal:** % of cases where the patient is intubated between patient out of room and PACU discharge.
 - Inclusions: All patients (general, MAC, Sedation)
 - Exclusions: ICU direct transports

	No Interest	Mild Interest	Very Interested
% of cases where the patient is re-intubated in PACU	15%	10%	75%
% of cases with ≥ 2 intubation attempts	15%	20%	65%

Medication Dosing

- Other medication dosing of interest?

	No Interest	Mild Interest	Very Interested
% of cases where appropriate dosing of Sugammadex or Neostigmine is given to patients who receive a paralytic intraoperatively	25%	30%	45%
Other Medication Dosing	20%	10%	70%

Pain Management

- **Proposal 1: % of cases with a postoperative pain score greater than _____**
 - Inverse Measure. Threshold?
 - Pain scales used; variation in documentation
- **Proposal 2: % of cases where non-opioid adjunct was used**
 - Include or exclude patients with regional blocks?
 - Case Types

	No Interest	Mild Interest	Very Interested
% of cases where non-opioid adjunct was used	8%	29%	63%
% of cases where opioid was not used	30%	20%	50%
% of cases where opioids were given in PACU	20%	30%	50%
% of cases with a postoperative pain score greater than _____	8%	25%	67%
Average opioid administration (using morphine equivalents) by case type	5%	45%	50%

ASPIRE Opioid Dashboard

- Add Tonsillectomy/Adenoidectomy and Spine categories for patients < 18yo
- Morphine equivalents in the OR vs. PACU

CARDIAC

Average administration: Based on a 6.7 hour case and 70kg patient (mg morphine IV)

76 Average (all sites) 77

SPINE

Average administration: Based on a 3.3 hour case and 70kg patient (mg morphine IV)

15 Average (all sites) 20

UPPER ABDOMEN

Average administration: Based on a 3.1 hour case and 70kg patient (mg morphine IV)

21 Average (all sites) 22

LOWER ABDOMEN

Average administration: Based on a 2.7 hour case and 70kg patient (mg morphine IV)

18 Average (all sites) 20

HYSTERECTOMY

Average administration: Based on a 3.7 hour case and 70kg patient (mg morphine IV)

23 Average (all sites) 23

KNEE/POPLITEAL

Average administration: Based on a 2.5 hour case and 70kg patient (mg morphine IV)

7 Average (all sites) 10

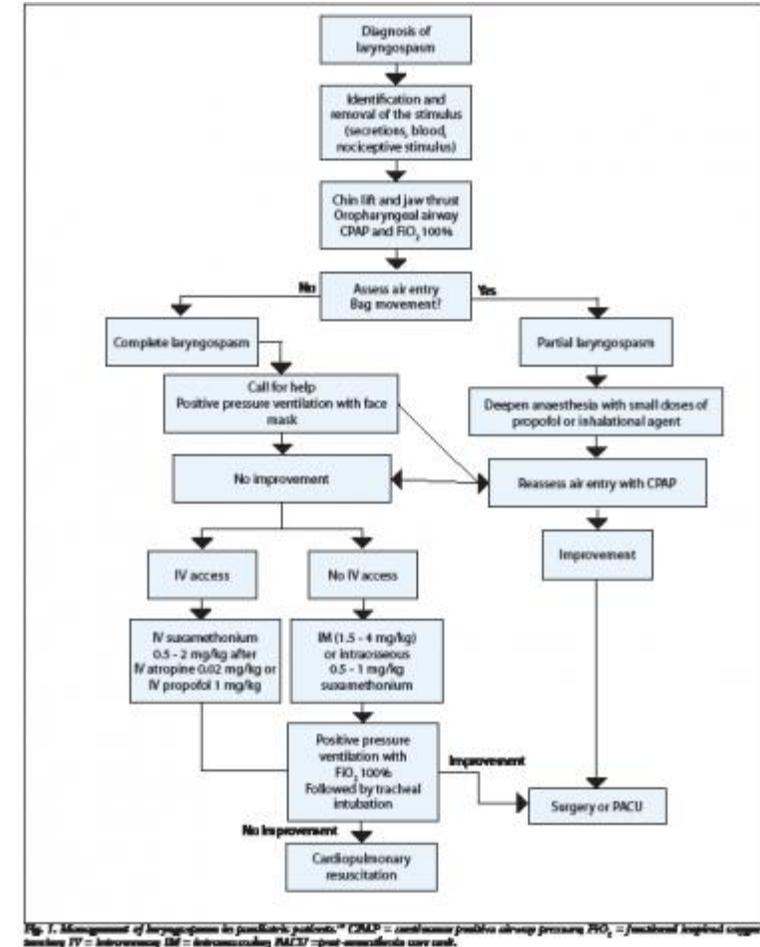
HIP

Average administration: Based on a 2.5 hour case and 70kg patient (mg morphine IV)

8 Average (all sites) 12

Other Suggestions – What are we missing?

- **Fluid Management (3.75/5)**
- **Antibiotic Stewardship (3.67/5)**
- **% of cases with hypoxemia (3.63/5)**
- **Transfusion Management in patients < 2yo (3.54/5)**
- % of cases with emergence delirium
- % of cases with laryngospasm
- % of cases where Succinylcholine was administered in PACU
- % of cases using FiO₂ less than 30% with patients SpO₂ > 92%
- % of cases where the patient was NPO liquids for < 2 hours without adverse outcomes



Recommendation

- Build 2-3 peds specific measure in 2020
 - Temperature management: postoperative hypothermia
 - Intraoperative Hypotension – informational measures
 - PACU re-intubation (if possible)
 - Add tonsillectomy and spine to opioid equivalency dashboard
- More discussion
 - Pain management
 - Glucose management
 - Appropriate medication dosing – what medications?
 - Other suggestions – need more consensus

Pediatric Subcommittee Membership

- Open to all pediatric anesthesiologists
 - Do not have to practice at an active MPOG institution
- Basecamp forum: best format for communication between members?
- How often should this group meet?
 - Need help with measure build questions
 - Approval Process
- How can we work with SPA (Wake Up Safe) or other groups
- 2020 Existing Meetings
 - Quality Committee Meetings (Webex)
 - February 24th, April 27th, June 22nd, August 24th, October 26th
 - MPOG Collaborative Meetings (In-person)
 - March 27th, Schoolcraft College, Livonia, MI
 - July 17th, Henry Center East Lansing, MI
 - October 2nd, ASA-Washington DC

2020 Pediatric
Subcommittee
Meetings

- June 2020
- ASA 2020
- December 2020

THANK YOU!

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ASPIRE Measures

- **AKI 01 (Excludes Baseline Cr \leq 0.2):** Percentage of cases that baseline creatinine increased more than 1.5 times within 7 postoperative days *or* the baseline creatinine level increased by \geq 0.3 mg/dL within 48 hours after anesthesia end.
- **MED 01:** Percentage of cases that required the use of naloxone or flumazenil for medication overdose.
- **BP 01 (Excludes < 18yo):** Percentage of cases where intraoperative hypotension (MAP < 55 mmHg) was sustained for less than 20 minutes.
- **BP 02:** Percentage of cases where gaps greater than 10 minutes in blood pressure monitoring are avoided.
- **BP 03 (Excludes < 18yo):** Percentage of cases where intraoperative hypotension (MAP < 65 mmHg) was sustained for less than 15 minutes

ASPIRE Measures

- **CARD 02:** Percentage of cases with elevated postoperative Troponin levels or documentation of perioperative myocardial injury.
- **CARD 03:** Percentage of high cardiac risk cases with significantly elevated postoperative troponin levels.
- **FLUID 01-NC:** Percentage of non-cardiac cases in which colloids were not administered intraoperatively.
- **GLU 01:** Percentage of glucose labs with perioperative glucose > 200 mg/dL with administration of insulin or glucose recheck within 90 minutes of original glucose measurement.
- **GLU 02 (Excludes <12yo):** Percentage of glucose labs with perioperative glucose < 60 with administration of dextrose containing solution or glucose recheck within 90 minutes of original glucose measurement

ASPIRE Measures

- **NMB 01:** Percentage of cases with a documented Train of Four (TOF) after last dose of non-depolarizing neuromuscular blocker.
- **NMB 02:** Administration of neostigmine, Sugammadex, and/or edrophonium before extubation for cases with nondepolarizing neuromuscular blockade
- **PONV 02 (Excludes < 3yo):** Percentage of patients aged 3 through 17 years of age, who undergo a procedure under general anesthesia in which an inhalational anesthetic is used for maintenance AND who have two or more risk factors for post-operative vomiting (POV), who receive combination therapy consisting of at least two prophylactic pharmacologic anti-emetic agents of different classes preoperatively and/or intraoperatively.
- **PONV 03:** Percentage of patients, regardless of age, who undergo a procedure and have a documented nausea/emesis occurrence postoperatively OR receive a rescue antiemetic in the immediate postoperative period.

ASPIRE Measures

- **PUL 01 (Excludes <12yo):** % of cases with median tidal volumes less than 10ml/kg.
- **PUL 02 (Excludes <12yo):** % of cases with median tidal volumes less than 8ml/kg.
- **PUL 03 (Excludes <12yo):** % of cases in which Positive End Expiratory Pressure (PEEP) is used for patients undergoing mechanical ventilation during anesthesia.
- **SUS 01:** % of cases with mean fresh gas flow (FGF) equal to, or less than 3L/min, during administration of halogenated hydrocarbons and/or nitrous oxide.
- **TEMP 01:** % of cases that active warming was administered by the anesthesia provider- includes fluid warming for c-sections
- **TEMP 02:** % of cases with increased risk of hypothermia that the anesthesia provider documented core temperature.
- **TEMP 03:** % of patients, who undergo general or neuraxial anesthesia of ≥ 60 minutes for whom at least one body temperature ≥ 36 degrees Celsius was recorded within 30 minutes before or 15 minutes after anesthesia end.

ASPIRE Measures

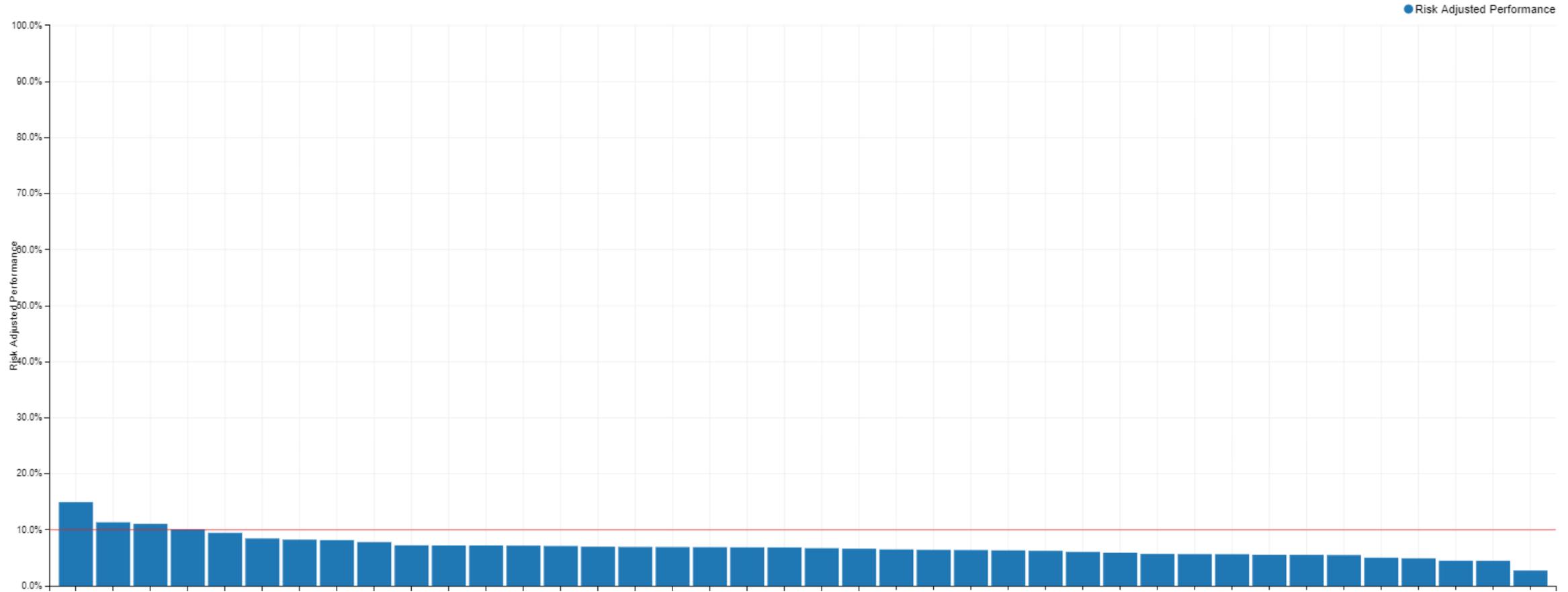
- **TOC 01:** Percentage of patients who undergo a procedure under anesthesia in which a permanent intraoperative anesthesia staff change occurred, who have a documented use of a checklist or protocol for the transfer of care from the responsible anesthesia practitioner to the next responsible anesthesia practitioner.
- **TOC 02:** Percentage of patients who are under the care of an anesthesia practitioner and are admitted to a PACU in which a post-anesthetic formal transfer of care protocol or checklist which includes the key transfer of care elements is utilized
- **TOC 03:** Percentage of patients who undergo a procedure under anesthesia and are admitted to an Intensive Care Unit (ICU) directly from the anesthetizing location, who have a documented use of a checklist or protocol for the transfer of care from the responsible anesthesia practitioner to the responsible ICU team or team member

ASPIRE Measures

- **TRAN 01:** Percentage of cases with a blood transfusion that have a hemoglobin or hematocrit value documented prior to transfusion.
- **TRAN 02:** Percentage of cases with a post transfusion hemoglobin or hematocrit value less than 10/30.
- **Transfusion Measure Pediatric Exclusions**
 - Excludes Patients < 2yo
 - Patients < 12yo undergoing cardiac surgery
 - Patients < 12yo who were either transfused PRBC or had an EBL greater than 30cc/kg

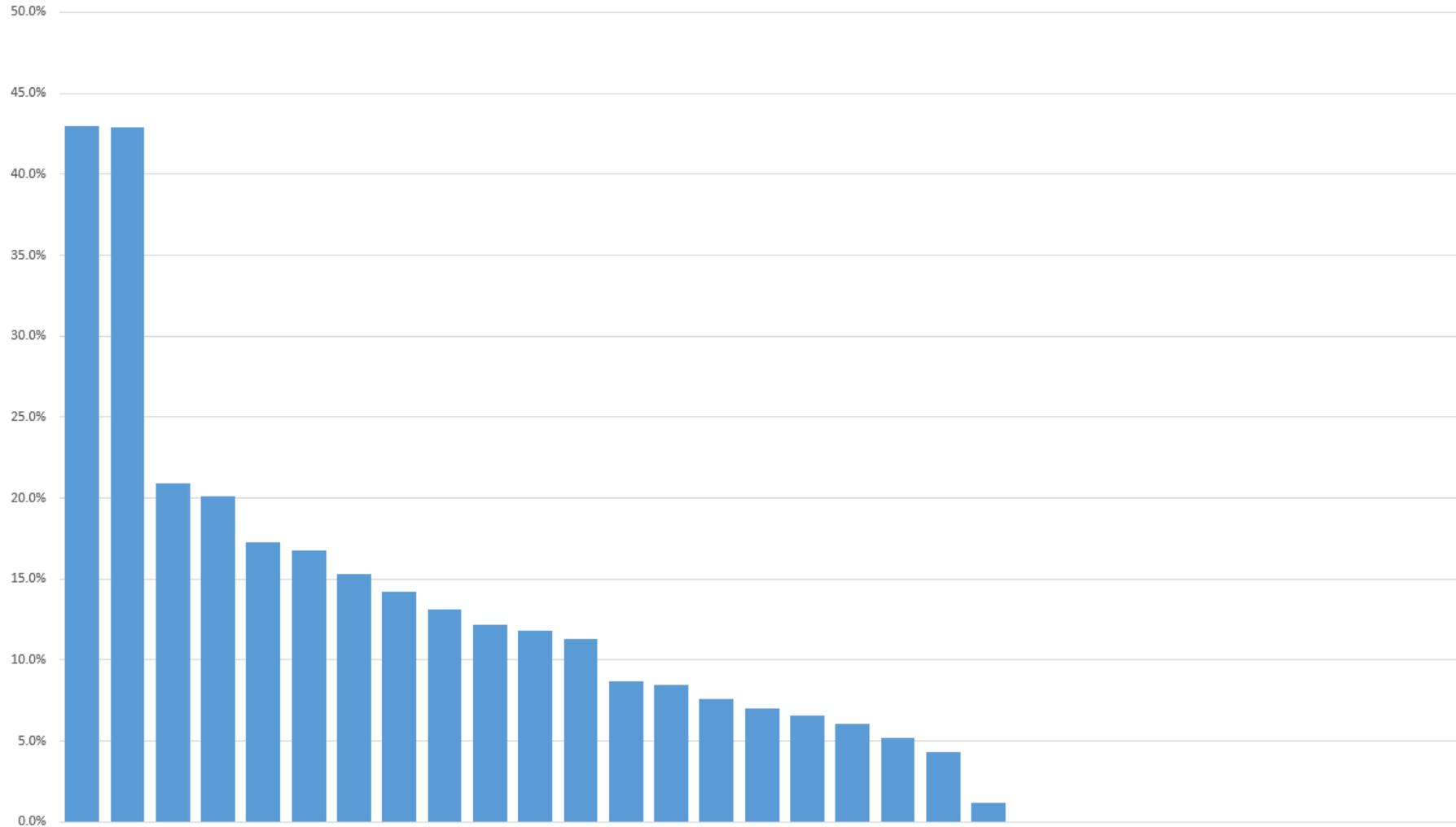
ASPIRE MEASURE PERFORMANCE VARIATION
ADULTS VS. PEDIATRICS
2019

AKI 01 Performance All Ages (risk adjusted)



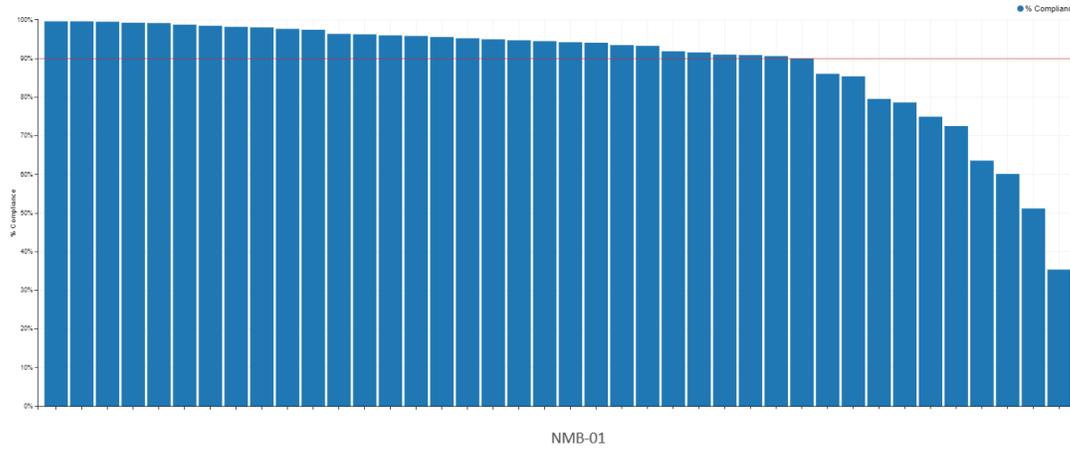
AKI 01 Performance < 12yo (risk adjusted)

AKI-01 (inverted, adjusted)



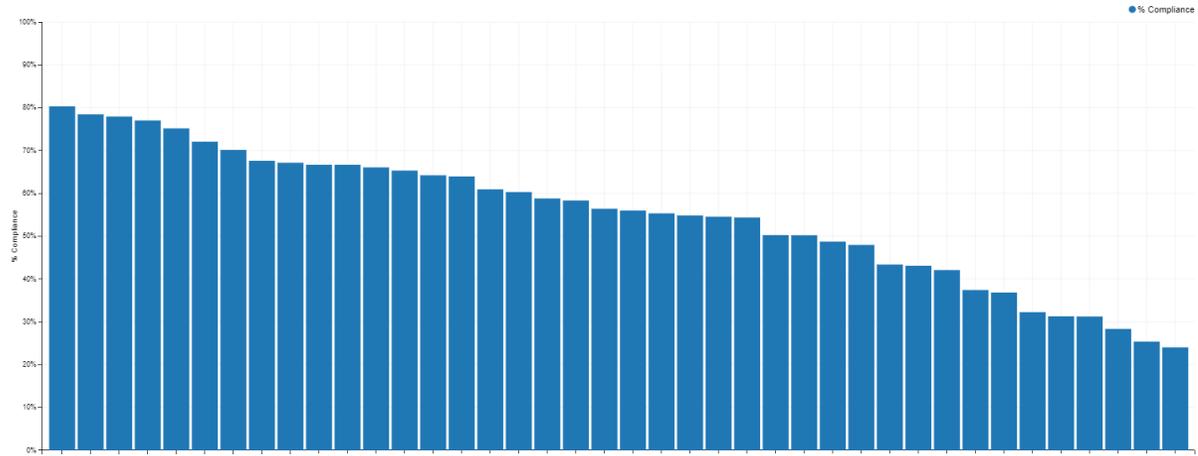
NMB 01

TOF checked prior to extubation

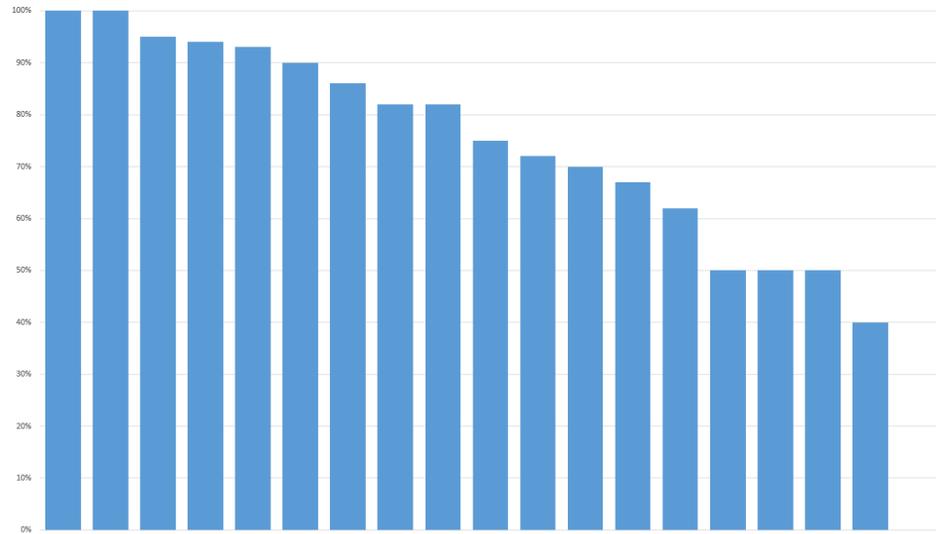


TRAN 01

Hgb/Hct check prior to transfusion

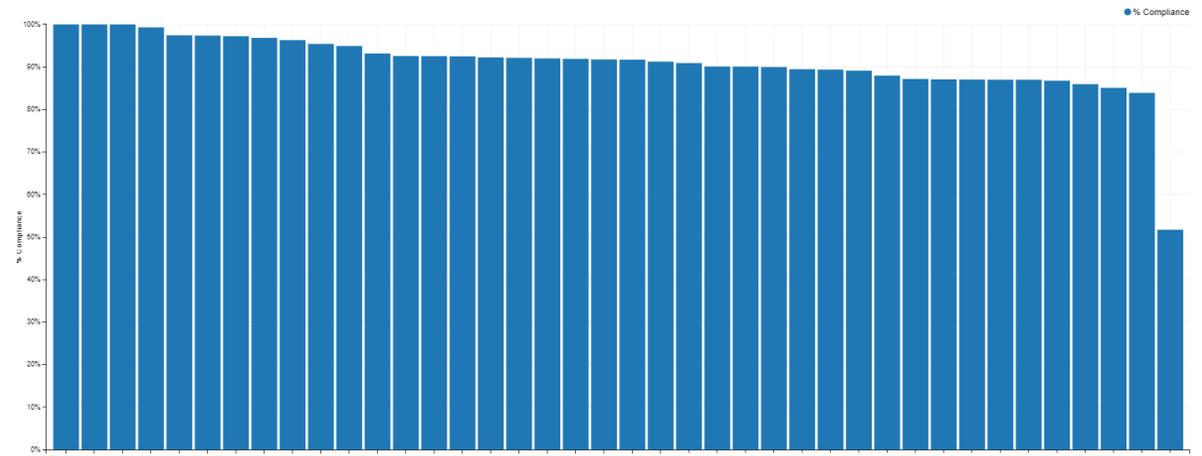


TRAN-01

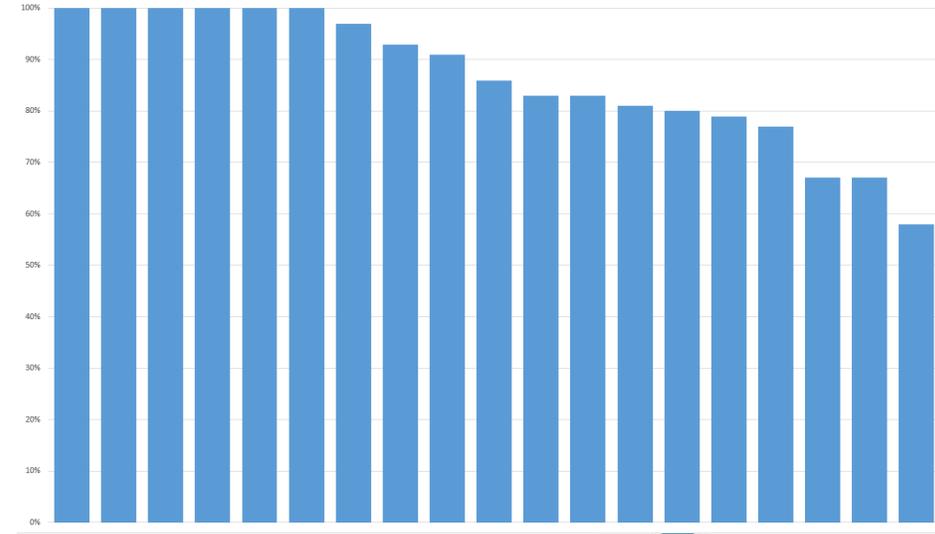


TRAN 02

Hgb/Hct > 10/30 post transfusion

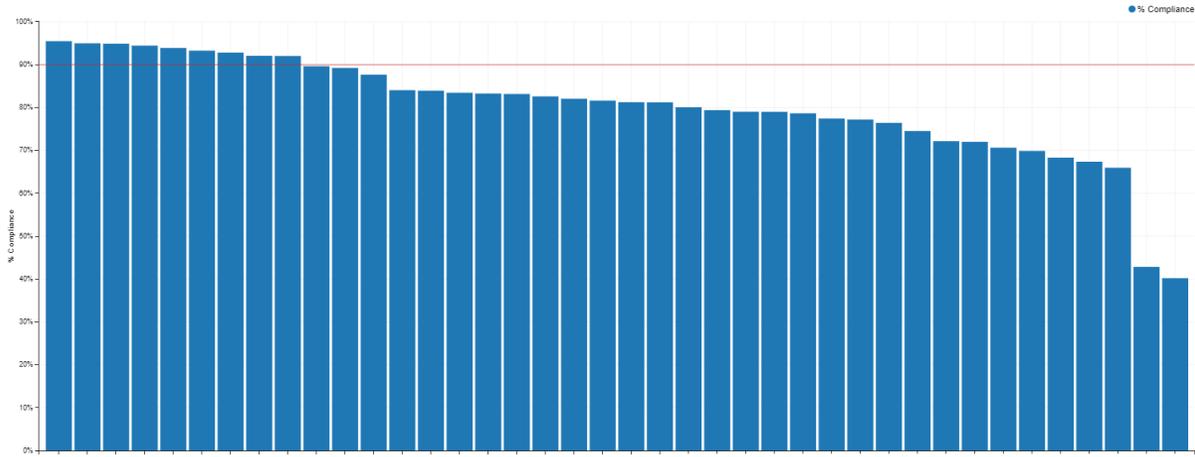


TRAN-02



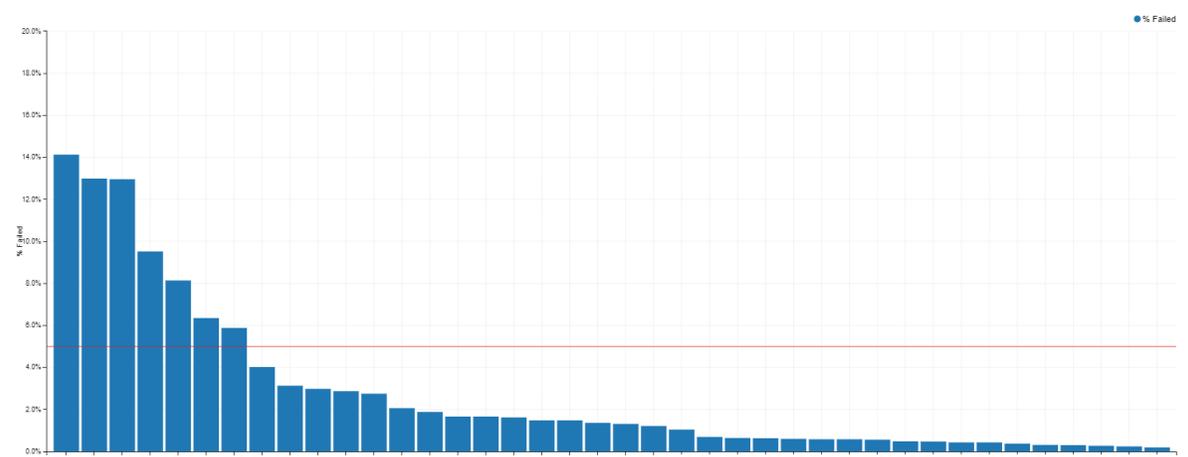
PONV 01 (>18 yo)

2 Anti-Emetics Administered Preop/Intraop

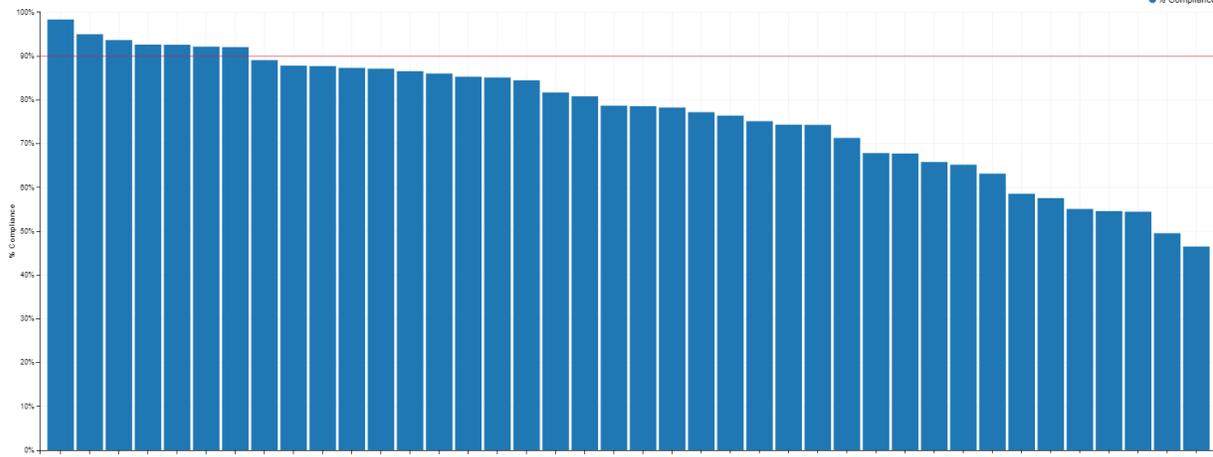


PONV 03

PONV Reported and/or Rescue Anti-Emetic Administered Postop



PONV 02 (<18 yo)



PONV-03 (inverted)

