

MPOG Pediatric Subcommittee Meeting

May 18, 2022



Agenda

10 minutes

Announcements

Dr. Bishr Haydar, University of Michigan

20 minutes

Peds Sustainability Workgroup Update

Dr. Eva Lu-Boettcher, University of Wisconsin

30 minutes

Unblinded Data Review

Dr. Nirav Shah, MPOG QI Director



MPOG Featured Member May and June 2022

[MORE INFO](#)



T. Wesley Templeton, MD, FASA
Associate Professor of Anesthesiology
Director of Faculty Development
Atrium Health Wake Forest Baptist



QI Toolkits Available

- Designed to improve care and patient outcomes through the adoption of best practices.
- Contain a collection of educational resources, articles, and reference guides.
- Opportunity for pediatric subcommittee members!
 - Building pediatric specific toolkits
 - Update/revise existing toolkit based on recent literature
 - Great avenue to produce scholarly work



Acute Respiratory Complications

Addresses ASPIRE
Measures PUL 01, NMB
01 & 02

[Click Here](#)



Perioperative Transfusion Stewardship

Addresses ASPIRE
Measures TRAN 01 & 02

[Click Here](#)



Surgical Site Infection

Addresses ASPIRE
Measures TEMP 01, 02,
03 & GLU 01

[Click Here](#)

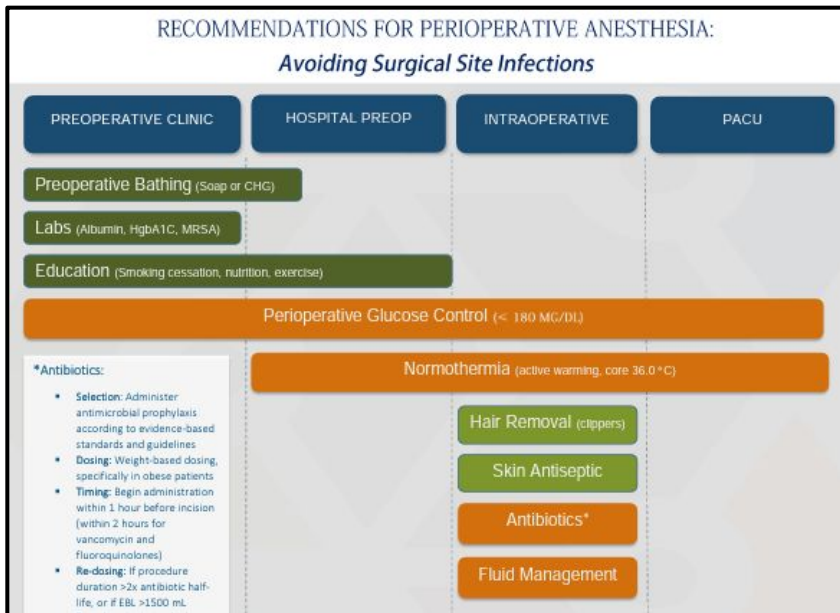


Acute Kidney Injury

Addresses ASPIRE AKI 01
measure

[Click Here](#)

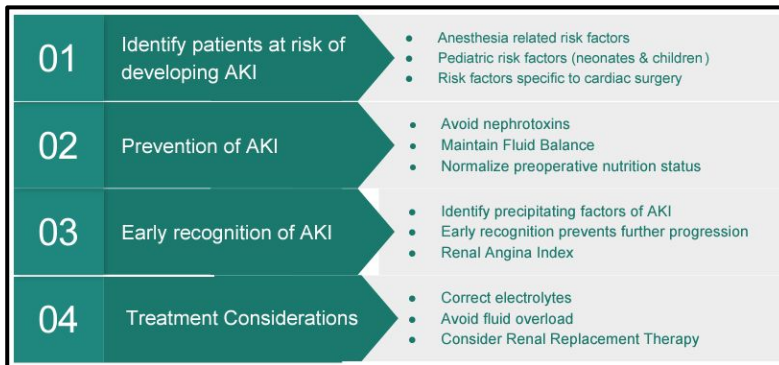
Reference Guides

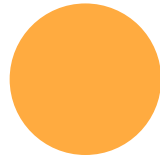
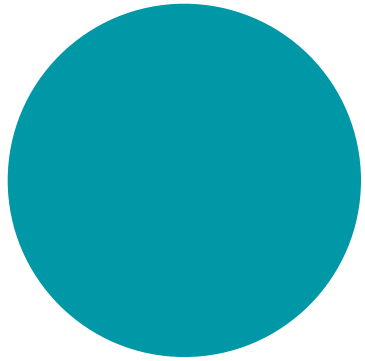


Additional Transfusion Resources

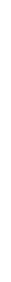
- American College of Obstetrics and Gynecology: [Maternal Safety Bundle for Obstetric Hemorrhage](#)
- American College of Surgeons: [Massive Transfusion Protocol](#)
- MARCQI: [Blood Transfusion Project-Reducing Transfusion in the MARCQI Population](#)
- MTQIP: [Proposal for Monitoring Site Performance for Massive Transfusion](#)
- Blood Conservation in Thoracic Surgery: [STS Clinical Guidelines](#)
- STS Renal Failure After Cardiac Surgery: [Webinar, May 2018](#)

Educational Presentations





NEW! Pediatric Measures



Transfusion Vigilance, Pediatrics (TRAN-03)



Description

Percentage of pediatric surgical cases with a blood transfusion that have a hemoglobin or hematocrit value documented prior to transfusion.

Measure Time Period

Up to 36 hours prior to the first transfusion during the case

Inclusions

Patients \geq 6 months to 18 years of age who receive a transfusion of red blood cells intraoperatively

Exclusions

- ASA 6
- Patients $<$ 6 months and \geq 18 years of age
- [Cardiac Procedures](#)
- [Obstetric Procedures](#)
- Massive Transfusion or blood loss: Defined as volume of 40mL/kg
- Cases where the 'Measure End Time' precedes 'Measure Start Time' will be excluded and marked 'invalid'

Success

Documentation of hemoglobin and/or hematocrit within 90 minutes prior to each blood transfusion volume \geq 15mL/kg

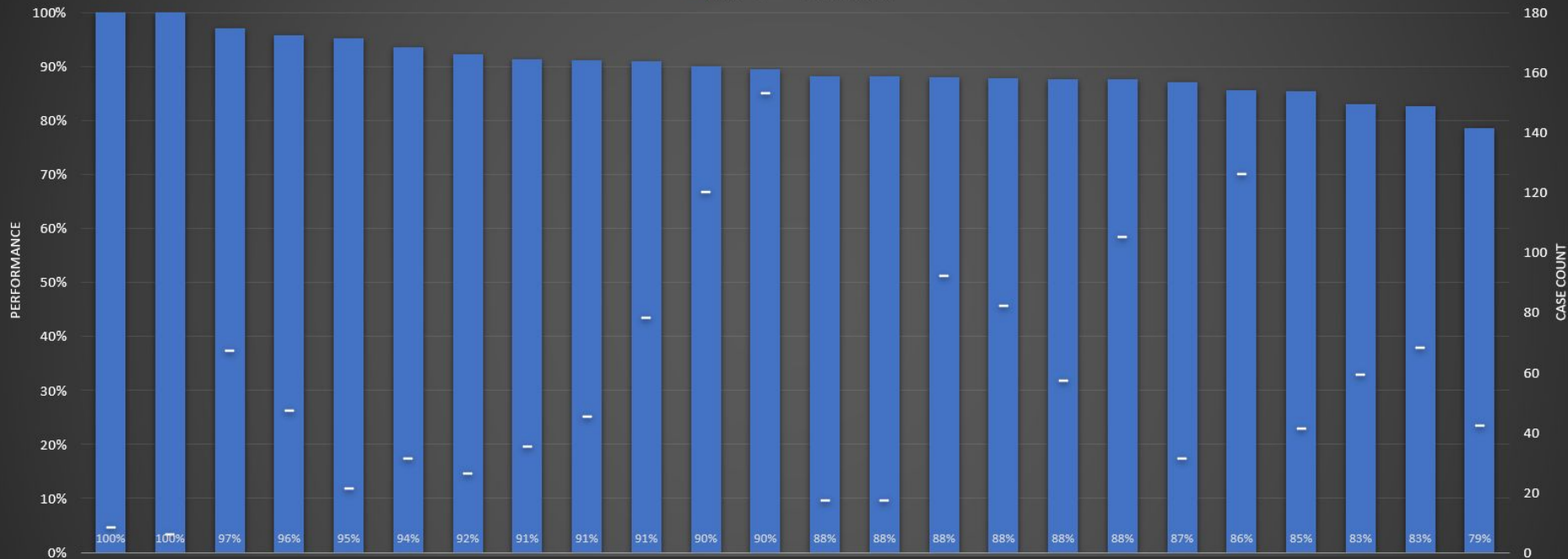
Other Measure Build Details

- Documentation of a Hgb/Hct value must be present within 90 minutes before each transfused volume of 15mL/Kg.
- Exceptions
 - If the Hgb/Hct was $<$ 8/24 within 36 hours of the first transfusion, 15mL/kg may be transfused without a lab check
 - If the most recent hgb/hct drawn before the first transfusion is \leq 5/16, a volume of \leq 30mL/kg can be administered without a lab check

Transfusion Vigilance, Pediatrics

Patients 6mo. - 18y (April 2021 - April 2022)

■ TRAN-03 — Denominator



Overtransfusion, Pediatrics (TRAN-04)



Description

Percentage of pediatric surgical cases with a post transfusion hemoglobin or hematocrit value greater than or equal to 10 g/dL or 30%

Measure Time Period

90 minutes before the last intraoperative transfusion to 18 hours after Anesthesia End

Inclusions

Patients \geq 6 months to 18 years of age who receive a transfusion of red blood cells intraoperatively

Exclusions

- ASA 6
- Patients $<$ 6 months and \geq 18 years of age
- [Cardiac Procedures](#)
- [Obstetric Procedures](#)
- Massive Transfusion or blood loss: Defined as volume of 40mL/kg
- Cases where the 'Measure End Time' precedes 'Measure Start Time' will be excluded and marked 'invalid'

Success

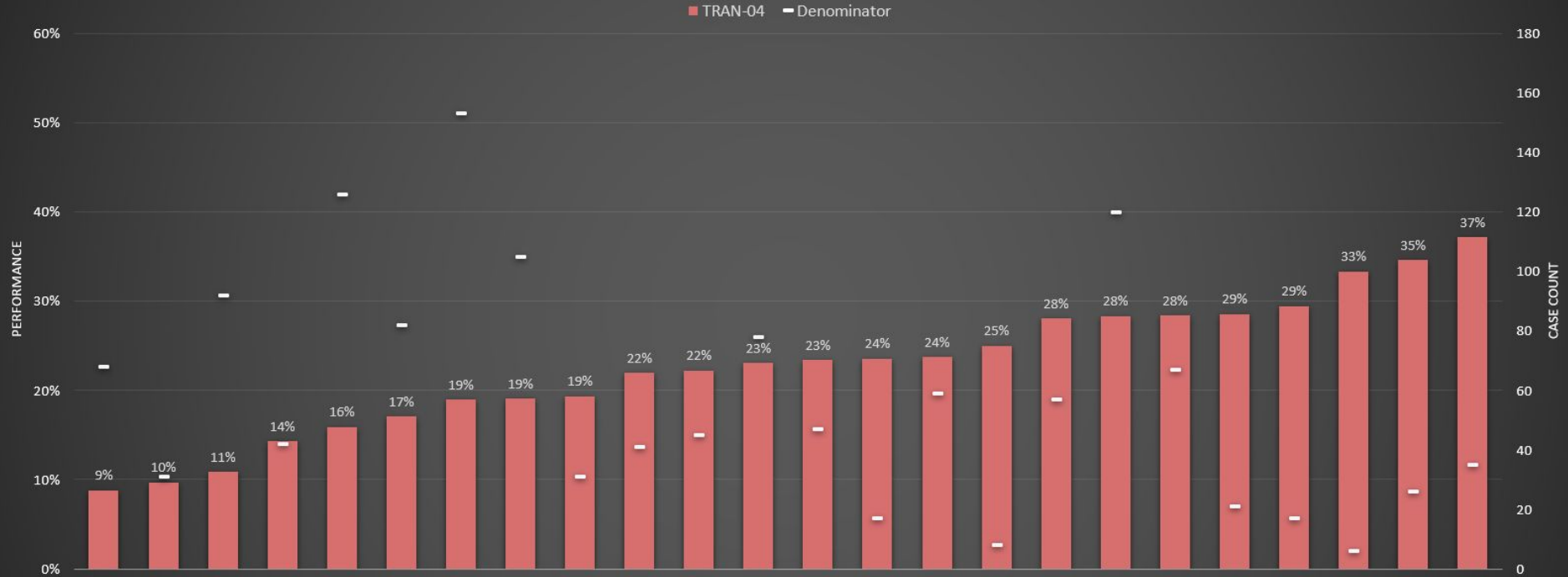
Hematocrit value documented \leq 30% and/or hemoglobin value documented \leq 10 g/dL

Other Measure Build Details

- All hemoglobin/hematocrit lab values drawn after the last transfusion and within 18 hours after anesthesia end will be evaluated. If the lowest of these values is \leq 10g/dL or \leq 30%, the case will pass.
- **If no Hgb/Hct checked within 18 hours after Anesthesia End time, the case will fail**
- If the hemoglobin or hematocrit at the time of the last transfusion (within 90 minutes before) is less than or equal to 8/24, the case will pass.

Overtransfusion, Pediatrics

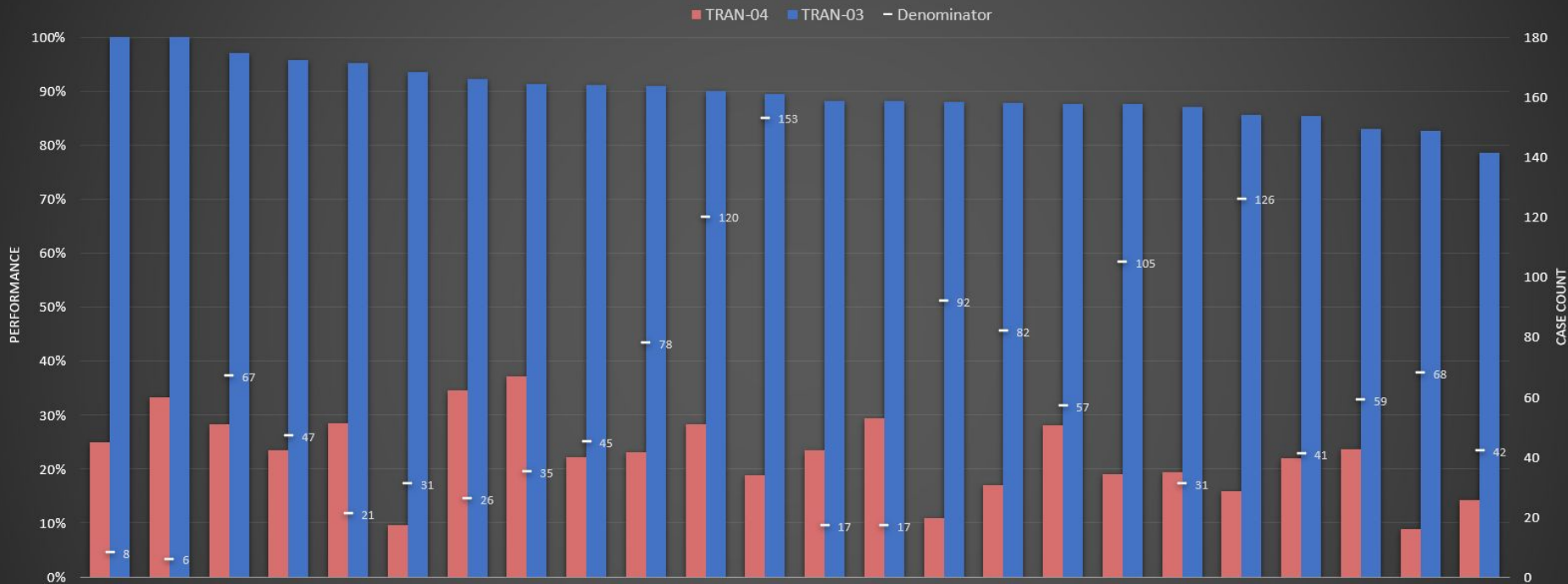
Patients 6mo. - 18y (April 2021 - April 2022)



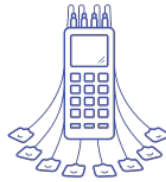
**Inverse measure. Lower score = better performance*

Blood Management, Pediatrics

Patients 6mo. - 18y (April 2021 - April 2022)



Neuromuscular Blockade Dosing, Children (NMB-03)



Description

Percentage of pediatric cases that receive appropriate initial dosing of non-depolarizing neuromuscular blocking drugs (NMB) intraoperatively.

Measure Time Period

Anesthesia Start to Earliest Extubation

Inclusions

- Patients < 5 years of age ([Age Group](#) < value_code 6)
- Patients who receive a bolus of non-depolarizing NMB during the measure time period

Exclusions

- Patients > 5yr
- ASA 6
- Patients who do not receive non-depolarizing NMB during the measure time period
- Patients who receive non-depolarizing infusion during the measure time period
- Patients without documented weight
- Patients who were not extubated before Anesthesia End.

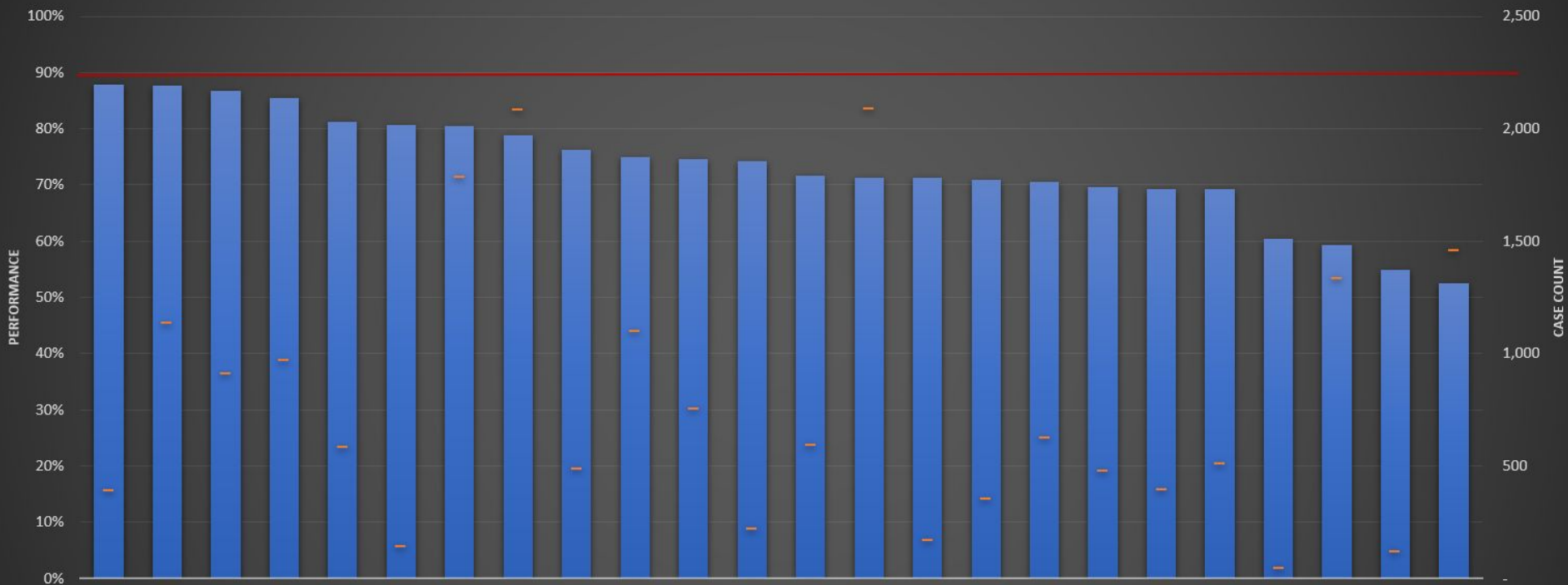
Success

The **first dose** of neuromuscular blocker is below an expert opinion-based threshold, during the time period of Anesthesia start and Extubation, as follows:

	Infants (mg/kg) AgeGroup value_code 1,2,3	Children (mg/kg) AgeGroup value_code 4,5
Cisatracurium	≤ 0.1	≤ 0.2
Atracurium	≤ 0.5	≤ 0.5
Rocuronium	≤ 0.5	≤ 1.2
Pancuronium	≤ 0.1	≤ 0.1
Vecuronium	≤ 0.1	≤ 0.1

NMB Initial Dosing, Patients < 5yo

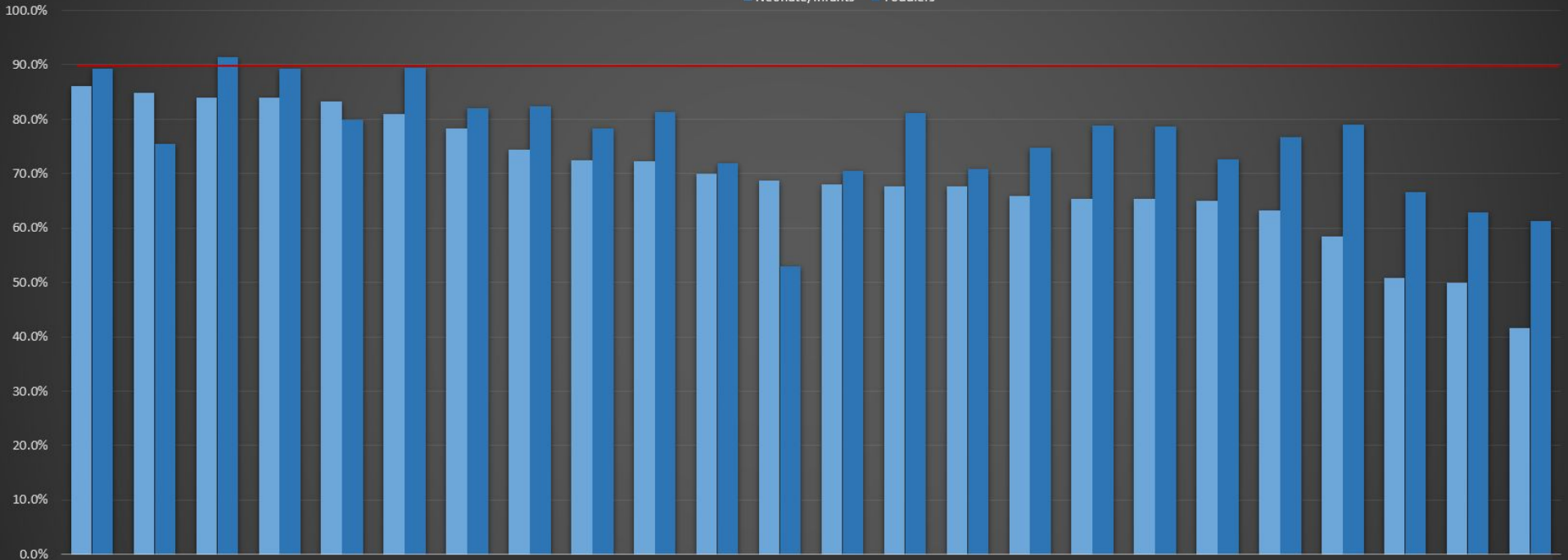
■ NMB-03 — Case Count

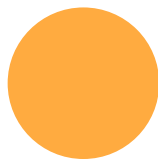
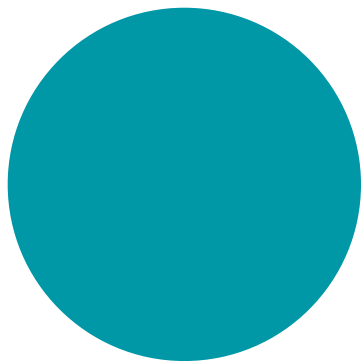


NMB Initial Dosing

Patients < 5y (April 2021 - April 2022)

■ Neonate/Infants ■ Toddlers





Sustainable Pediatric Anesthesia

Dr. Eva Lu-Boettcher, University of Wisconsin



MPOG Measure Build: Sustainability

Active:

- **SUS-01:** Low Fresh Gas Flow $\leq 3\text{L}/\text{min}$

In Progress:

- **SUS-02:** Global warming footprint of inhalational agents (maintenance)
- **SUS-03:** Global warming footprint of inhalational agents (induction)
- **SUS-04:** Low Fresh Gas Flow $\leq 2\text{L}/\text{min}$

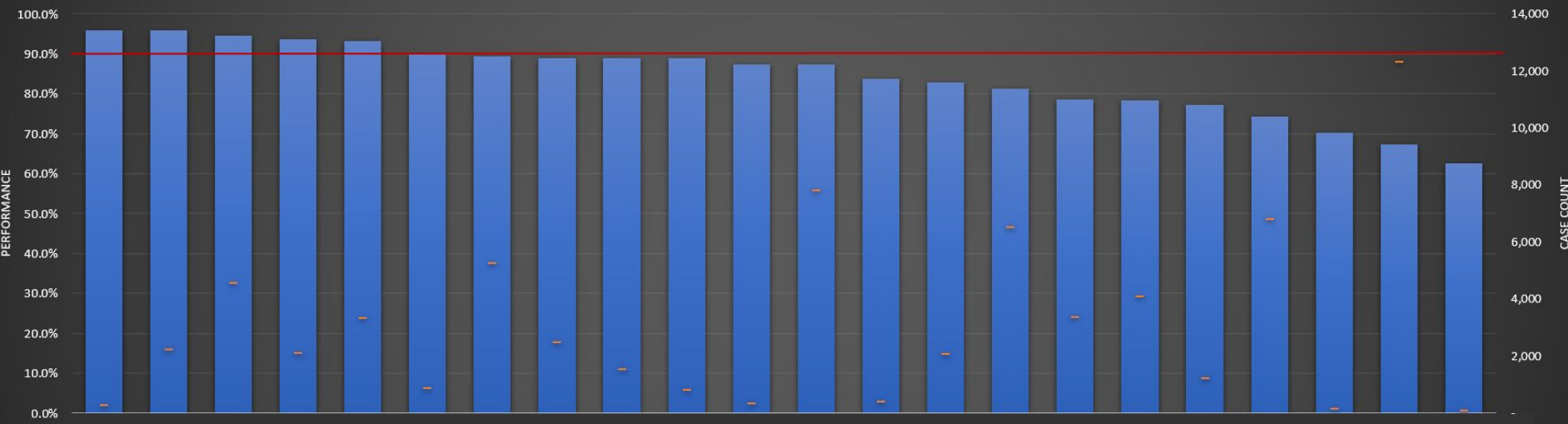
SUS-01: Low Fresh Gas Flow $\leq 3\text{L}/\text{min}$ (Active)



- **Measure Time Period:** Intubation → Extubation
- **Inclusions:** Patients who receive halogenated agents and/or nitrous oxide for ≥ 30 minutes
- **Exclusions:**
 - Cases with $>20\%$ of Fresh Gas Flow values manually entered during the case (automated capture of FGF required)
 - Cases in which nitric oxide is administered.
- **Artifact Values**
 - Nitrous Oxide Flows: $<0.2\text{ L}/\text{min}$
 - Isoflurane Insp: $<0.2\%$
 - Sevoflurane Insp: $<0.5\%$
 - Desflurane Insp: $<0.5\%$
 - Nitrous Oxide Insp: $<15\%$

Mean Fresh Gas Flow < 3L/min Pediatric Cases, < 18yo (April 2021 - April 2022)

SUS-01 Case Count



SUS-04: Low Fresh Gas Flow $\leq 2\text{L}/\text{min}$ (In Progress)



- **Measure Time Period:** Intubation \rightarrow Extubation
- **Inclusions:** Patients who receive halogenated agents and/or nitrous oxide for ≥ 30 minutes
- **Exclusions:**
 - Cases with $>20\%$ of Fresh Gas Flow values manually entered during the case (automated capture of FGF required)
 - Cases in which nitric oxide is administered.

Global Warming Footprint of Inhalational Agents (In Progress)

Percentage of cases where carbon dioxide equivalents, normalized by hour, is less than carbon dioxide equivalents of 2% sevoflurane at 2L FGF = 2.58 kg CO₂/hr

SUS-02: Maintenance

Measure Type: Process (90%)

Time Period: Intubation → Extubation

Provider(s) Notified: signed in for at least 30 minutes during the time when halogenated agent or nitrous oxide are documented.

SUS-03: Induction

Measure Type: Informational

Time Period: Induction Start → Induction End

Provider(s) Notified: None

How are CO2 Equivalents Derived?

$$\sum [\text{Inspired agent (\%)} \times \text{Fresh Gas Flow (L/min)}]_{1-n} \times \text{GWP}^{100}$$

Number of minutes of
inhalational agent
administered.

- Convert agent % and FGF → mass of agent (mols/min)
- For Nitrous %
 - a. Convert Nitrous % and FGF → Nitrous Flows (L/min)
 - b. N2O flow → mass of agent (mols/min)

Agent	Molecular Weight (g/mol)	Global Warming Potential ¹⁰⁰	Atmospheric Lifetime (years)
Isoflurane	184.5	565	3.2
Sevoflurane	200	144	1.1
Desflurane	169	2720	14
Nitrous Oxide	44	282*	114

Pediatric Sustainability Measure Proposals



Q: Do MPOG sustainability metric specifications accurately apply to the pediatric population?

- **Topics addressed:**
 - i. Unique aspects of induction that would warrant peds specific metrics?
 - ii. Include or exclude short cases < 30min?

Pediatric Sustainability Measure Proposals



Workgroup Summary:

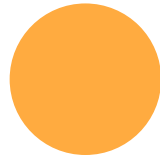
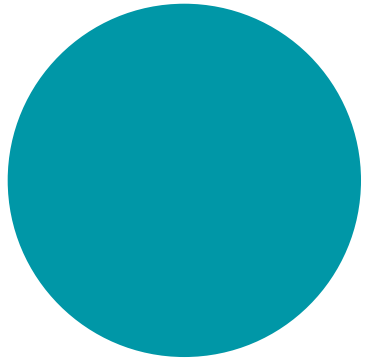
- **Pediatric-Specific Induction Metrics:**
 - SUS-05-PEDS: Weight-based FGF during induction:
 - i. Mask Inductions
 - ii. TIVA
 - SUS 06-PEDS: N2O (yes/no) used during induction.
 - SUS-Peds Age Definition: < 12y or < 18y?
 - i. Mask versus IV induction cut off.

Pediatric Sustainability Measure Proposals



Workgroup Summary Cont:

- **Include or exclude short cases <30min?**
 - Excluding cases < 30 min will throw a lot of pediatric cases out. Recommend including all cases regardless of duration.



Unblinded Data Review

Nirav Shah, MPOG QI Director



Reminders

- As outlined during the registration process:
 - A culture of openness and trust is critical to improve quality; and **a commitment for confidentiality is required for unblinded data at MPOG QI**
 - The following examples are to be considered privileged and confidential information and should be discussed only within the confines of the Pediatric Subcommittee Meeting.
 - Any and all patient information.
 - Any and all patient identifiers/information which are considered privileged and protected health information as defined by current HIPAA laws.
 - Any specific MPOG QI registry case information.
 - Any information discussed regarding a specific site outcome.
 - Any reference to a specific MPOG site result or analysis.
 - All anesthesiology data presented including but not limited to outcome reports

- **Taking screenshots, pictures or videos of data slides is prohibited**

Site Participation

- All sites that perform > 2,000 pediatric cases/year are included on the slides to follow
- MPOG Quality Champions were notified that unblinded data would be shared and were given the opportunity to opt out
- No sites emailed us to express a desire to be excluded from this review
- We encourage all sites (and especially low/high performers) to discuss current successes, opportunities and barriers

Temperature Management



TEMP-04-Peds

% of patients < 18 years old who have a median core/near core body temperature $\geq 36C$ (96.8F)

Measure Type: Standard (> 90%)

Time Period: Pt. In Room → Pt. Out Room

Exclusions: ASA 5&6, Cardiac, MRI, cases less than or equal to 30 minutes

TEMP-03

% of patients who have a postoperative body temperature $\leq 36C$ (96.8F)

Measure Type: Outcome/Inverse (< 10%)

Time Period: 30 min < Anesthesia End > 15 min

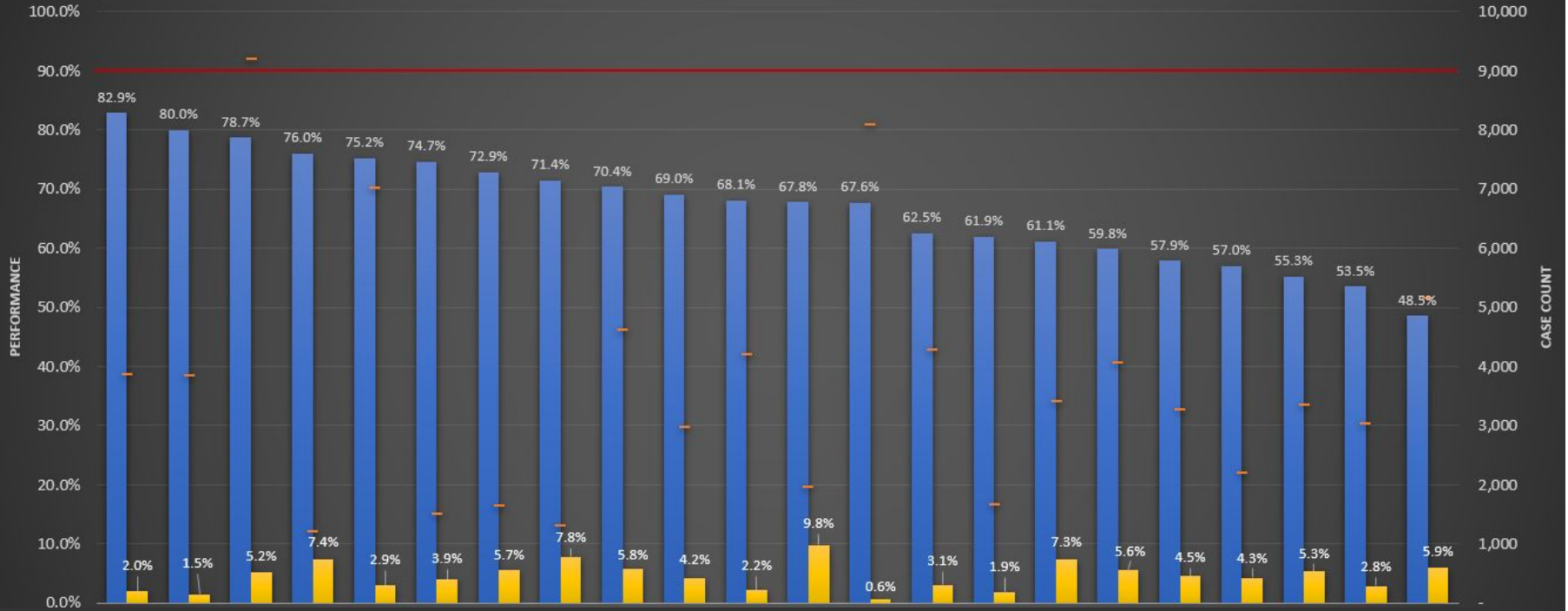
Inclusions: General and neuraxial cases

Exclusions: ASA 5&6, MAC cases, Cardiac, MRI

Intraop Normothermia vs. Postop Hypothermia

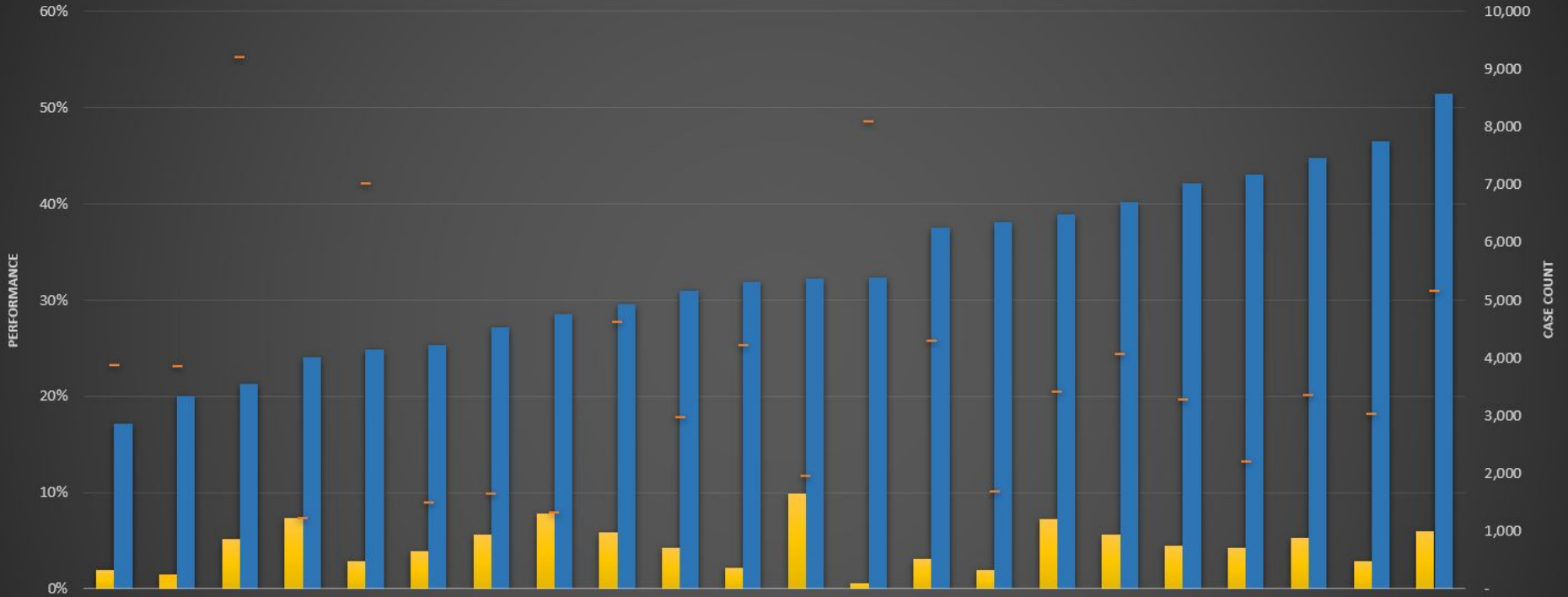
Patients < 18y (April 2021 - April 2022)

TEMP-04 TEMP-03 Case Count



Percentage of pediatric cases with Hypothermia (< 36C)

■ Immediate Postop ■ Intraop — Case Count



Thank You!!

Next Meeting: Wednesday August 17th @ 1p Eastern

For More Information on MPOG Peds:

- Website mpog.org/pediatrics-subcommittee/
- MPOG Site Pediatric QI Dashboard mpog.org/qireporting/
- Discussion Forum on Basecamp

- Contact Meridith with any questions meridith@med.umich.edu

