MPOG Pediatric Subcommittee Meeting

December 4, 2023



Agenda

Announcements

Dr. Brad Taicher, MPOG Pediatric Subcommittee Chair

Measure Review: Multimodal Analgesia (PAIN-01-Peds) Dr. Lisa Einhorn, Duke University

Provider Feedback: Using MPOG for Pediatric QI

Dr. Lauren Madoff, Boston Children's

MPOG Peds Research: Current Projects & Process

Dr. Vikas O'Reilly-Shah, Seattle Children's Dr. Michael Mathis, MPOG Research Director

2024 Meetings

- Pediatric Subcommittee Meetings
 - March
 - July
 - December

• MPOG Updates at SPA Q&S

- April & October

MPOG Annual Retreat 2024

- October (Philadelphia, PA)



Pediatric Subcommittee Leadership

MPOG is pleased to announce Drs. Vikas O'Reilly-Shah (Seattle Children's) and Morgan Brown (Boston Children's) as the new pediatric subcommittee leadership team.



Chair

Vice Chair





Membership Update

- 28 Pediatric Hospitals
- Welcome to our newest site Johns Hopkins!
- Onboarding In Progress
 - Indiana University Health, Riley Children's Hospital
 - Lucile Packard Children's





Measure Updates

NMB-04: Variation in Sugammadex Dosing

Description: Percentage of cases with sugammadex administration that had a cumulative dose \leq 200mg OR \leq 3mg/kg.

Background:

- Measure proposed by Dr. Megan Anders (Univ. Maryland). Strategies for cost-containment are an area of interest.
- A timely measure groups may be engaging in discussion of loosening formulary restrictions given ASA guideline

Limitations:

- Pediatric dosing (allows high dosing for peds)
- Measure may become obsolete when sugammadex comes off patent (January 2026)
- May incentivize underdosing
- Focus on vial vs mg/kg dosing





Measure Details

Rationale

- Fixed cost of 200mg vial
- Acknowledges dose rounding given small injection volumes
- Encourages judicious use of NMBD to end with at least TOF = 2
- Compliant with FDA approved dosing and ASA 2023 guideline

Exclusions

- Age ≤ 2yrs
- ASA 5 and 6 cases including Organ Procurement (CPT: 01990)
- Cases <30 min
- Patients that were not extubated in the immediate postoperative period

Threshold – 90%

 Acknowledges CICV, unexpected discontinuation of surgery, safety margin for individualized dosing



Sugammadex Dosing \leq 200mg or \leq 3mg/kg





NMB-05: Quantitative NMB Monitoring

Coming Soon!

Description: Percentage of cases with documentation of train-of-four count <u>or ratio provided by a quantitative monitor</u>

- Acceleromyography
- Electromyography
- Kinemyography
- Mechanomyography



Success Criteria: Documentation of train-of-four count **or** ratio provided by a quantitative monitor between patient in room and patient out of room.



All MPOG institutions contributing subjective data while only half of contribute data from quantitative monitoring.

Concept ID	New MPOG Concept Name	Example Values	# institutions	# of occurrences
3330	Train-of-four Qualitative (Subjective, Clinician Reported) Count	TOF Count: (0,1,2,3,4, ST)	65	62,052,001
3485	Train-of-four Quantitative (Objective) Ratio	TOF Ratio: decimals or % Values between 4 - 100	35	11,318,093
3033	Train-of-four Quantitative (Objective, From Device) Count	TOF Count (0, 1, 2, 3, 4)	24	7,167,485
3486	Train-of-four Quantitative (Objective) Count and Ratio combined	TOF Count + ratio: 4/4 55%	8	3,032,509
3487	Subjective Clinical Neuromuscular Monitoring Assessment (head lift, hand grasp)	0-4 and sustained tetany	3	183
3488	Train-of-four Post Tetanic Count (PTC)		0	-





QI Dashboard Updates

New Demographics filter with multiselect options



Provider tab links directly to provider specific case list

Entity Duke - University Hospitals Time Period Part 12 Months	NMB-03-Peds: NMB Dosing, Pediatrics Providers More Info Percentage of pediatric patients ≤ 5 years old who receive appropriate initial dosing of non-depolarizing neuromuscular blocking drugs (NMB) Case List									
Additional Filters + Location + Surgical Service > Demographics	Show 25 v entries Provider	Af Show CR Re View	Report Do	wnload tries	Operating	Surgical	Procedure		Primary Anesthesia	Measure Result d
	Ramon Antonio Ref. Contrat.	Re At CR	Flagged	Service	DNOR PED01	Pediatric Surgery	(Actual)REPAIR INITIAL ING(5 YEARS,WITH OR WITHOU LAPAROSCOPY, SURGICAL; DIAGNOSTIC, WITH OR WIT OR WASHING (SEPARATE PI	JINAL HERNIA, AGE 6 MONTHS TO YOUNGEF T HYDROCELECTOMY; REDUCIBLE (Right: Gro ABDOMEN, PERITONEUM, AND OMENTUM, HOUT COLLECTION OF SPECIMEN(S) BY BRU ROCEDURE) (Abdomen)	CPT R THAN in); 00840 SHING	Reason NMB Dose: Rocuronium - 1.1 MG/KG
	No. of Concession, Name	At Vie At Cas	Flagged		DNOR 07	Plastics	(Actual)PALATOPLASTY FOR (Bilateral: Mouth); TYMPANG TUBE), GENERAL ANESTHES	CLEFT PALATE, SOFT AND/OR HARD PALATE DSTOMY (REQUIRING INSERTION OF VENTILA IA (Bilateral: Ear)	ONLY ATING 00172	NMB Dose: Rocuronium - 1.3 MG/KG
	STREET, STREET	Re Showi	ng 1 to 2 of	f 2 records						
	THE R. LEWIS	Reside	95% 100% 100%	21 7 3	0		22 7 3	0% 0%		
		CRNA Resident	84% 73%	16 11	3		19 15	1%		
	TAICHER-BRAD	Attending Resident	97% 100%	68 4	2		70	1% 0%	1 P O	G
		CRINA	100%	2	0		2	0.70		

Easily navigates to MPOG case viewer with measure details





Anesthesia Providers

85%

20%

Coming Soon! Improved Provider Dashboard

Mock Up



Peds Cardiac Workgroup

Peds Cardiac Workgroup

Background:

- MPOG formed an adult cardiac subcommittee and has built a number of cardiac specific QI measures.
- Current cardiac procedure phenotype does not accurately categorize all peds cases

Proposal: Form a pediatric cardiac workgroup to

- Define a cardiac phenotype specific to congenital cardiac procedures
- Build QI process and outcome measures
- Increase multicenter research with MPOG platform
- Future CCAS-STS/MPOG data merge

First Interest Meeting: Early February 2024





PAIN-01-Peds

Measure Review

Dr. Lisa Einhorn Duke University



MPOG Pediatric Subcommittee PAIN-01 PEDS Measure Review

Lisa Einhorn, MD, FAAP Duke University



Rationale

- Multimodal pain management in children during the perioperative period can decrease postoperative pain, improve clinical outcomes, and increase patient satisfaction after surgery.
- Opioids remain an important analgesic strategy in acute pain management yet carry significant risk of perioperative complications including postoperative nausea and vomiting (PONV) and dose-dependent respiratory depression.
- The American Society of Anesthesiologists (ASA) and Society for Pediatric Anesthesia (SPA) have published guidelines and recommendations which endorse the routine use of multimodal analgesia when appropriate to reduce opioid exposure and opioid-related side effects.
- Current evidence supports the use of opioid sparing analgesics in pediatric surgical populations that act through different mechanisms. This list includes (but is not limited to) acetaminophen, NSAIDs, dexamethasone, ketamine, clonidine, and dexmedetomidine.



Rationale Evaluation

- Rationale is appropriate and based on Clinical Practice Guidelines from ASA and SPA.
- No new CPGs have been published for pediatrics in the time period since the last review.
- Changes: Multiple modifications in language in the rationale for clarity and flow.
- Suggest removing the words indicating that opioids carry a significant perioperative risk of "increased recovery time after surgery." This remains controversial in the literature and is not supported by a recent article published in JAMA Surgery in adult patients (PMID: 37314800) which concludes that "reduced opioid administration during surgery may have the unintended outcome of increasing postoperative pain and opioid consumption."



Review of New Literature

• PMID: 37300350. Paediatr Anaesth. 2023 Sep;33(9):699-709. doi: 10.1111/pan.14705.

Recent report of a single-center QI project reviewing 41260 patients who underwent intraoperative opioid free anesthesia using multimodal analgesia and regional anesthesia. Showed decreased opioid rescue rates and PONV treatment in PACU and stable in-hospital pain scores and length of stay.

• Supports Rationale of PAIN-01 PEDS measure



Current Inclusion/Exclusion Criteria

- Inclusions:
- Pediatric patients requiring anesthesia
- Exclusions:
- Patients ≥ 18 years of age
- ASA 5 and 6
- Procedure Types
 - <u>TEE/Cardioversions</u>
 - Endoscopy
 - Bronchoscopy
 - Obstetric Procedures
 - <u>ECT</u>
 - Diagnostic Imaging Procedures
 - Open Cardiac and 'other' cardiac procedures as determined by Procedure Type: Cardiac Surgery
- Intubation Only cases
- Block Only cases Proposed addition
- Myringotomy and Tube cases Proposed addition
- Otoscopy (00124)
- Central Line Placement (00532)
- Lumbar Puncture (00635)
- Other (01990, 01991, 01992, 01999)
 - · Rooms tagged as 'Other offsite anesthesia'
 - Cases with procedure text 'ABR Testing' (without any additional procedures listed)
- · Patients who remained intubated postoperatively (see 'other measure build details')
- Cases with a Spinal, Combined Spinal/Epidural or Unknown Anesthesia Technique: Neuraxial



Evaluation of Inclusion/Exclusion Criteria

- Inclusion criteria: Propose the addition of open cardiac cases that are extubated in the operating room.
- **Exclusion criteria:** Propose the addition of Block Only cases and Myringotomy and PE tubes. Continue to exclude cases with spinal/CSE/Epidural or Unknown Anesthesia Neuraxial Technique due to high likelihood of misclassification following a review of a large sample of these cases.
- Will discuss patients who receive no analgesic medications in the next slide



Evaluation of Definition of Success or Flagged Cases

- There were a total of 201,667 cases in the PAIN-01 (PEDS) measure. 34 institutions included. Of 100,000 pulled in the data extraction, **11,217 were flagged** (11.2%).
- Of the flagged cases, **5,507 (49%) received no analgesic medications (no opioids, no multimodal).** Common procedures in this category are listed below:
 - BAER with Sedation; ABR testing; Biopsy (kidney, liver, skin etc); Radiotherapy treatment; Bilateral Myringotomy/Tympanostomy Tubes; Lumbar Puncture/Bone Marrow Aspiration; Botox Injection; Arthrocentesis; Eye exam under anesthesia; EGD/Colonoscopy; CT/MRI needle biopsy; Cystocosopy removal of stent/Cystogram; Dental restorations/extractions; Laser tx; Echo; Spica Cast change
- Some of these procedures are already listed in the exclusion criteria (ie: ABR, LP) but require improved logic beyond CPT codes to increase accuracy.
- Other common procedures on this list may be appropriate to add to the exclusion criteria.
- As the goal of this measure is to reduce opioid exposure using non-opioid analgesics, it may be worth considering whether it is appropriate to exclude all patients who received no analgesics during a procedure (no opioids and no multimodal therapies).



Additional Discussion Points

- **Threshold:** currently none set. Would recommend setting to 90%, this seems imminently feasible and appropriate based on current numbers
- **Responsible Provider:** Continue any provider signed into the case? Other options include: provider who has signed in longest, provider at the end of the case.
- **Success Criteria:** Discrepancy between MIPS measure definition which requires 2 multimodal analgesics excluding opioids vs PAIN-01-PEDS which currently requires 1 multimodal analgesic.
 - Adding the requirement for a second multi-modal will likely result in significantly more flagged cases and may/may not be feasible for all included procedures.
- Exclusion Criteria: Exclude those who received no analgesia?
- Questions or other concerns?



Multimodal Analgesia Compliance Across MPOG Pediatric Hospitals

Past 12 months

PAIN-01 - Denominator



PAIN-01 Performance by Age Group



Summary of Recommended Modifications PAIN-01-Peds

- Add threshold of 90%
 - Include Cardiac procedures that were extubated intraop
- Exclude Block Only cases
- Exclude Myringotomy & Tube cases
- Exclude cases that receive no analgesia
- Improve accuracy of ABR and Lumbar Puncture exclusions
- Modify language in Rationale





PAIN-01-Peds

1 vote per site

Continue as is / modify / retire

Need > 50% to retire measure

Coordinating center will review all votes after meeting to ensure no duplication



Using MPOG for Pediatric QI

Dr. Lauren Madoff Boston Children's

Goals

Individual

- Review personal metrics
- Compare to others within the department

Institutional

- Target department-wide areas for improvement
- QI measures at multi-institutional level



Timeline

June 2023: Announced the initiation of MPOG dashboard at department-wide staff meeting

- □ August 2023: Second announcement about individual MPOG dashboards
- □ September 2023: Individual MPOG dashboards go live

□ Staff encouraged to review dashboards





Departmental MPOG QI Committee

- Volunteer committee
 - 10 volunteers
- Monthly meetings
 - 1 metric reviewed at each meeting
 - Is the information being recorded correct?
 - Mapping errors?
 - Is the data relevant to our practice?
 - Can the data be improved?



Future Directions

• Provide feedback on existing metrics

- Develop new metrics
 - Cardiac
 - Pain
 - Blocks
 - Multi-modal analgesia
- Email Lauren.Madoff@childrens.harvard.edu





Pediatric Research Update

Two multicenter pediatric research proposals recently accepted by the MPOG Perioperative Clinical Research Committee (PCRC)

- **PCRC 0145:** Prophylaxis Practice in Pediatric PONV: A Retrospective Observational Study
- **PCRC 0180:** The Association of Guideline Directed Prophylaxis with the Incidence of Postoperative Nausea and Vomiting in Pediatric Patients.

Primary Collaborators: Lucy Everett, Ben Andrew, Wes Templeton, Vikas O'Reilly-Shah, Lisa Vitale, Brad Taicher, Meridith Wade



Recent MPOG Peds Publications

Congratulations to Dr. Wes Templeton and team on their publication in Anesthesiology! > Anesthesiology. 2023 Sep 22. doi: 10.1097/ALN.00000000004781. Online ahead of print.

Hypoxemia in School Age Children Undergoing One-Lung Ventilation: A Retrospective Cohort Study from the Multicenter Perioperative Outcomes Group (MPOG)

T Wesley Templeton ¹, Bridget Krol ², Scott Miller ¹, Lisa K Lee ³, Mike Mathis ⁴, Susan R Vishneski ¹, Debnath Chatterjee, Ruchika Gupta ⁴, Rebecca A Shroeder ⁵, Amit K Saha ¹; Multicenter Perioperative Outcomes Group Investigators

Congratulations to Dr. Sydney Brown and team on their publication in BJA!

Observational Study > Br J Anaesth. 2023 Oct;131(4):e117-e120. doi: 10.1016/j.bja.2023.07.013. Epub 2023 Aug 11.

A retrospective observational cross-sectional study of intraoperative neuromuscular blocking agent choice and dosing in a US paediatric referral hospital before and after introduction of sugammadex*

Sydney E S Brown ¹, Kevin Spellman ², Ruth Cassidy ³, Rebecca Nause-Osthoff ³, Meridith Bailey ³, Graciela Mentz ³, Deborah Wagner ³, Bishr Haydar ³, Wilson Chimbira ³, Sachin Kheterpal ³, Douglas Colquhoun ³



Other Projects

PCRC-0128	03/14/2022	Weill Cornell	Pryor/Tangel	Accepted
PCRC-0127	08/09/2021	Washington	Lele	Accepted
PCRC-0092	03/09/2020	Mass General	Rosenbloom	Accepted



Pediatric Phenotypes In Progress - PCRC 241/Nasr

Gestational Age at Birth

Current State

- AIMS data sites have mapped to MPOG concepts is very limited and highly variable.
- MPOG Concepts Available
 - Pediatrics-Premature Birth
 Pediatrics-Gestational Age at Birth

Some value examples include:

Text

- 28 31 weeks (2)
- < 28 weeks (3)
- 24.57142857
- Twin at 32 weeks EGA
- Premature newborn (BW ... lb ... oz: NICU x 100 days)
- 22 5/7 wks
- Less than 37 weeks
- Yes

Numeric

- 0.156
- 1
- 0



Gestational Age Phenotype

Description: determines if a case was performed on a patient that was born prematurely.

Limitation: Results dependent on submission and accuracy of ICD codes

Future Goal: Refine phenotype with additional data submitted to increase accuracy and fill rates for projects on neonates

- Encourage sites to review/update their current variable mappings
- Share current and best documentation practices.

Value	Code	Definition	
Extremely Preterm	1	Gestational age < 28 weeks	
Preterm, Unspecified	2	Unspecified weeks of gestation	
Very Preterm	3	Gestational age 28 - 31 6/7 weeks	
Moderately Preterm	4	Gestational age 32 - 33 6/7 weeks	
Late Preterm	5	Gestational age 34 - 36 6/7 weeks	



PCRC proposals and "rightsizing" the paper

- Typically, one "proposal" -> one manuscript
- Diffuse proposals and hypotheses lead to unfocused manuscripts
- Paper must be "big" enough to warrant reading it, the "energy of activation"
- More messages, more complexity increase the energy of activation
- Novelty, focus, and "buzz" decrease energy of activation
- Paper must be "small" enough to be consumable and have a clear message (or two)





Reporting

- Pick an EQUATOR checklist
 - https://www.equator-network.org/ & https://www.goodreports.org/
 - Use it when designing the protocol
- If there is a better checklist for a novel methodology (machine learning, etc), use it
 - https://www.ahajournals.org/doi/10.1161/CIRCOUTCOMES.120.006556
- STROBE is not enough anymore
 - RECORD, SQUIRE, etc



MPOG-specific guidance

- When reporting a paper, sample size is your enemy, not your friend
- Do *NOT* highlight how many cases are in MPOG that you "started" with
 - readers question generalizability after excluding so many cases
- Statistical significance is a burden that must be explained
- Effect sizes are the key
- Consider a priori minimal clinically important difference in protocol
- MPOG data is no longer restricted to "academic medical centers"
- Model parsimony builds upon hypothesis focus
- Use supplemental digital content freely for model reporting





Next Meeting: March 2024

If interested in joining email Meridith@med.umich.edu

THANK YOU Dr. Taicher for your many contributions over the past few years as subcommittee Chair and for your continued participation as a member of the MPOG pediatric subcommittee!





Thank You!