Anesthesiology Performance Improvement and Reporting Exchange (ASPIRE)

Pediatric Subgroup Meeting Minutes – February 17, 2021

Attendance:

Amber Franz, Seattle Children's	Lisa Vitale, Michigan Medicine
Bob Brustowicz, Boston Children's	Lucy Everett, Mass General Hospital
Brooke Szymanski-Bogart, MPOG	Lori Reigger, Michigan Medicine
Carrie Menser, Vanderbilt	Lora Gibbs, Michigan Medicine
Cheryl Gooden, Yale University	Morgan Brown, Boston Children's
David Clark, MPOG	Meridith Bailey, MPOG QI Coordinator
Dave Moore, Vanderbilt	Olga Eydlin, NYU Langone
David Waisel, Yale University	Nirav Shah, MPOG Associate Director
James Xie, Stanford	Priti Dalal, Penn State University
Jeana Havidich, Dartmouth	R.J. Ramamurthi, Stanford
Joe Cravero, Boston Children's	Ryan Bradstreet, Bronson Healthcare Group
Jonathan Halem, Penn State Children's	Shobha Malviya, Michigan Medicine
Kim Strupp, Children's Hospital of Colorado	Uma Parekh, Penn State Children's
Liem Pham, NYU Langone	Wes Templeton, Wake Forest

Agenda & Notes

I. Announcements

a. 2021 Pediatric Subcommittee Meetings
   i. February 17th
   ii. May 19th
   iii. August 18th
   iv. October 9th (In person @ SPA if possible)
   v. December 15th

b. MPOG Annual Retreat 2021
   i. October 8th (In person in San Diego, CA, if possible)
   ii. Everyone is invited to this meeting regardless of MPOG member status

II. 2020 Recap

a. Four pediatrics measures built
   i. Intraoperative Hypothermia (Temp 04)
   ii. OME (T&A and Spine)
   iii. Multimodal Analgesia (Pain 01)

b. 150,000+ pediatric cases submitted to MPOG central database

c. Pediatric QI Dashboard Released

III. MPOG Peds Membership Update

a. Active Sites (Submitting Preop through PACU Data)
    i. Vanderbilt, Michigan Medicine, Washington University, Oregon Health & Science University, Yale University, University of California San Francisco, Duke Children's Hospital, NYU-Langone, Massachusetts General, MD Anderson, University of Chicago Medicine, Dartmouth, University of Virginia Children's Hospital, Beaumont Health, Bronson Healthcare Group
b. Active Sites (Submitting Intraop Data Only)
    i. Oklahoma University
    ii. 2021 Conversions (meaning that they will be able to submit preop and PACU data along with their intraop data)
    iii. Wake Forest, Weill Cornell University, Memorial Sloan Kettering Cancer Center, Cleveland Clinic Children's
c. New Sites Onboarding
    i. Spectrum Health (Helen-Devos Children's), Penn State Health, Boston Children's
    ii. Lucile Packard Children's – application submitted!

IV. Pain 01 (Peds) – Multimodal Anesthesia *New Measure

a. Description
    i. Percentage of patients < 18 years old who undergo a surgical or therapeutic procedure and receive a non-opioid adjunct preoperatively or intraoperatively
b. Success
    i. At least one non-opioid adjunct (medication, regional block, caudal, or epidural) was administered to the patient during the preoperative or intraoperative period.
c. Exclusions
    i. ASA 5 and 6
    ii. Cardiac Surgery, Obstetric Procedures, Radiology Procedures, ABR testing, and other non-operative procedures
d. See slides for performance comparison graph between MPOG sites contributing pediatric hospital data
    i. *Nirav Shah, MPOG – There is a significant amount of variation across sites. This may have to do with case mix and might be interesting for future analysis. This might also be because of differences in practice*
    ii. *Lucy Everett, MGH- This is the percentage of cases that received multimodal?*

iii. *Meridith Bailey, MPOG – Yes, this is the percentage of patients who receive a non-opioid adjunct*
iv. *Lucy Everett, MGH - Is this for all pediatric patients, except those listed in the exclusions, or specific to a service line?*
v. *Meridith Bailey, MPOG- Correct, this is looking at all pediatric patients*
vi. *Nirav – The QI reporting tool helps us to slice and dice this data a bit now. This also doesn't include any local given by the surgeon because of documentation issues*

V. 2021 Measure Survey Results

a. Thank you to everyone who responded! 15 responses
b. Top Responses
    i. Postoperative Respiratory Complications → 60% rated 'extremely important'
        1. *This can be challenging to capture with our current data. We are working to clean the data for the adult population first*
    ii. Emergence Delirium → 33% responded 'very important'
    iii. Sustained Intraoperative Hypotension → 33% 'extremely important'
    iv. Sugammadex use/dosing → 33% 'moderately important'
    v. Cardiac Surgery Specific measure → 20% responded 'not important'
c. Measure survey free text 'write ins'
    i. Interestingly, these are all tied to existing measures. We will work as a committee to update the existing measures to make them more relevant to the pediatric population

Suggestion	**Related MPOG Measures**
Temperature Regulation in Infants, Hypothermia (postop)	TEMP 03, TEMP 04
Appropriate monitoring (i.e. documented TOF) and use of any (sugammadex or neostigmine) for reversal)	NMB 01, NMB 02
Postoperative Nausea & Vomiting	PONV 02, PONV 03
Blood product usage - PRBC and other, blood conservation	TRAN 02
Use of appropriate handover tools, # of handovers intraop, etc.	TOC 01, TOC 02, TOC 03
Use of PEEP for all cases when using PPV.	PUL 03
Hypoglycemia and hyperglycemia prevalence	GLU 01 - 05

Link to All MPOG Measures

d. **Discussion:** Do any of the MPOG measures line up with recent, current, or upcoming QI projects in your department?
    i. *Joe Cravero, Boston Children's-We have a number of initiatives around over transfusion, under transfusion, anemia, handoff tools, and PONV. It lines up fairly well for us. The outcome metrics will be obviously really important to develop thoughtfully.*
    ii. *Nirav Shah, MPOG- as we start to look at the measures, we want to make sure that the measures that you are looking at as a department will line up with our measures. We want to make sure that we are not way off with what we are focusing on vs what you are focusing on locally*
    iii. *Uma Parekh, Penn State – We are interested in and have done work on hypoglycemia and hyperglycemia, but only in the neonatal population*
    iv. *Nirav Shah, MPOG - It will be important as we review these measures that we can segment out the populations of interest as well*
    v. *Wes Templeton, Wake Forest – We are interested in use of PEEP in all areas. There is a lot of talk in the literature about lung protective ventilation and what is appropriate in children. This can be age dependent and is an area of active interest for me and an area of interest for the pediatric community. This is an unambiguous area. Study out of France went from 6cc/kg to 12cc/kg, we published something about the dead space apparatus and maybe as much as 3-6 cc/kg. This is an interesting question that the power and size of the MPOG database in as we look at postop pulmonary complications and would be extremely helpful. PPV is something that would be beneficial to figure out how to do correctly for different age groups via MPOG.*

VI. **2021 Pediatric Subcommittee Goals**

a. #1 Review and modify existing MPOG measures

Measure	Description	Peds Meeting Review
PONV 02 (PEDS)	*PONV prophylaxis, Pediatrics*	2/17/2021
TRAN 01	*Transfusion Management Vigilance*	5/19/2021
TRAN 02	*Overtransfusion*	5/19/2021
NMB 01	*Train of Four Taken*	8/18/2021
NMB 02	*Reversal Administered*	8/18/2021
PUL 03	*Administration of PEEP*	10/9/2021
TOC 01	*Intraoperative Transfer of Care*	10/9/2021
PUL 01	*Protective Tidal Volume, 10 mL/kg PBW*	12/15/2021
TEMP 03	*Perioperative Hypothermia*	12/15/2021

b. Quality measures should reflect the latest evidence in pediatric or may be "topped out" and worth retiring if no longer relevant for QI
    i. Meridith may be reaching out to ask you to provide your expertise and review measures. We hope you will participate to help come up with suggestions that will ultimately help us to decide to keep, modify, or retire the measure.
c. #2 Add OME dashboard to new QI Reporting Tool
    i. Looking at opioid equivalency for T&As and spinal surgery
    ii. This is the last thing that needs to be migrated from the old dashboard to the new QI Reporting Tool
d. #3 Feature presentations on how active sites have used MPOG pediatric data to do QI or research
    i. We would like to use this meeting as a platform to share how data is being used to impact QI or research in pediatrics, ideally with MPOG data but could be any data. We would like to stir debate and discussion regarding what we should be doing within the subcommittee.
e. #4 Have two additional MPOG sites merge NSQIP-peds data

VII. 2021 Planning discussion

a. *Joe Cravero, Boston Children's – The Pediatric Regional Anesthesia Network (PRAN) Group has done a lot around regional anesthesia and adverse events. What we don't have a huge amount of data on is the actual impact of regional anesthesia on the conduct of general anesthesia and/or immediate or late pain in kids.*
    i. *It's a real outcome measure of effective or not effective. You could roll it into the PONV area as well. Many of us are doing studies looking at impact of various regional on different outcomes. What discussions or what has been done previously at MPOG in regards to this area?*
b. *Nirav Shah, MPOG- We haven't done a lot in the past with pediatrics looking at regional anesthesia in MPOG. Most sites submitting pediatric data have some preop data, intraop data, block placement information, and PACU data. We have information on medication administration and PONV in that time period based on nursing documentation as well which includes minute-minute physiologic data. This could be a ground for research and QI work. Meridith and I can provide some guiderails about the data in MPOG regarding its quality and if it is worth the time.*

Measure Review – PONV 02: PONV Prophylaxis in Children

- Originally released in March 2018. Directly transcribed from the pediatric MIPS PONV measure. At the time, MPOG was submitting data as a QCDR, which is no longer applicable
    - *Description:* Percentage of pediatric patients 3 - 17yo with ≥ two risk factors for postoperative vomiting (POV), and receive antiemetic combination therapy.
    - *Success: Patient receives at least two prophylactic pharmacologic antiemetic agents of different classes preoperatively or intraoperatively*
    - *Attribution:* Provider(s) signed in at Induction End. If not available then,
        - Induction Begin
        - Procedure Start
        - Patient in Room
        - Anesthesia Start
    - *Inclusion Criteria*
        - Patients ages 3-17 years old
        - Received an inhalational general anesthetic
        - Has ≥ 2 risk factors for POV
            - History of PONV
            - Strabismus surgery
            - Surgery ≥ 30 minutes
    - *Exclusion Criteria*
        - Patients < 3 or > 17 years old.
        - Patients transferred directly → ICU
        - Random CPT case exclusions: Liver Transplants, Lung Transplants, Procedures on the Neck, Intrathoracic Procedures, Procedures on the Lower Abdomen, Obstetric Procedures & Labor Epidurals, Endoscopy, Obturator neurectomy, Shoulder cast application
- **PONV Prophylaxis vs. Outcomes: A Single Center QI Story…**
    - PONV Prophylaxis Compliance
        - Antiemetic prophylaxis compliance and PONV outcomes were analyzed for 22,121 pediatric patients from 2017 to 2020. Baseline compliance of PONV-02 was 76%. Following release of the PONV 02 quality measure in March 2018, rates of PONV-02 compliance **steadily increased to 84% by December 2019.**
    - PONV Outcomes
        - Baseline rate of PONV outcomes was 6.5% in January 2017. Despite an increase in prophylactic compliance, the average percentage of patients who reported nausea or vomiting in the recovery room **remained at 6%.** There

was a slight decrease in the percentage of patients who received a rescue antiemetic after surgery (1.6%)

Proposed PONV-02 Revisions: Where do we go from here…

- Denominator
  - Patients 3-17 yo
  - Has ≥ 2 risk factors for PONV
- Exclusion criteria
  - Patients <3 or >17 yo
  - ASA 5 or 6 *New exclusion
  - Labor epidural cases *Improved accuracy
  - Direct ICU Transport
    - *Exclude all patients who remained intubated?*
  - Removed CPT exclusion list
- **PONV Risk factors**- New risk factors that came out in ANA in 2020
  - Post-pubertal females
    - Defined as age >12
  - Exposure to volatile anesthetics
    - Include Nitrous
  - Hx of PONV (personal or first degree relative)
  - At risk surgery
    - Strabismus
    - Adenotonsillectomy
    - Tympanoplasty
  - Anesthesia duration ≥30 min
    - *Is procedure duration more meaningful?*
  - Postoperative long-acting opioids (defined as administration after airway placed)
- *Discussion*
  - *Morgan Brown, Boston Children's- This is a more modern way of looking at it. The current metrics are out of date. All of these suggestions make a lot of sense. The teenage population seems to have more in common with adults than children.. When looking at the QI things for PONV, it would be helpful to stratify by risk factors. When looking at old Apfel data, there are a proportion of patients that no matter what we do, will have PONV; we can't target 0% NV rates per se.*
  - *Bob Brustowicz, Boston Children's – When looking at post-pubertal females, why are we defining it by age and not menarche?*
  - *Nirav Shah, MPOG - The documentation of menarche is not consistent across MPOG so we may not be able to get it accurately. For sites that do document it, we could*

potentially take advantage of that documentation and for those that don't we could default to an age

- *Shobha Malviya, Michigan Medicine- I agree with adding those two risk factors. I also want to ask about use of neostigmine. I am now reading that use of Sugammadex is associated with less PONV. This may make an interesting research study*
- *Morgan Brown, Boston Children's- I thought the original adult data was weak, but it would be interesting to collect. I don't think I would propose a specific risk factor at this point.*
- *Shobha Malviya, Michigan Medicine - I agree with that*
- *Nirav Shah, MPOG- Sounds like matching this to the new consensus guidelines seems to make sense for this group. There is some variability in documentation for planned use of postop opioid. One definition proposed in the past, is if there is a medium to long acting opioid given after intubation. We could start with that definition. We are also getting some documentation from some sites regarding the postop pain plan including opioids*

- **Success Criteria – Patient with greater than or equal to 2 risk factors for PONV receive 2 antiemetics from different classes.**
  - How many risk factors should we include in this measure? Consensus guidelines suggest requiring only one risk factor.
- **Discussion:** is this how you are practicing? Dropping it from two to one risk factor for antiemetics would significantly impact the scores
  - *Morgan Brown, Boston Children's - For high risk patients, they probably should be getting TIVA, so they wouldn't be getting into this metric anyway because of the 30 min minimum duration of inhalational anesthetic requirement. This is potentially arguable. It may be easier to get at that most patients should at least get 1. Would be helpful to see if patients aren't getting any or if they are just getting one antiemetic.*
  - *Carrie Menser, Vanderbilt – When we looked at some of our failures where children were considered medium risk because it was a procedure >30 min with volatile anesthesia, one population that popped up are patients coming for MRI. That group has a very low incidence of PONV, so it isn't our routine practice to give those patients two antiemetics.*
  - *Uma Parekh, Penn State- Do you want to look at non-smoking as a risk factor?*
    - *Nirav Shah, MPOG- We certainly can. I can look at data across MPOG to see what the documentation is for smoking in the pediatric population*
    - *Meridith Bailey, MPOG- Vaping would be more popular in that age group. We could look at if they are vaping nicotine or not*

        - *Shobha Malviya, Michigan Medicine - I don't know how many kids will admit that they smoke in front of their parents, that data may not be as reliable as other risk factor data.*
        - *Shobha Malviya, Michigan Medicine – Administration of antiemetics for MRI patients is dependent on the risk factors that the kid has. Some of the kids do get Zofran dependent on the risk factors. I agree that the MRI area is an area of low risk. We also do a lot of mask induction and start the IV to switch to sedation, so they don't get inhalation for 30 min so our risk is probably even lower.*
        - *Lora Gibbs, Michigan Medicine- The vast majority of kids in MRI don't get any antiemetics*
    - *Carrie Menser, Vanderbilt – so in the current system those cases would show up as a failure?*
        - *Nirav Shah, MPOG- Yes, if we make no changes, those cases will show up as flagged case. We are hearing that they should be excluded.*
        - *Shobha Malviya, Michigan Medicine – Yes, agree those cases should be excluded.*
        - *Morgan Brown, Boston Children's- We should really look at publishing that PONV after MRI is low so that it can be incorporated into these guidelines*
        - *Amber Franz, University of Washington- When you say anesthetic duration for > 30 min can you clarify if that means any anesthetic including TIVA? At Seattle Children's we also do inhalational induction and switch to Propofol and I don't think we don't give much antiemetics.*
        - *Meridith Bailey, - Currently, the algorithm we use for anesthetic duration starts with Induction End and ends with patient Extubated (with appropriate fall back times)*
    - *Liem Pham, NYU- I thought one of the inclusion criteria was that maintenance had to be a volatile? So if TIVA is the maintenance then it would be excluded?*
        - *Nirav Shah, MPOG- Yes that is correct. For the existing measure we only include cases with inhalational agent (defined as 5 valid minutes of inhalational after procedure start). We are proposing to make inhalational not an inclusion criteria but a risk factor.*
    - *Wes Templeton, Wake Forest- When we talk about the antiemetics, what are people giving? Is Zofran and Decadron given 98% of the time?*
        - *Nirav Shah, MPOG- ondansetron, dexamethasone and diphenhydramine are the most common. I don't know what the frequency distribution is across all of them. When we built this measure we used the MIPS list and surveyed the*

sites to see what they were using. It would be interesting to look at the frequency distributions

- *Wes Templeton, Wake Forest- it would be helpful to know what people are giving and share with this group. We're not giving a lot of aprepitant to 5 yr olds so knowing globally what people are doing to potentially meet this metric and what rescue's they are using as well.*
- *Nirav Shah, MPOG- It would be interesting to put this in the new QI reporting tool to give us the flexibility to drill down on practice patterns across our collaborative.*

- *Meridith Bailey, MPOG (via Chat) – Another thing we could do is apply/define a specific duration dependent exposure to the volatile agents*
  - *Morgan Brown, Boston Children's (via Chat)- Yes, I think the risk factor is anesthesia with volatile >30 minutes*
- *RJ Ramamurthi, Stanford (via Chat) – Instead of calling two or more antiemetic "medications" – suggest 'modalities', include 'propofol' and 'acupuncture'*
- *James Xie, Stanford (via Chat)-* https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4679372/ *Stimulation of PC6 acupointe has been shown to be as effective as zofran for prevention of PONV*
- *Bob Brustowicz, Boston Children's – Are you considering Propofol infusion only as 'pass' or infusion vs bolus? End of the case?*
  - *Nirav Shah, MPOG- The way that we built the measure, propofol bolus doesn't count as an antiemetic. The quality committee decided previously that given as an infusion counts as an antiemetic.*
  - *Bob Brustowicz, Boston Children's - Some people give a large dose to extubate deep, would that then count?*
  - *Nirav Shah, MPOG- That wasn't included previously as an antiemetic. Interested to hear what the group thinks?*
  - *Morgan Brown, Boston Children's- I don't know all the literature, but I don't think that there is data to support using it as an antiemetic and I think we should be using literature to drive our measures*
  - *Nirav Shah, MPOG - that's exactly wat we try to limit the markers for success to what the literature says. Sometimes in MPOG we use expert consensus if the literature isn't absent or weak as well but in general our mode of operation is using what has been published.*
  - *Meridith Bailey, MPOG- Going back to anesthesia duration, this algorithm doesn't mean that they were given a volatile the entire time. Do folks think we should update this definition to 30 minutes of continuous volatile anesthetic?*

        - **Thumbs up from committee members on Zoom*
        - *Amber Franz, Seattle Children's (via chat)- yes*
- PONV Prophylaxis Measures - Next steps
    - *In general, folks agree with the risk factors proposed and the 2020 consensus guidelines*
        - *We need to look at MRI cases as an exclusion*
- *Look at the use of neostigmine, we need that info but not to include it as a risk factor;* Same for smoking/vaping
        - *Distribute a frequency distribution of antiemetics*
    - We will incorporate your feedback and draft a measure specification
    - Apply the measure specification to past cases and test functionality
    - Present the new PONV-02 specification at the next Quality Committee on March 22nd

Meeting adjourned at: 1402