Anesthesiology Performance Improvement and Reporting Exchange (ASPIRE)

Pediatric Subgroup Meeting Minutes – May 18, 2022

Attendance:

Meridith Bailey, MPOG Coordinating Center	Ronnie Riggar, MPOG Coordinating Center
Ryan Bradstreet, Bronson	Jacques Scharoun, Weill-Cornell
Kate Buehler, MPOG Coordinating Center	Charles Schrock, St. Louis Children's
Ellen Choi, University of Chicago	Denise Schwerin, Bronson
Lucy Everett, Massachusetts General	Ashka Shah, University of Utah
Lora Gibbs, University of Michigan	Nirav Shah, MPOG Coordinating Center
Jeana Havidich, Dartmouth-Hitchcock	Adam Suchar, University of North Carolina
Bishr Haydar, University of Michigan	Brad Taicher, Duke
Jerri Heiter, St. Joseph Mercy Ann Arbor	Susan Vishneski, Wake Forest
John Huntington, Spectrum	Lisa Vitale, University of Michigan
Rebecca Johnson, Metro/Spectrum	David Waisel, Yale - New Haven Children's
Eva Lu-Boettcher, University of Wisconsin	Jessica Wren, Henry Ford Macomb/Wyandotte
Tiffany Malenfant, MPOG Coordinating Center	James Xie, Stanford Hospital
Vikas O'Reilly-Shah, Seattle Children's	Andrew Zittleman, MPOG Coordinating Center
Vikram Patel, Le Bonheur Children's Hospital	

Meeting Summary

(00:04) **Announcements**

- MPOG Featured Member for May/June 2022: Wes Templeton, MD, FASA - Wake Forest
- 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

(00:08) **New Pediatric Measures**

- TRAN-03: Transfusion Vigilance, Pediatrics
    - **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 before first transfusion
    - **Inclusions:** Patients ≥ 6 months to 18 years of age who receive a transfusion of red blood cells intraoperatively
    - **Success:** Documentation of hemoglobin and/or hematocrit within 90 minutes prior to each blood transfusion volume ≥ 15mL/kg
    - See slide 8 of presentation for performance by site (blinded)

- Discussion:
  - *James Xie (via chat)*: Point of care ABG hematocrit measures count for this? If included in the EHR?
    - Meridith Bailey (MPOG Pediatric Lead): Yes, correct
  - *Jeana Havidich via chat (Dartmouth)*: How should we input the data on the EHR if we use POC testing?
    - *Lucy Everett via chat (MGH)*: Some places have it set up to integrate the POC data to EHR when you dock the device. If not you would have to enter it manually. For manual entry would need to have a specific flowsheet row designated for that value and then mapped to MPOG.
    - *Nirav Shah (MPOG Quality Director)*: Epic sites typically have this set up to auto-populate POC results but will want to confirm this with your site and see about getting this added with your lab/pathology teams
  - *Charles Schrock via chat (St. Louis Children's)*: my last two toddler transfusions were GSW, and transfusion was empiric, and by subsequent Hgb, quite necessary. Can only get so close to 100% lest we delay transfusion for labs that we don't need prior to acting.

- TRAN-04: Overtransfusion - Pediatrics
  - **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 ≥ 6 months to 18 years of age who receive a transfusion of red blood cells intraoperatively
  - See slide 10 of presentation for performance by site (blinded)
  - See slide 11 for comparison between TRAN 03/TRAN 04 performance by site

- NMB-03: Neuromuscular Blockade Dosing - Pediatrics
  - **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
  - **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

- See slide 13-14 of presentation for measure performance by site (blinded)

(00:20) **Sustainable Pediatric Anesthesia, Dr. Eva Lu-Boettcher, University of Wisconsin**

- Active measures:
  - **SUS-01**: Low Fresh Gas Flow ≤ 3L/min.
  - See slide 19 for pediatric (age<18) performance by site - unblinded
  - Discussion:
    - *James Xie via chat (Stanford):* We implemented a fresh gas flow alert in our Epic Anesthesia system that reminds you to turn down FGF if it is > 2L/min after anesthesia ready. Very similar to UCSF's build.
    - *Lucy Everett via chat (MGH):* At MGH there's been broad interest in this so we did include SUS-01 in the subset of measures that we send out to folks on their emails.
- In Progress measures:
  - **SUS-02**: Global warming footprint of inhalational agents (maintenance)
    - Description: 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
    - Time Period: Intubation-> Extubation
    - Provider(s) Notified: Any provider signed in for at least 30 minutes during the time when halogenated agent or N2O are documented
    - How are CO2 equivalents derived? *See SUS 02 measure spec for more details.*

$$\frac{\sum [\text{Inspired agent concentrations (\%)} * \text{Fresh Gas flow (l/min)}]_{1\text{-}n} * GWP_{100}}{\text{Duration of inhalational agent administration (hours)}}$$

  - **SUS-03**: Global warming footprint of inhalational agents (induction) -*Informational only*
    - Time Period: Induction Start -> Induction End
    - Provider(s) Notified: None
  - **SUS-04**: Low Fresh Gas Flow ≤ 2L/min
    - Measure Time Period: Intubation-> Extubation
    - Inclusions: Patients who receive halogenated agents and/or nitrous oxide for ≥ 30 minutes

- **Pediatric Sustainability Measure Proposals:**
  - *Do current MPOG sustainability measure specifications accurately apply to the pediatric population?*

    Considerations:

    - Unique aspects of induction that would warrant peds specific metrics?
    - Include or exclude short cases < 30min? **Note**: Subgroup recommended including all cases regardless of duration.
    - Unique aspects of maintenance that would affect sustainability metrics in peds?
    - Induction/maintenance definitions: current version acceptable or consider different definitions for peds?
    - Peds age definition appropriate at <18 or should <12 be considered 'pediatric population' for sustainability?

  - Discussion:

    Bishr Haydar via chat (MPOG Pediatric Subcommittee Chair): Do we adjust this by altitude?

    Vikas O'Reilly-Shah via chat (Seattle Children's): What if inspired not reported? We only record expired, but use that for our internal work on this topic led by Liz Hansen locally.

    - *Nirav Shah via chat (MPOG Quality Director)*: thanks vikas… currently we are not including expired to enable comparisons across sites. have worked with sites to obtain this data over time…

    Charles Schrock via chat (St. Louis Children's): This is a tight parameter. Currently I have same GWP running at 4% times 1 liter/min in an adult size child to maintain system FiSevo of 2.8 and FeSevo of 2.3. Uptake and distribution is a problem during maintenance of bigger peds patients

    Bishr Haydar via chat (MPOG Pediatric Subcommittee Chair): There was an outstanding "Pediatric Anesthesia Article of the Day" newsletter item on induction, referencing a great article with tips for all phases of case.

    Charles Schrock via chat (St. Louis Children's): Does the GWP value factor in the atmospheric lifetime?

    - *Vikas O'Reilly-Shah (Seattle Children's)*: Yes

    Vikas O'Reilly-Shah via chat (Seattle Children's): We've certainly had a lot of success pushing our GWP down dramatically by disconnecting nitrous hoses (tanks available if really needed); dropping default flows from 8 to 3; in-Epic flow reminders have helped a lot. Really haven't had many issues with these approaches. Would recommend using expired agent if inspired agent is not available. Liz Hansen is largely leading these efforts at our site. One other really insane thing she found -- our nitrous use went way down but our purchasing stayed relatively high -- apparently nitrous tanks have a built in "feature" where they slowly leak!!

    - *David Waisel via chat (Yale)*: VIkas, I think I'd like to try the disconnect nitrous approach. Do you know what other institutions do that?

      1. *Vikas O'Reilly-Shah via chat (Seattle Children's)*: I don't know if other institutions do it, but our department on the adult side at

HMC has also done so

- *Lucy Everett via chat (MGH)*: Brian Cheesbro who co-chairs the ASA committee with Jodi Sherman has eliminated piped nitrous in a lot of facilities across the Providence system and has good info on it. Apparently a lot of the CO2 impact is actually from facility leaks.

- Should additional pediatric measures be considered?
  - SUS-05: Weight-based FGF during induction
    - Mask Inductions
    - TIVA
  - SUS-06: N2O (yes/no) used during induction

- Coordinating Center will send Qualtrics survey to help decide next steps on the following:
  - Age definition
  - Include cases <30 minutes
  - SUS-05 (Mean FGF during induction measured as kg CO2/min)
  - SUS-06 (N2O used during induction)
- If you are interested in joining the MPOG Peds sustainability workgroup please email Meridith Bailey (MPOG Pediatric Lead): meridith@med.umich.edu

(00:49) **Unblinded Pediatric Data Review**

- Unblinded Data Review: Performance for selected pediatric measures was shared with the subcommittee. This session was confidential, thus unblinded data was removed from the presentation before posting. General discussion topics are noted below- any comments specific to a site's performance were omitted from the minutes.

- **TEMP-03:** % of patients who undergo a procedure with general or neuraxial anesthesia > 60 min and have a postoperative body temperature ≤ 36C (96.8F)
  - Time Period: 30 min < Anes end > 15 minutes
  - Exclusions: ASA 5&6, MAC only, Cardiac, MRI
- **TEMP-04:** % of patients < 18 years old who undergo any procedure > 30 min and have a median core/near core body temperature ≥ 36C (96.8F)
  - Time Period: Patient in Room -> Patient Out of Room
  - Exclusions: ASA 5&6, Cardiac, MRI
  - Discussion:
    - *Lucy Everett (MGH)*: Found some mapping issues to make sure core temperature was appropriately mapped
      - *Meridith Bailey (MPOG Pediatric Lead)*: TEMP-04 considers core and near core temp values
    - *Jacques Scharoun (Weill-Cornell):* Used skin temp for ENT cases and is responsible for failing more of our TEMP 04 cases
    - *James Xie (Stanford)*: We also frequently use skin/axillary temps that are much lower appearing than a core temp
    - *Bishr Haydar (MPOG Pediatric Chair)*: At Michigan we've recently been required to formally consent parents for rectal temp. If not specifically asked of parents in preop, not allowed to do rectal temp.

- Jeana Havidich (Dartmouth): Axillary temperature does not seem too accurate
- *Eva Lu-Boettcher (UWisconsin)*: where we struggle the most is the beginning of the case where the hypothermia is prolonged and there's a lower nadir, we started to include a temp check at pre-induction verification to intervene earlier and remind folks to place temp probe earlier
- *Lisa Vitale (Michigan Medicine)*: For those performing well for TEMP 04, what interventions have been most successful?
    - *Eva Lu-Boettcher (UWisconsin)*: Temp before entering the OR, bair hugger for all patients, increased room temperatures, reminder to get core temp as soon as the patient gets into the OR or immediately following induction.
    - *Bishr Haydar (MPOG Pediatric Chair)*: Temp-04 has made me much more aggressive about warming during induction/line placement. Which is great.
    - *Vikram Patel (Le Bonheur Children's)*: or long cases preop bair hugger in holding room had some success. But keeping patient warm before draping is very hard. Axillary temp probe and taping it works at times

Meeting Wrap-up

- Next Meeting: Wednesday, August 17th at 1pm EST
- More information on MPOG Peds website: https://mpog.org/pediatrics-subcommittee/
- MPOG Pediatric dashboard: https://mpog.org/qireporting/
- Discussion Forum on Basecamp - contact Meridith Bailey to be added

Meeting Concluded @ 2:01pm EST