ASPIRE Pediatric Subcommittee Meeting
July 21, 2020

Agenda

- April 2020 Meeting Recap

- Announcements

- Measure Performance Review
  - Temperature Management (TEMP-04)
  - Opioid Equivalency: Tonsil and Adenoidectomy

- Non-Opioid Adjunct Measure (PAIN-01)

April 2020 Meeting Recap

- Meeting Minutes from April 2020 have been posted to the website

- Established SPA Quality and Safety Measure Workgroup

  - Dr. Vikas O'Reilly-Shah and Dr. Brad Taicher to serve as MPOG liaisons

- TEMP-04 Measure Discussion

  - Reached consensus on measuring hypothermia intraoperatively

  - Addressed temperature artifact algorithm

  - Exclude MAC/Sedation cases and those without documentation of a core temperature route

MPOG

2020 MPOG Meetings (Virtual)

- **Pediatric Subcommittee Meetings**
  - October (Before or After SPA?)
  - December

- **MPOG Quality Committee Meetings**
  - August 24th
  - October 26th

- **MPOG Annual Retreat 2020**

Acute Kidney Injury Toolkit

- Avoiding Kidney Injury is the 4th toolkit released by MPOG

- Toolkit Components :
  - Recommendations for Perioperative Care: Pediatrics
  - AKI Reference Guide

- MPOG Measure: AKI-01
  - Patients ≤ 18 years old
    - KDIGO Criterion used
    - Exclusion criteria: baseline creatinine < 0.2mg/dL
    - Success criteria:
      - The creatinine level does not go above 1.5x the baseline creatinine within 7 days post-op or does not increase by ≥ 0.3 mg/dL within 48 hours after anesthesia end.
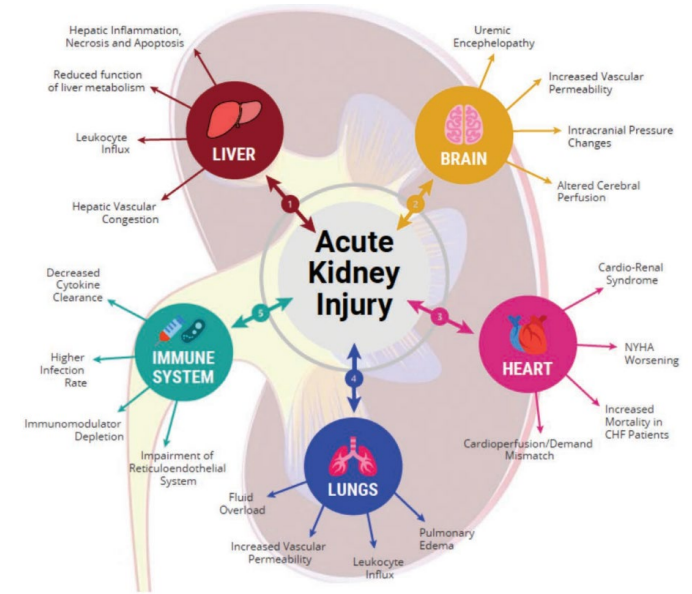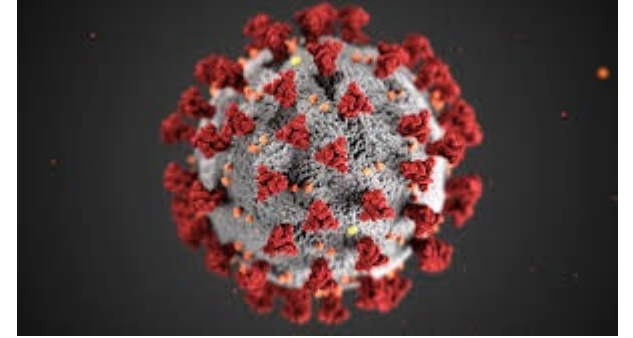

Image Source: Gumbert et al. *Anesthesiology*. 2020

MPOG Lab Concepts - Microbiology

- New Microbiology Category with prefix 'Micro'
  - Culture type (aerobic, anaerobic, AFB etc.)
  - Specimen type (wound, CSF, fluid etc.)

- Immunology – Antibody tests

- **COVID-19 Related Concepts available**
  - Micro – Virology – Coronavirus (SARS-CoV-2)
  - Immunology – Antibody – COVID19 - IgG

Measure Performance Review
TEMP-04-Peds

TEMP-04 Considerations

- Nadir temp < 35C removed from success criteria
  - Inaccurate temperature monitoring algorithm.
  - Plan to refine year and add nadir temp back flag for TEMP-04 at a later date.

- Updated artifact algorithm:
  - Exclude all Temperature values that are < 32C and > 40C
  - Apply artifact to exclude minute-to-minute values ≥ 0.5 C difference in temperature.
  - **Exclude first 5 minutes of temperature monitoring to account for probe warming**
    - Minute-to-minute: exclude first 5 values
    - 5 minute intervals: exclude the first value

- Outlier cases: Difficulty capturing general anesthetic patients who are transferred directly from MRI → OR
  - Measure code is inaccurately excluding a few cases
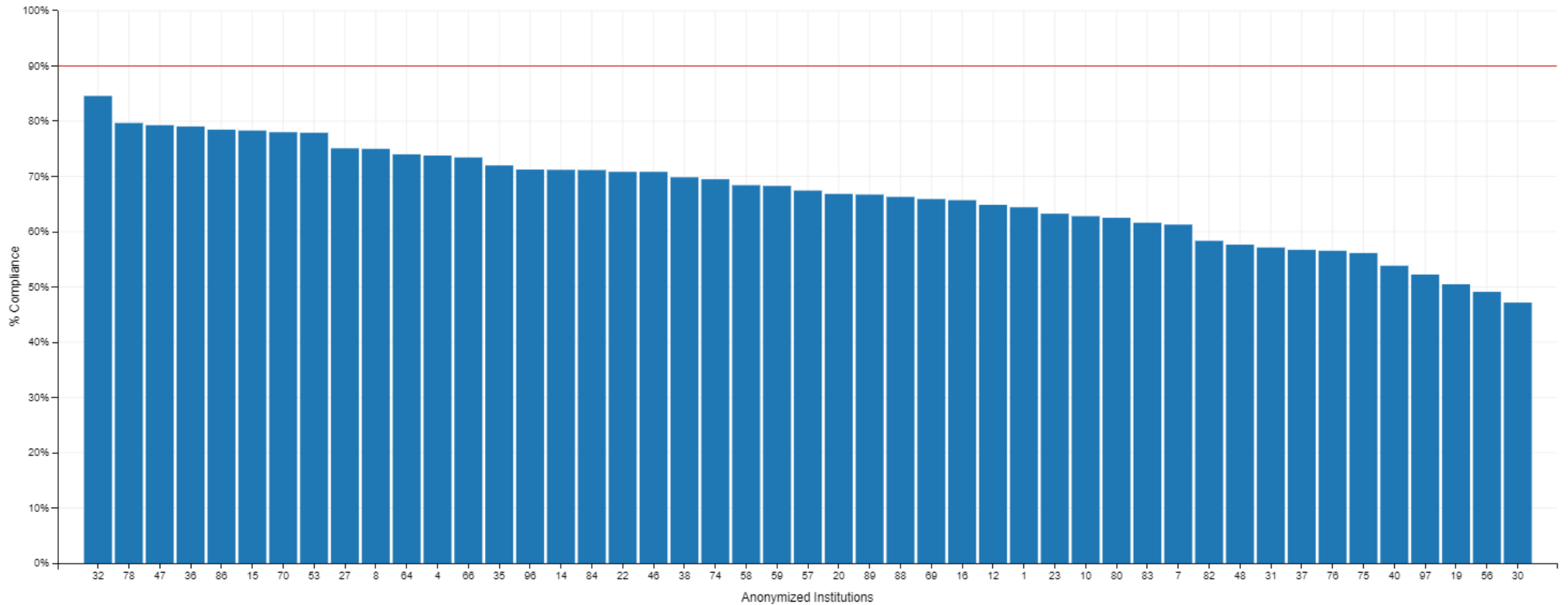 - Working on a solution

Additional information provided in case details

- Nadir temp

- Preop temperature

- Postop temperature

- Lowest temperature

- Total Time @ lowest temperature

- % Time temperature < 36C

- Time from Patient in Room to 1st temp value

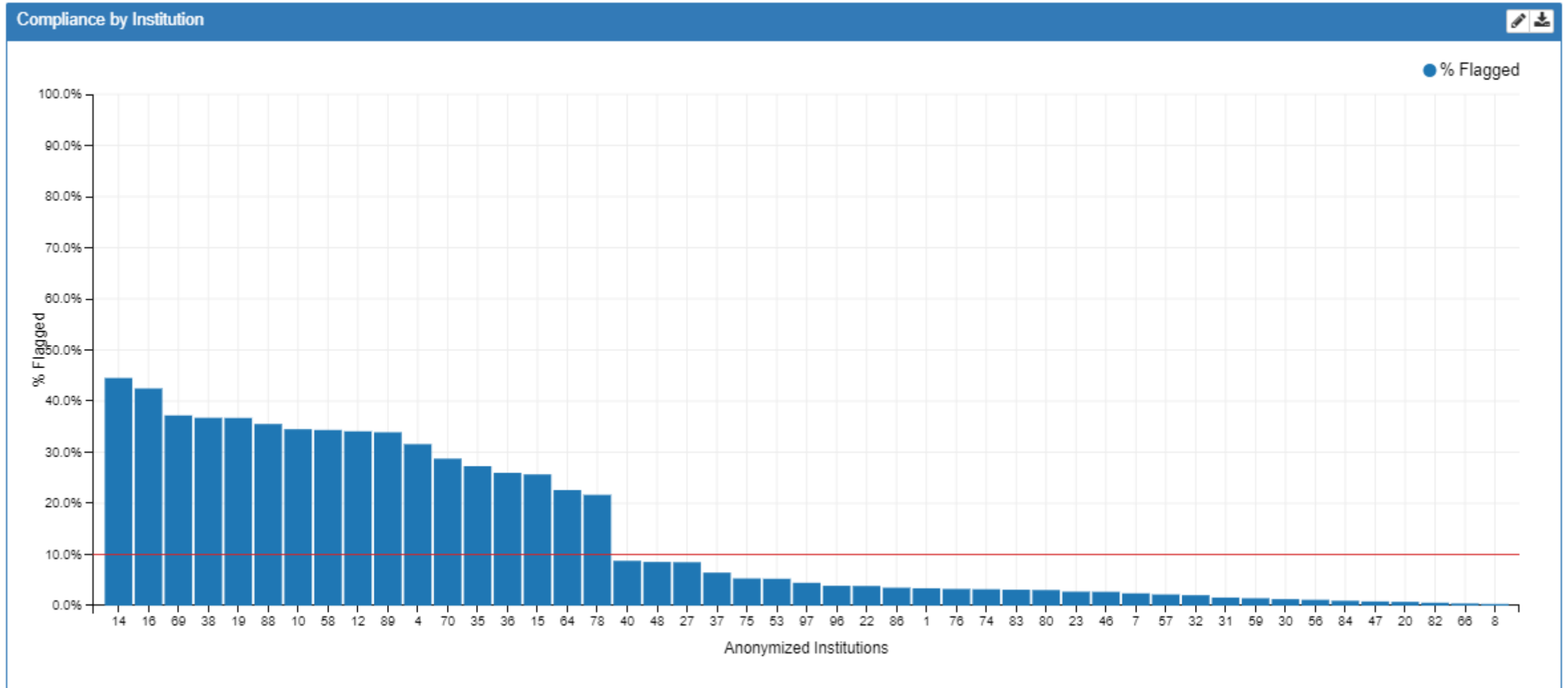| Attribute	Value	Result
Median temp < 36°C	Median:35.45°C	Failed
Is Valid Case	Yes	Included
Age >= 18	0.333333	Included
ASA Class	ASA Class 4	Included
Case Duration	487	Included
No Core Temperature Route	Yes; Axillary	Included
No Intraop Temperature exists	Yes	Included
Procedure Type	00532	Included
Anesthesia Technique	General - ETT	Included
Diagnostic Procedure	No	Included
Responsible Provider	Yes	Included
Institution	University of Michigan Health System	Info
Measure Start (Type)	25 Sep 2019 17:25:38:000 (Patient In Room)	Info
Measure End (Type)	26 Sep 2019 02:37:36:000 (Patient Out of Room)	Info
Duration from measure start to 1st temp	18	Info
Date of Surgery	09/25/2019	Info
MPOG Procedural Service	Cardiac	Info
Procedure Text	(Actual)MIDLINE HEART TRANSPLAN MIDLINE CARDIAC PUMP AGE 4MO-23M MIDLINE PERFUSION CARDIAC	Info
Preop Temperature	36.72	Info
Was the first Postop Temp >= 36C	Yes(38.20)	Info
Median Temperature	35.45	Info
Lowest Temperature	32.00	Info
Lowest Temperature Time	Sep 25 2019 9:37PM	Info
Was Nadir prior to Procedure Start	No	Info
% Time Temp < 36C (measure start-end)	48.55	Info
Had Median Temp < 36C / Nadir Temp < 35C	Yes / Yes	Info
Is Non-Operative Case	No	Included

TEMP-04 Performance comparison across MPOG institutions (Median >36C)

Percentage of patients < 18 years old who undergo a procedure greater than 30 minutes whom have a median core/near core temperature > 36C (96.8F).

% of pediatric patients with first postop temp < 36C (TEMP-03)

Measure Performance Review
Opioid Equivalency – Pediatric Tonsil/Adenoidectomy
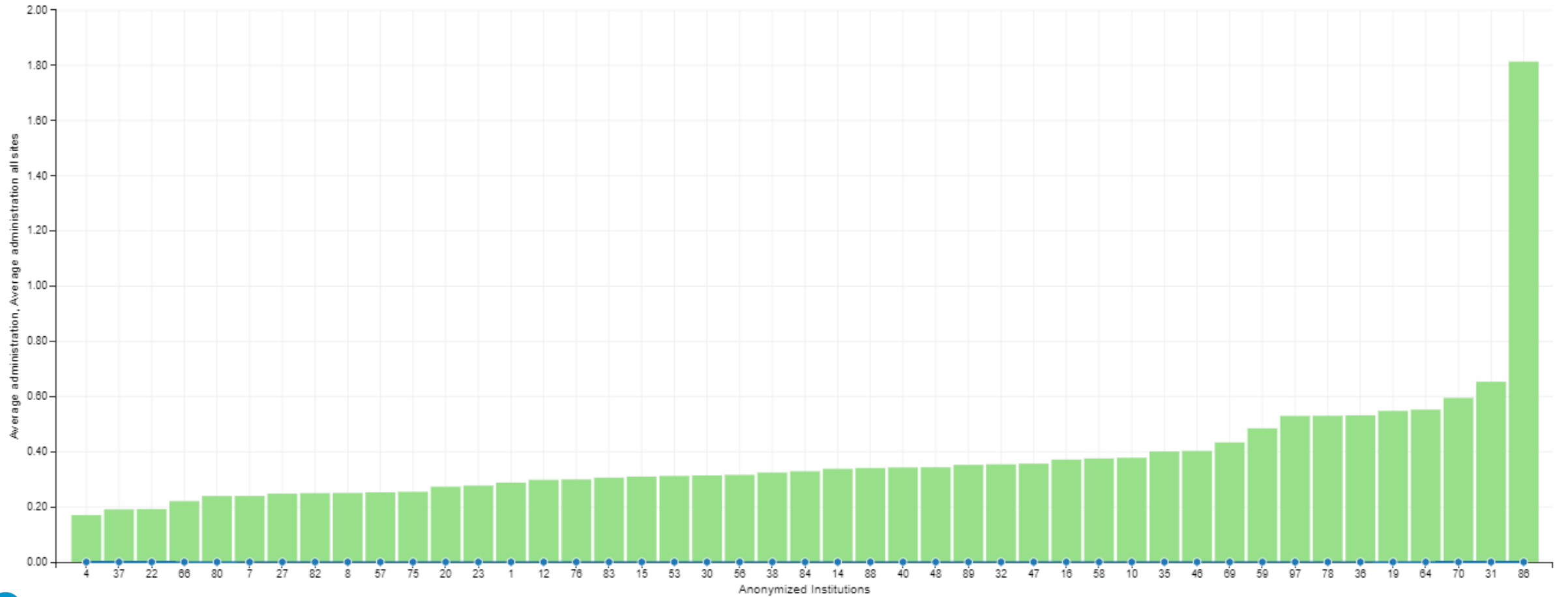
Average Opioid Administration (mg/kg/hr)

- Opioid Equivalency - Informational Measure
  - Opioid equivalents are calculated using conversions given between anesthesia start and anesthesia end for each case. This value is normalized to patient weight (kg) and case length of 1 hour.
  - *Does not include Opioids given in PACU

- Case Cohort – Tonsillectomy and Adenoidectomy
  - Patients < 18yo
  - CPT: 00170, procedure text with 'tonsil' and/or 'adenoid'
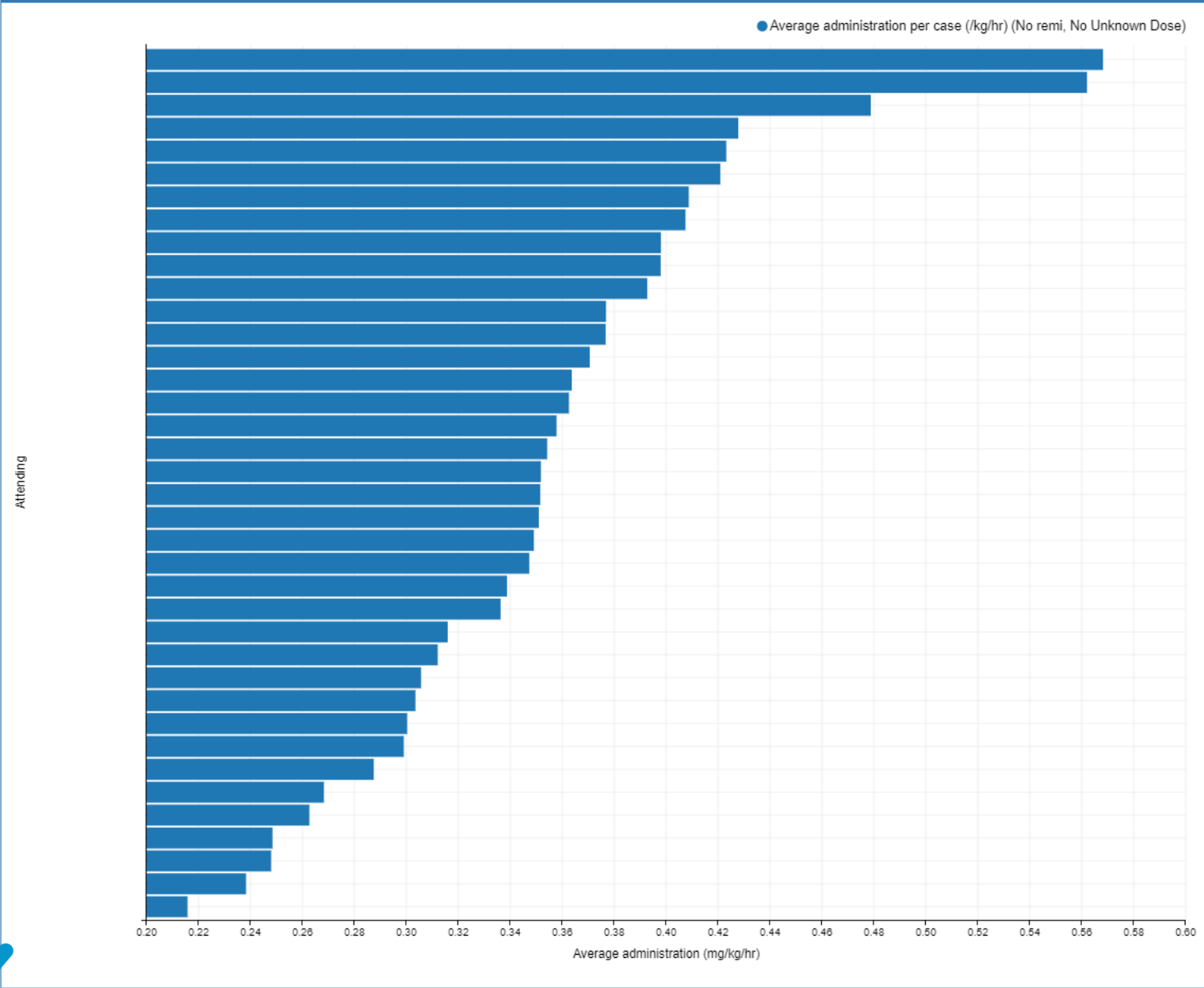
- Measure Specification

Opioid	Route	Multiplier
Morphine[1,2]	Oral	30.00
Codeine[1,2]	Oral	200.00
Hydromorphone (Dilaudid)[1,2]	Oral	7.50
Hydrocodone[2]	Oral	30.00
Oxycodone[1,2]	Oral	20.00
Oxymorphone[1,2]	Oral	10.00
Meperidine[1]	Oral	300.00
Tramadol[1]	Oral	120.00
Methadone[8]	Oral	6.00
Fentanyl[2]	transdermal	12.50
Buprenorphine (Suboxone)[3]	Sublingual	0.40
Morphine[1]	IV	10.00
Codeine[1]	IV	100.00
Fentanyl[1]	IV	0.10
Hydromorphone (Dilaudid)[1]	IV	1.50
Oxymorphone[1]	IV	1.00
Meperidine[1]	IV	100.00
Tramadol[1]	IV	100.00
Buprenorphine (Suboxone)[1]	IV	0.40
Nalbuphine[1]	IV	10.00
Butorphanol[1]	IV	2.00
Alfentanil[7]	IV	0.50
Sufentanil[5]	IV	0.01
Remifentanil	IV	0.00
Methadone[3]	IV	5.00
Hydromorphone[6]	epidural	0.30
Morphine[4]	epidural	1.00
Fentanyl[6]	epidural	0.03
Fentanyl[6]	IT	0.01
Morphine[4]	IT	0.10
Hydromorphone[6]	IT	0.06

MPOG

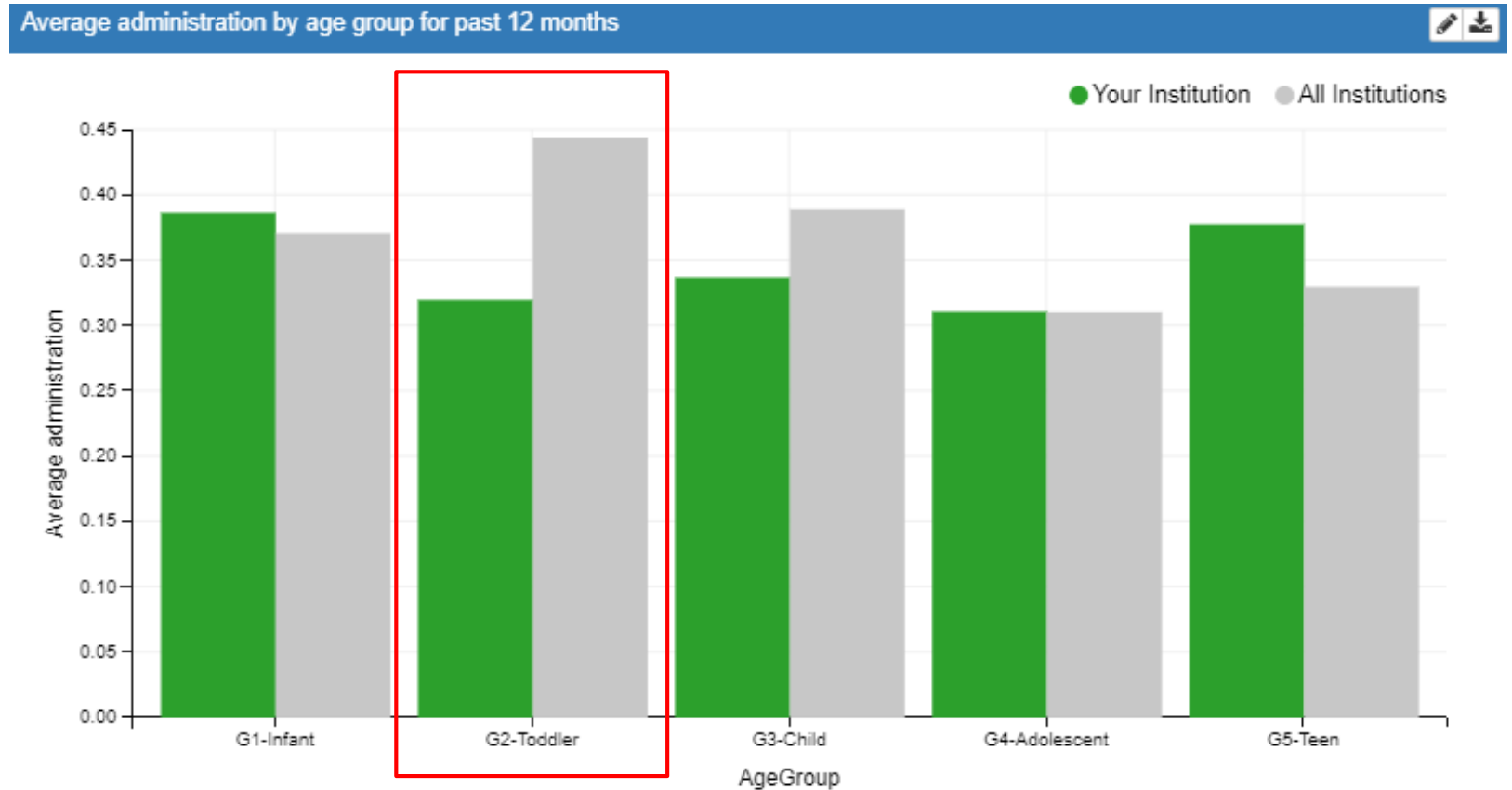# Average Opioid Administration across MPOG institutions

*(mg/kg/hr)

Variation in practice seen across providers during tonsillectomy procedures

Variation in opioid administration across age groups

*(mg/kg/hr)

- Infant (0-1y)
- Toddler (1-3y)
- Child (4-7y)
- Adolescent (8-12y)
- Teen (13-17y)

Average administration by age group for past 12 months

● Your Institution   ● All Institutions

MPOG

In Progress: Additional Case Details

- Highest Pain Score in PACU (FLACC)

- Opioids given in PACU (yes/no)

- Average opioid equivalency administered in PACU

Date of Service	Remi	Unknown Dose	MPOG.Cases	Average administration	Standard Deviation	Average Case Time	ViewButton
7/1/19	No remi	No Unknown Dose	133	0.35	0.16	0.9	View Details
8/1/19	No remi	No Unknown Dose	128	0.34	0.18	1.0	View Details
9/1/19	No remi	No Unknown Dose	68	0.31	0.15	1.0	View Details
10/1/19	No remi	No Unknown Dose	89	0.34	0.16	0.9	View Details
11/1/19	No remi	No Unknown Dose	108	0.34	0.16	0.9	View Details
12/1/19	No remi	No Unknown Dose	66	0.34	0.16	0.9	View Details
1/1/20	No remi	No Unknown Dose	67	0.39	0.21	0.9	View Details
2/1/20	No remi	No Unknown Dose	71	0.39	0.19	0.9	View Details
3/1/20	No remi	No Unknown Dose	46	0.34	0.14	1.0	View Details
4/1/20	No remi	No Unknown Dose	2	0.49	0.36	1.3	View Details
5/1/20	No remi	No Unknown Dose	36	0.34	0.19	1.1	View Details
			814	0.35	0.17	0.9	View Details

Average administration (per case) organized by month

Opioid Equivalency: Additional Pediatric Case Cohorts

- <u>Up Next</u>: Spine

- Future Considerations
  - Cardiac
  - Thoracic Surgery
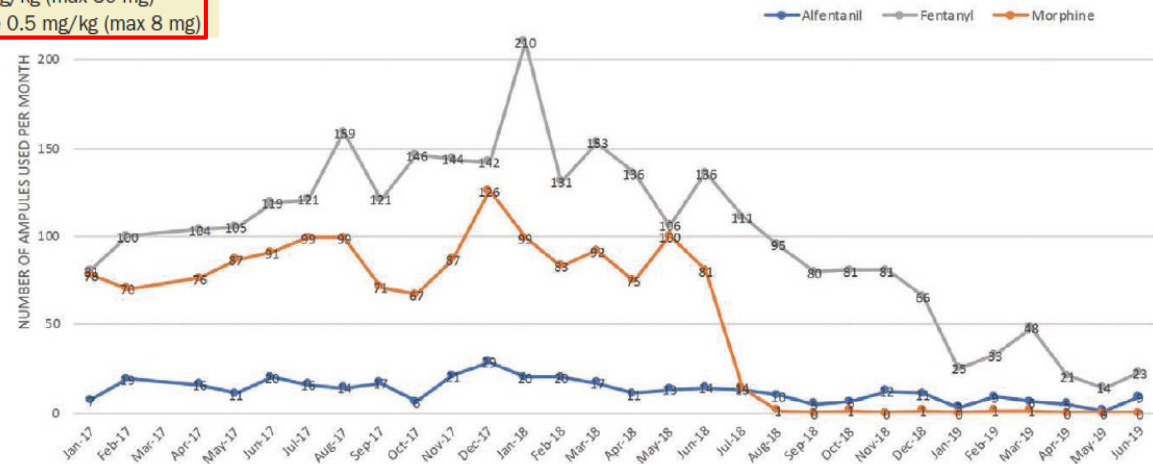 - Urology
  - Maxillofacial Surgery

Opioid Free Anesthesia: A QI Project

- Implementation of an opioid-sparing protocol **reduced perioperative opioid use by 90%** in pediatric ambulatory surgical patients at Seattle Children's Hospital

Table 1. Standardized Intraoperative Anesthesia Protocols for Bellevue Clinic and Surgery Center's Most Common Surgeries as of December 2017 and June 2019
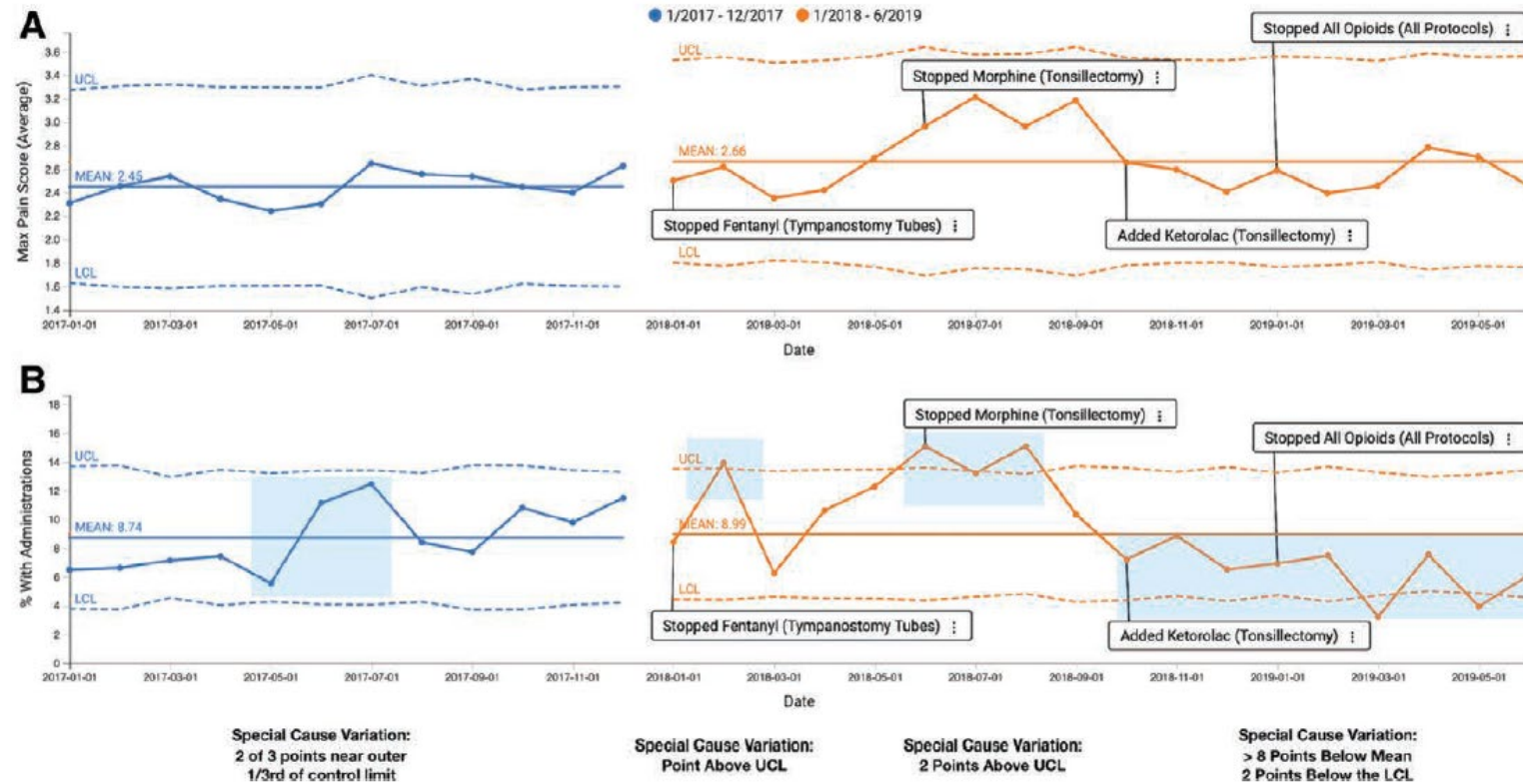
	Procedure	Opioid-Inclusive Protocols (2017)	Opioid-Free Protocols (2019)
Otolaryngology	Myringotomy with tympanostomy tubes	Fentanyl 1 µg/kg intranasal (intraoperatively)	Ibuprofen 10 mg/kg oral (preoperatively)
	Tonsillectomy and adenoidectomy/tonsillectomy	Morphine 0.1 mg/kg Acetaminophen 15 mg/kg Dexamethasone 0.15 mg/kg (max 4 mg)	Dexmedetomidine 1 µg/kg Ketorolac 0.5 mg/kg (max 30 mg) Dexamethasone 0.5 mg/kg (max 8 mg)
	Adenoidectomy	Morphine 0.05 mg/kg Acetaminophen 15 mg/kg Dexamethasone 0.15 mg/kg (max 4 mg)	Dexmedetomidine 0.5 µg/kg Ketorolac 0.5 mg/kg (max 30 mg) Dexamethasone 0.5 mg/kg (max 8 mg)

Figure 1. Number of opioid ampules used intraoperatively at Bellevue Clinic and Surgery Center each month between January 2017 and June 2019.

Image Source: Franz et al. *Anesthesia & Analgesia*. 2020

Outcomes

- Maximum postoperative pain score (FLACC, FACES, or Visual Analog) and Postoperative morphine rescue rate

- Total PACU minutes, Anesthesia Duration and PONV rates remained stable

Figure 2. Primary outcome measures. A, Maximum pain score in the postanesthesia care unit—X-bar chart. B, Percent of patients requiring rescue morphine in recovery—P Chart. LCL indicates lower control limit; UCL, upper control limit.

Non-Opioid Adjunct Measure
PAIN-01

PAIN-01 Measure Discussion

- **Description:** Percentage of patients < 18 years old who undergo a surgical or therapeutic procedure and receive a non-opioid adjunct preoperatively and/or intraoperatively.

- **Success Criteria:** At least one non-opioid adjunct medication was administered to the patient during the preoperative or intraoperative period.

- **Measure Time Period**: Preop Start → Anesthesia End

- **Exclusions**
  - ASA 5 and 6; Patients transferred directly to ICU
  - Organ Harvest (CPT: 01990); Cardiac Surgery (CPT: 00561, 00562, 00563, 00566, 00567, 00580); Obstetric Non-Operative Procedures (CPT: 01958, 01960, 01967)
  - Non-operative procedures; Radiology procedures

- **Responsible Provider**: Provider at the beginning of the case (prior to incision)

MPOG

Non-Opioid Adjuncts Included

Acetaminophen   Dexmedetomidine

Aspirin   Dextromethorphan?

Ibuprofen   Gabapentin

Naproxen   Pregabalin

Celecoxib   Clonidine

Ketorolac   Magnesium

Ketamine   Lidocaine (Infusion only)

Included RCTs + MAs, N=35

Acetaminophen	11 + 0
NSAIDS	2 + 1
Dexamethasone	3 + 1
Ketamine	6 + 2
Gabapentin	2 + 0
Clonidine	0 + 1
Magnesium	3 + 0
Dexmedetomidine	0 + 2
Dextromethorphan	1 + 0
IV Lidocaine	0 + 0
Amantadine	0 + 0
Pregabalin	0 + 0
Esmolol	0 + 0
Caffeine	0 + 0

Image Source: Zhu, Benzon & Anderson. *Pediatric Anesthesiology*. 2017

2020 Plans – Next Steps

- Publish additional OME case cohort – Pediatric Spine

- Finalize specification for Non-Opioid Adjunct measure (PAIN-01)

- Send PAIN-01 specification to group and publish measure

Measure Build	Status
Pediatric Temperature Management (TEMP-04)	*Complete!*
OME Pediatric Cohort #1 - Tonsillectomy/Adenoidectomy	*Complete!*
OME Pediatric Cohort #2 - Spine	October
Non-Opioid Adjunct (PAIN-01)	October

MPOG

Thank you